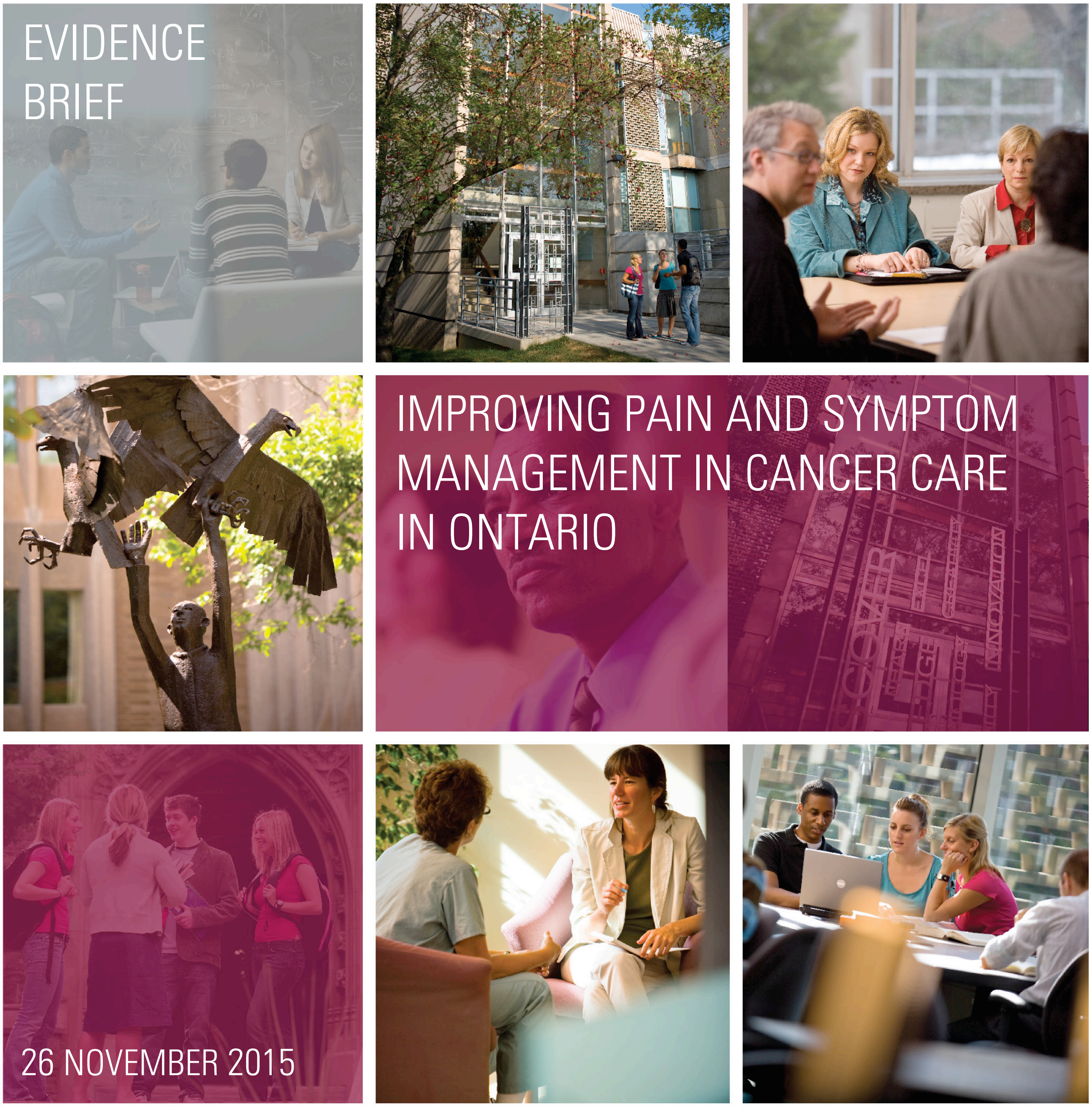
McMaster University

McMaster
HEALTH FORUM



EVIDENCE BRIEF

IMPROVING PAIN AND SYMPTOM MANAGEMENT IN CANCER CARE IN ONTARIO

26 NOVEMBER 2015

EVIDENCE >> INSIGHT >> ACTION

Evidence Brief:
Improving Pain and Symptom Management in Cancer Care in Ontario

26 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.

Authors

Kaelan A. Moat, PhD, Scientific Lead, Health Systems Evidence and Learning, McMaster Health Forum

Denise Bryant-Lukosius, PhD, Associate Professor, School of Nursing and Department of Oncology, McMaster University

Funding

The evidence brief and the stakeholder dialogue it was prepared to inform were funded by the Canadian Cancer Society Research Institute (through a grant awarded to the Canadian Centre of Excellence in Oncology Advanced Practice Nursing entitled Improving Cancer Pain and Symptom Management Through Knowledge Translation) and the Government of Ontario (through a Ministry of Health and Long-Term Care Health System Research Fund grant entitled Harnessing Evidence and Values for Health System Excellence). The McMaster Health Forum receives both financial and in-kind support from McMaster University. The views expressed in the evidence brief are the views of the authors and should not be taken to represent the views of funders.

Conflict of interest

The authors declare that they have no professional or commercial interests relevant to the evidence brief. The funders played no role in the identification, selection, assessment, synthesis, or presentation of the research evidence profiled in the evidence brief.

Merit review

The evidence brief was reviewed by a small number of policymakers, stakeholders and researchers in order to ensure its scientific rigour and system relevance.

Acknowledgements

The authors wish to thank Aunima Bhuyia and Tony Jin for assistance with reviewing the research evidence about options. We are grateful to Steering Committee members and merit reviewers (Julia Abelson, Robin McLeod and Ollie Minton) for providing feedback on previous drafts of the brief. The views expressed in the evidence brief should not be taken to represent the views of these individuals.

Citation

Moat KA, Bryant-Lukosius D. Evidence Brief: Improving Pain and Symptom Management in Cancer Care in Ontario. Hamilton, Canada: McMaster Health Forum, 26 November 2015.

Product registration numbers

ISSN 1925-2242 (print)
ISSN 1925-2250 (online)

Table of Contents

KEY MESSAGES

What's the problem?

As the number of individuals diagnosed with cancer continues to rise in Ontario, advances in screening, detection and treatment have also increased the number of people living longer after a diagnosis. Many individuals living with cancer experience significant amounts of pain and other distressful symptoms that may negatively affect their lives, and the need for comprehensive, patient-centred and evidence-based pain and symptom management is emerging as a priority issue. While a number of initiatives have been pursued to address this need in Ontario, several challenges still exist, including:

- healthcare providers do not consistently use pain and symptom management guidelines in practice;
- health system arrangements in Ontario are not optimally suited to promoting the uptake of pain and symptom management guidelines in clinical practice; and
- poor documentation of care provided to symptomatic patients makes it challenging to establish the full extent of the problem.

What do we know (from systematic reviews) about three viable options to address the problem?

- Option 1 – Strengthen efforts to translate knowledge about pain and symptom management best practices to patients and their families, to providers and to the full range of organizations in which pain and symptom management support is (or could be) delivered
    - Educating patients using a range of approaches can reduce their pain, improve patients' knowledge, and may improve communication with providers
    - While there is a lack of evidence focused specifically on provider- and organization-targeted strategies in the context of cancer pain and symptom management, high-quality evidence supports a number of effective strategies to improve providers' adherence to best practices
- Option 2 – Support the increased uptake of pain and symptom management guidelines by healthcare providers and the organizations in which care is delivered through targeted payments
    - Targeting payments to reward the performance of individual providers may help improve processes of care, referrals, admissions and costs, although only in the short term
    - Several negative unintended consequences are likely associated with targeting payments for performance, both at the level of individuals and at the level of organizations
- Option 3 – Strengthen the models of cancer care to optimize the integration of pain and symptom management best practices
    - There is limited synthesized evidence available about the effectiveness of developing referral and transition protocols in the context of cancer care, although there is evidence of communication challenges between providers during transitions to palliative care
    - There are likely benefits to leveraging technology to ensure effective communication of patient information across providers and settings, and recent evidence also suggests there may be benefits to team-based care
    - Supporting self-management at home using electronic system reporting was found to be at least as beneficial as usual care

What implementation considerations need to be kept in mind?

Several potential barriers to implementing these options exist at the level of patients, providers, organizations and systems, although the biggest barrier likely lies in facilitating better linkages between patient needs (including those identified during routine screening) and the most appropriate evidence-based care. Several 'windows of opportunity' also exist, although the relevance of this issue in the context of the goals and objectives outlined by Cancer Care Ontario's Cancer Plan IV constitutes the biggest opportunity for sustained focus and targeted efforts that can bring about change.

REPORT

The number of new cancer cases has continued to rise in Ontario over the last two decades.(1-2) The most recent estimates indicate there will be 76,000 new cancer cases and approximately 28,500 deaths from cancer in the province in 2015 (up from 65,338 and 26,076 in 2009, respectively).(2-4) These trends are shared across Canada as a whole, where it is estimated there will be 196,900 new cancer cases and approximately 78,000 deaths from cancer in 2015, which are also increases from previous years. Substantive increases in the number of new cases are also expected in the future. By 2031, the number of new cancer cases is projected to rise to nearly 300,000 in Canada.(3) Compared to the average annual increases observed from 2003 to 2007, the average number of new cancer cases is expected to increase by 79% in 2028-2032.(2)

The increasing number of new cancer cases is due in part to the growing number of Canadians aged 65 or over.(3) Although the vast majority (89%) of those who develop cancer are over the age of 50,(2;5) cancer is not only of concern for older adults. In fact, cancer is the leading cause of death for Canadians aged 35 to 64, killing more younger Canadians than heart disease, injuries, stroke and diabetes combined.(3)

Overall, these trends suggest that the importance of focusing on cancer care in the province of Ontario and in Canada as a whole will not diminish in the near future. Furthermore, with two out of every five people expected to develop cancer in their lifetime, and one out of every four people expected to die of cancer, it is an issue that most Ontarians and Canadians more generally will have to face directly either as a patient or in support of a family member or friend who is a patient.

Box 1: Background to the evidence brief

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

The preparation of the evidence brief involved five steps:

1) convening a Steering Committee comprised of representatives from the partner organizations (and/or key stakeholder groups) and the McMaster Health Forum;
2) developing and refining the terms of reference for an evidence brief, particularly the framing of the problem and three viable options 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 options for addressing the problem were not designed to be mutually exclusive. They could be pursued simultaneously or in a sequenced way, and each option 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.

Living with cancer poses many challenges, and improvements in screening, detection and treatment will increase the number of people in Ontario requiring pain and symptom management support

Dealing with a cancer diagnosis and progressing through the journey that follows can pose significant challenges and disruptions to daily life. Patients may undergo a range of treatments and receive care from multiple healthcare providers located across a number of settings. Individuals who have cancer and their informal/family caregivers may also face challenging adjustments to their financial situation if, for example, treatment (or supporting treatment) requires taking time away from work. Transitions in care following treatment to either survivorship or palliative care also require new adjustments. These challenges can be made even more difficult if patients find themselves in pain or suffering from symptoms that negatively affect their daily lives at any point in the cancer journey.

Many people living with cancer experience significant amounts of pain and other distressing physical symptoms including fatigue, difficulty breathing, depression and nausea.(6-8) They may also experience other types of distress associated with emotional, practical, informational, social and spiritual needs.(9) Studies indicate that the number individuals experiencing severe distress due to untreated cancer-related symptoms may be as high as 35% to 45%.(10-12) Overall, pain and symptoms that cause distress can result in poor quality of life, psychological issues and increased healthcare costs.(11;13-15)

Despite the expected increase in the number of new cancer cases in the coming decades, people diagnosed with cancer today have better chances of surviving than they did a decade ago.(2) In Ontario, advances in screening, early detection and treatment have helped to improve the prognosis for those living with cancer. The average five-year survival rate for people diagnosed with any type of cancer in Canada is 63% (this varies across types of cancer), and while the total number of cancer deaths per year continues to increase, the rates at which people are dying from cancer are declining.(2) It is estimated that in 2015, more than 400,000 Ontarians are living with or have survived cancer.(1) At the national level, it has been reported that 810,045 Canadians who had been diagnosed with cancer in the preceding decade were still alive in 2009.(2) By 2031 it is estimated that nearly 2.2 million Canadians will be living with a cancer diagnosis.(3)

As a result of these advances, the number of patients needing support to address pain and symptoms that can cause distress is likely to increase, making the issue of improving pain and symptom management in cancer care a priority.(2) Ensuring that evidence-based pain and symptom management is well integrated into routine practices will be essential for the delivery of comprehensive, patient-centred and high-quality cancer care.

Efforts have been made to improve pain and symptom management in cancer care

The first step towards ensuring comprehensive, evidence-informed pain and symptom management is to identify distressful pain and symptoms in people with cancer as early as possible.(9) Late detection of distressful pain and symptoms can interfere with patients' ability to follow recommended treatments, reduce satisfaction with care, and result in poor quality of life, while early detection facilitates the provision of the most appropriate, comprehensive and patient-centred care based on evidence-based guidelines to individuals living with cancer.(9-10)

For nearly a decade in Ontario, efforts have been made to ensure consistent and systematic screening approaches are used to identify distressful pain and symptoms as early as possible, and that the management of these symptoms is based on the best available evidence. In 2006, Cancer Care Ontario launched the Provincial Palliative Care Integration Project to improve evidence-based pain and symptom management. This project expanded in 2008 to become the Ontario Cancer Symptom Management Collaborative (OCSMC).(16-17) The OCSMC promotes the use of the Edmonton Symptom Assessment System-revised (ESAS-r) to screen individuals for distressful pain and symptoms and provide clinicians with standardized information about patient needs at each visit. This information is seen as a first step towards ensuring appropriate care, based on a clear set of 10 symptom management guidelines. In addition to these Ontario-specific efforts, increasing numbers of those involved in cancer care across Canada have also recognized that dealing with the full range of physical, emotional, social, informational, spiritual and practical challenges throughout the cancer journey is an important aspect of quality patient-centred care.(10)

Two important developments have underpinned these shifts. First, distress has been recognized as the ‘sixth vital sign’ alongside temperature, pulse, blood pressure, respiratory rate and pain.(10) Second, in 2008 the Canadian Partnership Against Cancer (CPAC) introduced the ‘Screening for Distress’ model, which not only recognizes the importance of distress as the sixth vital sign, but also clearly conceptualizes five steps required for patient-centred, comprehensive and evidence-based symptom management.(10;18) These five steps are:

1) screen for symptoms and distress using standardized assessment tools. (i.e., ESAS-r, which measures the intensity of the nine common symptoms of pain, tiredness, nausea, depression, anxiety, drowsiness, appetite, well-being and shortness of breath. ESAS-r may be complemented by the Canadian Problem Checklist to screen for emotional and physical problems);(19)
2) open a dialogue with the patient and initiate a therapeutic relationship;
3) assess risk factors, intensively assess problem(s);
4) ascertain patient perceptions and negotiate a relevant plan of care; and
5) select appropriate interventions based on best evidence (i.e., symptom management guidelines).(10)

Box 2: Equity considerations

A problem may disproportionately affect some groups in society. The benefits, harms and costs of options 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 Ontarians, but (where possible) it also gives particular attention to two groups:

- socially disadvantaged populations including those with limited health literacy and the frail elderly, who may have difficulty accessing appropriate pain and symptom management; and
- people living in rural and remote communities, who are far away from a regional cancer centre and for whom a failure to effectively manage pain and symptoms may result in prolonged distress and significant reductions in quality of life.

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.

Most jurisdictions in Canada have now taken steps towards implementing this model across their provincial/territorial regions.(10) Accreditation Canada has also endorsed the model and created accreditation standards that signal to cancer care organizations across the country that these steps ought to be adopted in practice.(10)

In addition to adopting the Distress Screening model, the most recent provincial cancer strategy – the Ontario Cancer Plan IV – will also shape how pain and symptom management evolves in the next five years.(20) While the strategic plan doesn't focus on pain and symptom management specifically, all of the goals and objectives will have at least an indirect influence on one or more of the many dimensions of pain and symptom management in the province. Five of the six goals (quality of life and patient experience, safety, integrated care, sustainability and effectiveness) include objectives that are likely to have a direct influence on the issue. Table 1 provides a high-level overview of the plan's goals and objectives, flagging how objectives are related to pain and symptom management, and also issues addressed in the evidence brief.

It is within this context that this evidence brief was prepared, with the intention of helping policymakers and stakeholders develop a better understanding of: 1) the problems that exist in relation to improving pain and symptom management in Ontario; 2) some of the options available (among many) to address these problems; and 3) key implementation considerations related to the options. The majority of cancer services are delivered in ambulatory settings, with recent trends towards shifting care from major tertiary centres to community-based clinics closer to home.(21) Given these transitions, the authors have chosen to emphasize ambulatory, primary and community-based settings in this brief, while acknowledging that cancer pain and symptom management in inpatient settings is also very important. The rationale for this decision stems from the notion that inpatient settings are distinctly unique, and would alter the nature of the problem(s) considered, the options available to address these problems, and the implementation considerations. Furthermore, focusing on the settings in which the majority of care is provided has the potential to significantly impact pain and symptom management.

In developing the evidence brief, a number of working definitions were adopted to help provide clarity and consistency when using key terms. These are presented in Table 2.

Table 1: Overview of Ontario Cancer Plan IV's goals in relation to improving pain and symptom management

Goal	Strategic objectives in Ontario Cancer Plan IV	How objectives are relevant to pain and symptom management (if directly relevant)	Whether and how the objectives are addressed in this evidence brief
Quality of life and patient experience Ensure the delivery of responsive and respectful care, optimizing individuals' quality of life across the cancer care continuum	• Drive excellence in the development of policies, programs, strategies and evaluation by partnering with patients and their families to ensure services and care reflect their needs and preferences	Pain and symptom management needs are unique to each patient and family/informal caregiver situation, requiring inputs from patients and families in decision-making about policies, programs and evaluation to ensure their needs are reflected	Not specifically addressed
	• Expand and integrate access to palliative, psychosocial and rehabilitation services to improve quality of life and patient experience in cancer centres and the community	Pain and symptom management is complex and includes a broad range of services that may be delivered across a number of settings extending beyond regional cancer centres (e.g. psychosocial, rehabilitation and palliative care services delivered in the community)	Not specifically addressed
	• Capture a range of real-time patient-reported information that is meaningful to patients to improve the quality of care	Screening for Distress hinges on patient needs being defined by real-time assessments using ESAS-r	Not specifically addressed, although the importance of ESAS-r screening in the context of the Screening for Distress model is highlighted in the discussion of the problem
	• Increase understanding of wait times from the patient's perspective and identify opportunities to improve the patient experience	Only indirectly relevant	Not specifically addressed
	• Support healthcare providers, patients and families with training, tools and resources to improve communication, decision-making, self-management and quality of life	Ensuring pain and symptom management support aligns with best-practice guidelines requires that patients and their informal/family caregivers, providers and organizations are supported to access and apply them	Option 1 focuses on approaches to providing information about best-practice guidelines to patients and their informal/family caregivers, to providers and to organizations within which care is provided
Safety Ensure the safety of patients and caregivers in all care settings	• Expand the use of technologies and tools for providers that drive adherence to evidence-based guidelines across care settings, including the home	Linking electronic patient records across providers and settings can help ensure pain and symptom management needs are communicated, and may also facilitate clearer signals to providers about how existing pain and symptom management best-practice guidelines can help address those needs	Option 3, sub-element 2, focuses on how to best link patient records (and particularly information about their pain and symptom management needs) electronically across providers and settings
	• Develop and implement patient safety tools in collaboration with patients and families that enable safer care in settings outside the hospital, including	Pain and symptom management services provided outside of regional cancer centres, including primary-care settings and in the home, require supports for patients and their informal/family caregivers (if they are	Option 3, sub-element 4, focuses on strengthening home-based pain and symptom management services to better support the integration of best-practice

Goal	Strategic objectives in Ontario Cancer Plan IV	How objectives are relevant to pain and symptom management (if directly relevant)	Whether and how the objectives are addressed in this evidence brief
	the home	self-managing their pain and symptoms at home) and healthcare providers (who may be providing services in the home, or supporting self-management remotely)	guidelines
	• Identify opportunities for system-level oversight for safety related to cancer services	Only indirectly relevant	Not specifically addressed
	• Advance peer review of care plans to ensure concordance with evidence-informed practice and appropriateness of care that will lead to improved patient safety and clinical effectiveness	Ensuring the uptake of pain and symptom management best-practice guidelines requires monitoring of uptake, which could take the form of peer review of care plans	Option 1, sub-element 4, focuses on the development of monitoring and evaluation strategies to document the uptake of best-practice guidelines, which could include peer review
	• Describe cancer-specific requirements for regulated healthcare providers delivering cancer care	Only indirectly relevant	Not specifically addressed
Equity Ensure health equity for all Ontarians across the cancer system	• Develop and implement the third Aboriginal (FNIM) Cancer Strategy, building on successes of previous PNIM cancer strategies as well as the established relationship protocol agreements between Cancer Care Ontario and FNIM communities	Only indirectly relevant	Not specifically addressed
	• Assess, expand, enhance and utilize data to better understand and improve equity issues in the regions	Only indirectly relevant	Not specifically addressed, although option 1, sub-element 4, focuses on the development of monitoring and evaluation strategies to measure and document the uptake of best-practice guidelines, which could highlight equity challenges
	• Develop locally relevant policies and programs in partnership with community service providers to improve access to services for specific populations, and support healthcare providers with training, data and tools to deliver equitable services	Only indirectly relevant	Not specifically addressed
	• Advise governments in the development of provincial policies and programs to improve access to services for specific populations,	Only indirectly relevant	Not specifically addressed

Goal	Strategic objectives in Ontario Cancer Plan IV	How objectives are relevant to pain and symptom management (if directly relevant)	Whether and how the objectives are addressed in this evidence brief
	including equitable access to specialized services		
Integrated care Ensure the delivery of integrated care across the cancer care continuum	• Stratify patients by risk, based on clinical factors, comorbid conditions and social determinants of health, to determine the supports that patients and families require to navigate their care pathway	Only indirectly relevant	Not specifically addressed
	• Ensure that standardized care plans are developed and communicated to all members of the care team, across the cancer continuum, to facilitate an integrated approach to care that is centred on the patient	Comprehensive pain and symptom management can involve care provided by a number of different providers (possibly across settings) working in multidisciplinary teams, which may require the introduction of standardized care protocols that enable better coordination of care within the team, and across the entire continuum of care	Option 3, sub-element 1, focuses on the development of referral and transition protocols to improve transitions across providers and settings
	• Enhance communication among all providers across the care continuum and care settings to facilitate smoother care transitions	Comprehensive pain and symptom management can involve care provided by a number of different providers and across settings, which may require approaches to ensure better communication of patient needs across providers and settings	Option 3, sub-element 3, focuses on improving the linkage of electronic patient records across providers and settings to improve communication of patient needs during transitions
	• Increase the availability of relevant patient clinical information to patients and providers across care settings to support informed decision-making	Ensuring patients' pain and symptom management needs are communicated across providers and settings during transitions from one provider/setting to another is essential to ensuring care is informed by these needs	Option 3, sub-element 3, focuses on improving the linkage of electronic patient records across providers and settings to improve communication of patient needs during transitions
	• Determine opportunities for improving the transition of adolescents and young adults, when appropriate, from the pediatric to adult cancer system	Only indirectly relevant	Not specifically addressed
Sustainability Ensure a sustainable cancer system for future generations	• Develop and execute on a chronic disease prevention strategy that focuses on reducing the incidence of the major chronic disease modifiable risk factors and exposures	Only indirectly relevant	Not specifically addressed
	• Continue to implement organized cancer screening programs for breast, cervical and colorectal cancer	Only indirectly relevant	Not specifically addressed

Goal	Strategic objectives in Ontario Cancer Plan IV	How objectives are relevant to pain and symptom management (if directly relevant)	Whether and how the objectives are addressed in this evidence brief
	• Assess value from a patient experience, population health and cost perspective to inform decision-making across the cancer system	Only indirectly relevant	Not specifically addressed
	• Optimize the model of care delivery to achieve the greatest benefit for patients and the cancer system	Models of care need to be optimized to ensure 'Screening for Distress' can be incorporated into routine care, which will ensure patient pain and symptom management needs are identified, and appropriate evidence-based care that is responsive to those needs is provided	Option 3 focuses on ways to strengthen the models of cancer care to optimize the integration of pain and symptom management best practices
	• Strengthen and expand system capacity planning to ensure resources are most optimally allocated and utilized	Only indirectly relevant	Not specifically addressed
Effectiveness Ensure the provision of effective cancer care based on best evidence	• Expand measurement of clinical and patient-reported outcomes to enable effective, high-quality care	Improving pain and symptom management requires strengthening the approaches used to monitor the care actually provided to patients and their informal/family caregivers, and an assessment of whether this care aligns with best-practice guidelines	Option 1, sub-element 4, focuses on the development of monitoring and evaluation strategies to document the uptake of best-practice guidelines, which could be considered a clinical process outcome
	• Expand our performance management model to include non-hospital healthcare organizations and performance at the provider level in order to be more effective with our quality and access programs across the system	Improving pain and symptom management requires that performance be assessed based on the extent to which care aligns with best-practice guidelines both at the level of providers and organizations	Not specifically addressed, although option 1, sub-elements 4-6, focus on the development of monitoring and evaluation, setting targets, and publicly reporting progress towards meeting targets which could factor into a new approach to performance management at the level of providers and organizations
	• Leverage and expand the use of evidence-based guidance to improve the appropriateness of care	Increasing the uptake of pain and symptom management best-practice guidelines is a key factor in ensuring appropriate evidence-based care that is responsive to the needs of patients and their informal/family caregivers	All options
	• Develop a unifying strategy for personalized medicine for cancer care including personal and tumour genetics, and incorporate recommendations into clinical practice	Only indirectly relevant	Not specifically addressed

Goals and objectives are reproduced from Ontario Cancer Plan IV (20)

Table 2: **Working definitions of key terms**

Term	Working definition adopted in the brief
Pain	An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. (22)
Cancer pain	A complex, changing symptom which is a subjective experience that can differ across individuals. The pain can be disease- or treatment-related, occur at any point in the cancer journey (from diagnosis to treatment to survivorship or palliative care), and be considered acute, persistent and/or chronic.
Symptom	A change in body or mind which indicates that a disease is present, or something that indicates the presence of bodily disorder.(23)
Distress	A multifactorial unpleasant emotional experience of a psychological (cognitive, behavioural, emotional), social and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms and its treatment. Distress extends along a continuum, ranging from common normal feelings of vulnerability, sadness and fears to problems that can become disabling, such as depression, anxiety, panic, social isolation, and existential and spiritual crisis.(10)
Screening for Distress	A cancer pain and symptom management model that involves five steps: 1) screen for symptoms and distress; 2) open a dialogue with the patient and initiate a therapeutic relationship; 3) assess risk factors and intensively assess problem(s); 4) ascertain patient perception of problem and negotiate a relevant plan of care; and 5) select appropriate interventions based on best evidence.(10)
Palliative care	Interdisciplinary care focused on relief of pain and other symptoms and support for best possible quality of life for patients with serious illness, and their families. It is appropriate at the point of diagnosis of a serious illness and provides an extra layer of support for patients and families.(24)
Edmonton Symptom Assessment System - revised (ESAS-r)	A valid and reliable assessment tool to screen for the intensity of nine common symptoms experienced by cancer patients: pain, tiredness, nausea, depression, anxiety, drowsiness, appetite, well-being and shortness of breath.(19)
Ambulatory care	All care provided to patients not admitted to hospitals, personal care homes or emergency departments, including office visits, walk-in clinics, home visits, and visits to outpatient departments.(25)
Home care	Includes nursing, therapies, homemaking, personal support services and other related services delivered to patients in their home. In Ontario, these services are provided by service provider organizations that have a service agreement with a Community Care Access Centre.(26)
Community services	Includes non-clinical supports such as meals, transportation, supported living, home help and other assistance designed to help people to live as independently as possible in the community. In Ontario these services are provided through Community Support Service (CSS) agencies that are funded through Local Health Integration Networks (LHINs).(26)
Primary care	A level of care providing first access or entry into the system for all new needs and problems, provides person-focused (not disease-oriented) care over time, provides care for all but very uncommon or unusual conditions, and coordinates or integrates care provided elsewhere by others.(27)
Organization	Any healthcare setting within which ambulatory cancer care, and specifically pain and symptom management support, is (or could be) provided to individuals living with cancer across the entire continuum of care. This includes hospitals, regional cancer centres, community cancer centres, community health centres, primary care clinics and other community-based settings (e.g. mental health clinics).

THE PROBLEM

Previous and current strategic plans demonstrate Cancer Care Ontario’s ongoing commitment to improving patient healthcare experiences and quality of life, as well as the system's responsiveness to unique patient needs.(1;20) However, emerging evidence suggests that people living with cancer in Ontario who experience distressful pain and symptoms do not consistently receive appropriate care based on best-practice guidelines, despite the full extent of efforts outlined above.(16) Several challenges exist that have made it difficult to ensure individuals with cancer are receiving evidence-based pain and symptom management throughout the continuum of care. In particular, the problem can be understood in relation to three dimensions:

1) healthcare providers do not consistently use pain and symptom management guidelines in practice;
2) health system arrangements in Ontario are not optimally suited to promoting the uptake of pain and symptom management guidelines in clinical practice; and
3) poor documentation of care provided to symptomatic patients makes it challenging to establish the full extent of the problem.

While there are likely other dimensions of the problem affecting how cancer care is delivered, these particular aspects were identified with input from key informants and a steering committee of pain and symptom management experts as being important challenges to ensuring patients receive the most appropriate evidence-based 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 “hedges” in MedLine, namely those for appropriateness, processes and outcomes of care (which increase the chances of us identifying administrative database studies and community surveys). Published literature that provided insights into alternative ways of framing the problem was sought using a fourth hedge in MedLine, namely the one for qualitative research. Grey literature was sought by reviewing the websites of a number of provincial and national organizations, such as the Cancer Care Ontario, Health Quality Ontario, the Canadian Partnership Against Cancer, the Institute for Clinical Evaluative Sciences, Canadian Institute for Health Information, and Statistics Canada.

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.

Healthcare providers do not consistently use pain and symptom management guidelines in practice

Despite widespread endorsement of the Screening for Distress model in Ontario — which includes both the identification of patients’ pain and symptom management needs, as well as care to address these needs based on evidence-based pain and symptom management guidelines — there is variation in the extent to which the components of the model are used in daily clinical practice. With respect to identifying patient needs, there is wide variation in the use of ESAS-r across regional cancer centres, with many not meeting the provincial screening target rate of 70%.(16) Furthermore, the actual use of screening data by cancer care providers to manage distressful symptoms is inconsistent. One study found that while most nurses and allied healthcare providers value the approach to identify pain and symptom management needs, only about half of physicians regularly rely on the results reported by patients.(28) Another study from 2013 found that only 41% of patients consistently discussed their pain and symptom management needs (based on ESAS-r screening) with their oncology team.(16)

With respect to responding to patients’ needs by providing care based on pain and symptom management guidelines, the situation is also challenging. A study of one region in Ontario in 2009 showed that only 56% of healthcare providers used pain and symptom management guidelines in their practice.(17) Preliminary results emerging from a recent 2015 study also suggest that healthcare providers report low levels of guideline use in daily practice across regional cancer centres in the province.(29)

In Ontario some of the underlying reasons for these variations in practice include:

- a lack of agreement among healthcare providers about the need for the screening tool;
- a lack of knowledge about the guidelines and about available supports for dealing with patients with high distress scores;
- a lack of time and resources to act on the results of screening and incorporate pain and symptom management guidelines into practice; and
- resistance to change among some healthcare providers.(30)

Other barriers to healthcare providers' use of the symptom management guidelines relate to their perceptions that they already provide expert pain and symptom management care based on experience, and that their practices are consistent with the guidelines.(31) Healthcare providers have also identified limitations of the guidelines themselves and the need to improve their implementability by making the guidelines easier to access in clinics, embedding guideline recommendations into electronic documentation systems and in routine policies and care delivery processes, and by providing simpler and modified versions adapted to address varied team and patient contexts.(31)

Contributing further to the problem, existing efforts to support healthcare providers' use of the pain and symptom management guidelines may not be doing enough.(29) The majority of approaches used to date have focused on passive provider education (e.g. dissemination of the guidelines in written form), with far fewer actively engaging them to overcome barriers to using pain and symptom management guidelines in practice. These passive educational approaches have been found to be over-simplified, failing to directly address the complex changes required at the level of the individual providers, care teams and in cancer care organizations.(29;31) While improving knowledge of the guidelines through education and dissemination is important, there is a need to actively engage patients, healthcare providers and those working in cancer care organizations to adopt more patient-centred approaches to care that are necessary to integrate routine use of pain and symptom management guidelines in practice.

Findings from other provinces echo these challenges. For example, in Nova Scotia and Quebec, some health providers view the addition of the Screening for Distress model as a burden in terms of workload and time commitment.(18) In these provinces providers also reported a lack of training and knowledge about the approach, including how to best integrate symptom management guidelines into practice.(18) Overall, this suggests there is a need for improvements across the country as well.

Health system arrangements in Ontario are not optimally suited to promoting the uptake of pain and symptom management guidelines in clinical practice

Several features of the health system in Ontario contribute to the poor uptake of pain and symptom management guidelines in cancer care. These can be understood in terms of the delivery arrangements, financial arrangements, and governance arrangements that exist.

Delivery arrangements

There are at least three aspects of existing delivery arrangements in Ontario that make it a challenge to ensure pain and symptom management support is comprehensive and based on best-practice guidelines. First, emerging results from a provincial study suggests that there are significant disparities across cancer centres in Ontario in terms of the leadership, knowledge, capacity, financial and human resources required to improve symptom management.(29) As indicated in the previous section, there is also wide variation in screening practices across Ontario, with many centres not meeting provincial screening targets of 70%.(16) This variation means that patients attending low-resourced settings and/or settings that are under-performing in terms of screening may not have equal access to pain and symptom management support based on best-practice guidelines.

Second, existing quality improvement initiatives like Ontario's Cancer System Quality Index have focused on reporting symptom screening rates publicly,(16) but they haven't focused on the quality of care that is actually provided to patients. In particular, no systems are in place to monitor and report on the extent to which screening results are used in combination with pain and symptom management guidelines to support patients living with cancer.

Third, there are no systems in place to ensure patients receive comprehensive, evidence-based pain and symptom management support across the entire continuum of care (i.e. from diagnosis until post-treatment, recovery or palliative care). In particular, most of the focus on the Screening for Distress model and its components have been on how it is integrated into care provided to patients at regional cancer centres, and much less attention has been paid to the care provided to patients when they transition to other settings such as primary care. Furthermore, it has been acknowledged that much broader engagement of interprofessional healthcare teams across the continuum of cancer care is needed to improve evidence-informed cancer symptom management.(29)

Financial arrangements

Problems with current financial arrangements in the health system in Ontario include a lack of regular targeted payments that would enable healthcare providers and organizations to focus on overcoming the full range of barriers to using pain and symptom management guidelines in practice. Specifically, existing provider remuneration packages and organizational funding arrangements do not provide adequate resources to enable more time and effort to be spent on ensuring the uptake of guidelines in practice for each episode of care or consultation. Given that time and resource constraints are frequently cited as a barrier to ensuring the most comprehensive care based on the practice guidelines is provided, this is a particularly difficult challenge. While project-based funds have been made available through the OSCMC and Cancer Care Ontario to support regional cancer centres' efforts to translate pain and symptom management guidelines into practice, these are not focused on supporting a more comprehensive package of care for each patient consultation.

Governance arrangements

Provincial initiatives exist to promote evidence-based pain and symptom management (e.g. OCSMC), but there are no accountability mechanisms in place to ensure that individual healthcare providers and the full range of organizations that are (or should be) providing pain and symptom management support actually use pain and symptom management guidelines in practice. While the Screening for Distress model is endorsed by Accreditation Canada as a standard of care,(10) it is still adopted and implemented on a voluntary basis, leaving wide variation in care across cancer centres in the province (and across the rest of the country more generally).

Poor documentation of care provided to symptomatic patients makes it challenging to establish the full extent of the problem

Most evaluations conducted in Ontario have placed emphasis on the extent to which ESAS (and more recently ESAS-r) has been incorporated into routine cancer care.(30;32-33) Furthermore, and as already highlighted above, existing quality improvement initiatives in Ontario place nearly all emphasis on measuring and reporting pain and symptom screening rates. Very few monitoring and evaluation activities have focused on determining the extent to which patients who are screened and determined to have a need for pain and symptom management support receive care based on symptom management guidelines.(29;31) This has created a major gap in understanding about how different providers and the full range of organizations in which pain and symptom management support services may be provided are performing in terms of uptake of pain and symptom management guidelines. As a result, it is very difficult to determine where efforts need to be targeted to promote the uptake of evidence-based standards of care across all practice settings. A lack of integrated electronic documentation systems and ability to update and modify existing electronic systems in a timely manner is a major barrier to addressing this issue.(29-30)

Additional equity-related observations about the problem

While the assessment of the problem did not identify specific issues related to any of the groups prioritized for equity considerations (see Box 2), two dimensions of the problem could be considered with these groups in mind. First, current initiatives for translating pain and symptom management best-practice guidelines into practice have mostly targeted providers working in regional cancer centres, and have not engaged individuals with cancer or their informal/family caregivers. As such, patients and their families are likely unaware of the scope and nature of pain and symptom management support that they ought to be receiving based on the guidelines. For individuals with lower levels of health literacy, who are often from socially disadvantaged populations,(34) the current failure to support patients' understanding of what constitutes best practice in pain and symptom management likely overlooks a key informational challenge that may be particularly problematic for this group. Second, past and present initiatives in Ontario have narrowly focused on improving the use of best-practice guidelines in regional cancer centres, while overlooking the full range of settings within which individuals may receive care outside of these centres (e.g. community cancer clinics, homecare agencies, and primary-care settings). For individuals who live in rural and remote areas without easy access to a regional cancer centre, the result of this oversight could be that the settings in which they receive pain and symptom management services are not supported to integrate best-practice guidelines into routine care – leading to inequalities in the extent to which care received across settings is based on the best evidence.

THREE OPTIONS FOR ADDRESSING THE PROBLEM

Many approaches could be selected as a starting point for deliberations about how to improve cancer pain and symptom management in Ontario. To promote discussion about the pros and cons of potentially viable approaches, we have selected three options that could be considered to address the problems outlined in the previous section. The three options were developed and refined through consultation with the Steering Committee and key informants who we interviewed during the development of this evidence brief. The options are:

1) strengthen efforts to translate knowledge about pain and symptom management best practices to patients and their families, to providers and to the full range of organizations in which pain and symptom management support is (or could be) delivered;
2) support the increased uptake of pain and symptom management guidelines by healthcare providers and the organizations in which care is delivered through targeted payments; and
3) strengthen the models of cancer care to optimize the integration of pain and symptom management best practices.

The options could be pursued separately or simultaneously, or components could be drawn from each element to create a new (fourth) option. 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 options based on findings from systematic reviews. We present the findings from systematic reviews along with an appraisal of whether their methodological quality (using the AMSTAR tool) 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.

The options presented in this evidence brief were iteratively developed as a direct response to the problems outlined in the previous section, and not so that they

Box 4: Mobilizing research evidence about options for addressing the problem

The available research evidence about options for addressing the problem was sought primarily from Health Systems Evidence (www.healthsystemsevidence.org), which is a continuously updated database containing nearly 5,000 systematic reviews and more than 2,000 economic evaluations of delivery, financial and governance arrangements within health systems. The reviews and economic evaluations were identified by searching the database for reviews addressing features of each of the approach options 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 option 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 option 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 option may want to search for a more detailed description of the option or for additional research evidence about the option.

would align with the specific goals and objectives in the Ontario Cancer Plan IV. However, given the focus of the brief and the options considered, all options taken together address the Ontario Cancer Plan IV's objective to 'leverage and expand the use of evidence-based guidance to improve the appropriateness of care' within the effectiveness goal, and sub-elements of options 1 and 3 match up with the plan's objectives closely. These alignments may be important to consider in addition to what is known from systematic reviews about each option. To facilitate further consideration of the alignments between the options and Ontario Cancer Plan IV, Table 1 provides an overview of whether and how this brief addresses each goal and objective. We also briefly present this information when introducing each option in greater detail.

Finally, on September 19, 2015, a citizen panel was convened by the McMaster Health Forum on the topic of 'Improving Pain and Symptom Management in Cancer Care in Ontario.' Seven citizens with various backgrounds from the region covered by the Hamilton Niagara Haldimand Brant Local Health Integration Network were provided with a pre-circulated citizen brief, and brought together to discuss the problems related to this issue, the options available for addressing these problems (which were the same options as those presented in this evidence brief) and the implementation considerations. They were asked to consider how their values underpinned their views about and experiences with the issue. Given the direct relevance to the issues covered in this evidence brief, a summary of the main themes that emerged during the panel is provided in Table 3. Box 5 provides an overview of the citizen briefs and panels process.

Box 5: McMaster Health Forum's citizen briefs and panels process

Citizen panels provide the opportunity for citizens to share their views and experiences on high-priority healthcare issues. Building around a deliberative dialogues approach, this process helps to uncover unique understandings of these issues and spark insights about viable solutions that are aligned with citizens' values and experiences.

Steps in a citizen panel include:

- Preparatory consultations with a steering committee created specifically for each panel are undertaken
- 15-20 key informants are interviewed to help frame and characterize the issue and the possible ways to address it
- Before the panel meeting (or series of meetings), a plain-language citizen brief that mobilizes relevant research evidence about an issue, options for addressing it, and/or relevant implementation considerations is prepared and circulated (this brief is directly informed by the inputs from key informant interviews). The citizen briefs are made publicly available after the event has taken place.
- A citizen panel is convened, which brings together a group of 10 to 14 citizens (and occasionally as many as five to 10 such groups to discuss the same topic) for an off-the-record dialogue where they can bring their own views and experiences to bear on the issue, learn from the evidence and from others' views and experiences, and share their newly informed views about the issue and how to address it.
- After the event, a panel summary is prepared and circulated (as one type of event 'footprint"that will benefit others). This document is made publicly available on the Forum's website. Customized post-event briefings to partners involved in funding or working with the panel are delivered upon request, to further prepare them to tackle the issue.
- The key features of the citizen brief and citizen panel are evaluated to ensure that the process contributes to our collective understanding about how citizens can best be engaged in shaping how society addresses health issues.

Table 3: Summary of main themes that emerged from a citizen panel convened about improving pain and symptom management in cancer care in Ontario

Citizen panel element	Themes that emerged during discussions
Problem	Seven problems related to pain and symptom management in cancer care in Ontario were discussed by participants as being the most pressing: • healthcare providers don't have the time to support the full range of pain and symptom management needs of individuals living with cancer; • there are major inconsistencies across providers and settings, particularly during transitions from regional cancer centres to primary-care and community-care settings; • healthcare providers and individuals living with cancer are not communicating effectively; • individuals living with cancer often lack vital information and knowledge that would enable them to play an active role in managing their pain and symptoms; • accessing the full range of pain and symptom management support is not always easy; • there is a lack of accountability measures in the system; and • too much emphasis is placed on pain management, while supportive care for other distressful symptoms can often be overlooked.
Options to address the problem	All participants supported option 1, and felt it particularly important to ensure individuals living with cancer and their informal/family caregivers had access to information about best-practice guidelines, as well as information about care more generally. Four values-related themes emerged during discussions about option 1: • self-reliance (by enabling individuals to understand and use information about pain and symptom management guidelines); • patient-centredness (in considering the ways in which the information is provided to individuals); • collaboration (among healthcare providers and patients); and • adaptability (in the approaches used to inform and educate healthcare providers). Many participants strongly opposed option 2, and particularly when discussions focused on the possibility of payments targeted at individual healthcare providers. This was underpinned by two values-based themes that emerged: • responsibility (for providing patients with the highest standards of care); and • fairness (with respect to how healthcare providers are paid). Most participants didn't oppose targeted payments for organizations within which pain and symptom management supports may be provided, and the values-based theme of accountability supported this position. Participants were generally supportive of option 3, and three values-based themes emerged when discussing option 3 and its various

	elements: • privacy (of patients and their personal information); • collaboration (between providers); and • community (to ensure strong support systems are in place for individuals with cancer and their informal/family caregivers.
Implementation considerations	Participants viewed the following as major barriers to implementing the options discussed: • constrained budgets and scarce resources; • challenges related to changing physician behaviour; and • fragmentation between the cancer care system and many of the essential services individuals require to support pain and symptom management (e.g. mental health services). Despite these barriers, participants were also optimistic about the potential for change as a result of the following facilitators: • improvements in information technology, which will make information about best practices more readily available to all who want it, while making it easier to relay patient information across providers and settings; and • decision-makers in the cancer care system in Ontario appear committed to making things better for patients.

Option 1 – Strengthen efforts to translate knowledge about pain and symptom management best practices to patients and their families, to providers and to the full range of organizations in which pain and symptom management support is (or could be) delivered

The first option aims to improve the uptake of pain and symptom management guidelines in routine care by pursuing strategies that are often referred to as "knowledge translation" or "implementation" strategies. These efforts can be targeted at three levels:
1) at patients and/or their families by informing and educating them about what care should be provided to them by others based on the guidelines, and what care they can provide to themselves based on the guidelines;
2) at the range of healthcare providers who are collectively responsible for providing supportive care to patients experiencing distressful pain and symptoms, by informing and educating them about the content of the guidelines, and then ensuring they consult and use them when appropriate; and
3) at the organizations within which pain and symptom management support is (or could be) delivered, by changing the way routine processes facilitate the incorporation of the guidelines.

The strategies outlined above will often require additional elements to ensure progress with uptake of guidelines is tracked, expectations for healthcare providers and organizations are set, and the extent to which progress has been made is shared publicly. In this brief, we have focused on the following three additional sub-elements in particular:
4) developing monitoring and evaluation strategies to measure and document the uptake of best-practice guidelines by healthcare providers and/or organizations;
5) establishing province-wide targets for the uptake of best-practice guidelines by healthcare providers and/or organizations; and
6) publicly reporting progress towards meeting established province-wide targets for the uptake of best-practice guidelines to promote accountability and quality improvement.

Below, we first outline the evidence identified during the preparation of this brief related to specific strategies available to improve the uptake of guidelines by targeting patients, providers and organizations (sub-elements 1-3), before moving on to sub-elements 4-6.

At the level of patients, most of the evidence identified focused on approaches for educating patients about cancer pain and/or symptoms, with many finding benefits in doing so.(35-41) Educating patients using a range of approaches (e.g. audio, booklets and brochures, interviews, phone calls and video) was found to reduce pain in one recent high-quality review,(38) three recent (or relatively recent) medium-quality reviews,(36;40;42) and one older low-quality review.(43) Education was also found to improve patients' knowledge about their pain, treatments or medications in three recent or relatively recent medium-quality reviews,(36;40-41) and an older low-quality review.(43) One of these relatively recent medium-quality reviews also found that education could improve communication with providers.(41) Another recent medium-quality review and one older low-quality review found that education improved patient knowledge about pain when provided by nurses,(35;44) and one recent medium-quality review found that when provided by pharmacists, education increased patients' satisfaction with their care.(39) One relatively recent low-quality review was also identified, and the results suggested that using a 'problem solving' approach with patients to identify stressors and develop strategies to improve the situation improves symptom management, reduces distressful symptoms and helps them develop coping strategies.(45) Finally, while not focused on cancer care or pain and symptoms specifically, one old but high-quality review found some evidence that involving patients in the development of patient information materials could improve knowledge.(46)

Fewer directly-relevant reviews were found that focused on strategies at the level of providers. However, two older and low-quality reviews were identified, and both found that educating providers (including through lectures on cancer pain management, workshops, booklets, teleconferences and role modelling) could improve health providers' knowledge and attitudes towards cancer pain management activities while also encouraging their participation in these same activities.(43-44) A relatively recent costing study found cancer management to be more cost-effective when providers followed guidelines.(47) Despite the relative lack of evidence focused on strategies within the context of cancer care specifically, a large body of evidence on the best ways to promote the uptake of best-practice guidelines more generally was identified. There are many high-quality reviews that focus more generally on how to improve practice by using a range of strategies targeted at healthcare providers, and as such are likely important to consider within this option. Table 4 provides a brief summary of these approaches, including details about how they are designed, and the benefits of using them to improve care.

Table 4: Key features and effectiveness of professional behaviour-change interventions (adapted from Grimshaw et al. 2012,(48) Wilson et al. 2015,(49) Lavis et al. 2015(50))

Description of candidate strategy/technique (active ingredients)	Causal mechanisms*	Mode of delivery	Intended targets	Evidence of effects
Printed educational materials (51) • "Distribution of published or printed recommendations for clinical care, including clinical practice guidelines, audio-visual materials and electronic publications" • Commonly used, and relatively low cost and feasible	• Education • Training	• Delivered personally or through mass mailings	• Knowledge and potential skill gaps of individual clinicians • Motivation (when written as a persuasive communication)	• Findings based on 14 randomized trials and 31 non-randomized studies o Median absolute differences from randomized trials were: 2% (range from 0 to +11%) for categorical practice outcomes (e.g., X-ray requests, prescribing and smoking-cessation activities); and 13% (range from -16% to +36%) for continuous professional practice outcomes. o Only two randomized trials and two non-randomized studies reported patient outcomes. After the data was re-analyzed, significant improvements in patient outcomes were observed (but there is insufficient evidence to reliably estimate their effect on patient outcomes).
Educational meetings (52) • "Participation of healthcare providers in conferences, lectures, workshops or traineeships" • Commonly used, main cost is for the release time for healthcare providers, and generally feasible	• Education • Training • Persuasion	• Didactic or interactive meetings	• Knowledge (for didactic approach) or knowledge, attitudes and skills (for interactive approach) at the individual healthcare professional/peer group level	• Findings based on 81 randomized trials (involving more than 11,000 healthcare providers) o Median absolute improvement in care of 6.0% (interquartile range +1.8% to 15.3%).
Educational outreach (53) • "Use of a trained person who meets with providers in their practice settings to give information with the intent of changing the providers' practice. The information given may have included feedback on the performance of the provider(s)" • Used across a wide range of healthcare settings, especially to target prescribing behaviours, and	• Education • Training • Persuasion	• The detailer aims to get a maximum of three messages across during a 10- to 15-minute meeting with a clinician	• Knowledge and attitudes through a social-marketing approach (54) • Most studies of educational outreach have focused on changing relatively simple behaviours that are in the control of individual	• Findings based on 69 randomized trials (involving more than 15,000 healthcare providers) o Median absolute improvements in: prescribing behaviours (17 comparisons) of 4.8% (interquartile range +3.0% to + 6.5%); other behaviours (17

require considerable resources (including the costs of detailers and preparation of materials) • The detailer will tailor their approach to the characteristics of the individual clinician, and typically use additional provider behaviour-change strategies to reinforce their message			clinician behaviours, such as the choice of drugs to prescribe	comparisons) of 6.0% (interquartile range +3.6% to +16.0%). o The effects of educational outreach for changing more complex behaviours are less certain.
Local opinion leaders (55) • "Use of providers nominated by their colleagues as 'educationally influential,' and the investigators must have explicitly stated that their colleagues identified the opinion leaders." • Colleagues identify different opinion leaders for different clinical problems,(56) and opinion leaders were not stable over time(57) • Resources required include the costs of the identification method, training of opinion leaders, and additional service costs • Informal leadership is not a function of the individual's formal position or status in the system; it is earned and maintained by the individual's technical competence, social accessibility, and conformity to the systems norms • As compared to their peers, opinion leaders have greater exposure to all forms of external communication, have somewhat higher social status and are more innovative	• Persuasion	• Opinion leadership is the degree to which an individual is able to influence other individuals' attitudes or overt behaviour informally, in a desired way, and with relative frequency • Opinion leaders have a unique and influential position in their system's communication structure; they are at the centre of interpersonal communication networks	• Knowledge, attitudes and social norms of the opinion leader's peer group, and the potential success is dependent upon the existence of intact social networks within professional communities	• Findings based on 18 randomized trials (involving more than 296 hospitals and 318 primary care physicians) o Median absolute improvement of care of 12.0% across studies (interquartile range +6.0% to +14.5%).
Audit and feedback (58-59) • "Any summary of clinical performance of healthcare over a specified period of time" to change health professional behaviour, as indexed by "objectively measured professional practice in a healthcare setting or healthcare outcomes" • The resources required to deliver audit and feedback include data abstraction and analysis costs, and dissemination costs • Feasibility may depend on the availability of meaningful routine administrative data for feedback	• Education • Persuasion • Enablement • Modelling	• Information extracted from medical records, computerized databases, or observations from patients • Summary of performance may include recommendations for clinical action and action planning	• Healthcare provider/peer groups' perceptions of current performance levels • Create cognitive dissonance within healthcare providers as a stimulus for behaviour change (e.g., Adams and colleagues observed that healthcare providers often over-estimated their performance by around 20% to 30%) (60)	• Findings based on 140 randomized trials o Median absolute improvement of 4.3% (interquartile range +0.5% to +16%). More than 16% absolute improvement is observed when baseline performance is low and/or when key intervention features are incorporated.

Reminders (61) • "Patient- or encounter-specific information, provided verbally, on paper or on a computer screen…" • The resources required vary across the delivery mechanism, and there is insufficient knowledge at present about how to prioritize and optimize reminders • The majority of early studies on computerized reminders were undertaken in highly computerized academic health science centres in the United States, and their generalizability to other settings is less certain(62)	• Environmental restructuring	• Provided on paper or on a computer screen (e.g., computer aided decision support and drugs dosage) • Reminders may be encountered through general education, medical records and/or interactions with peers	• Prompt healthcare providers to recall information and remind them to perform or avoid some action to aid individual patient care (63)	• Findings based on 28 randomized trials o Median absolute improvement of care of 4.2% (interquartile range +0.8% to +18.8%).
Tailored interventions (64) • "Strategies to improve professional practice that are planned taking account of prospectively identified barriers to change"	• Dependent on the composition of the tailored strategy	• Dependent on the composition of the tailored strategy	• Professional practice based on prospectively identified barriers to change	• Findings based on 26 randomized trials o Meta-regression using 12 randomized trials. Pooled odds ratio of 1.52 (95% CI, 1.27 to 1.82, $p < .001$)
Multifaceted interventions (65) • Any intervention including two or more components and that potentially target different barriers in the system • Multifaceted interventions are likely to be more costly than single interventions, and when planning multifaceted interventions, it is important to carefully consider how components are likely to interact to maximize benefits	• Dependent on the composition of the multifaceted strategy	• Dependent on the composition of the multifaceted strategy • Few studies provide any explicit rationale or theoretical base for the choice of intervention, and it is therefore unclear whether an *a priori* rationale based on possible causal mechanisms or an 'everything but the kitchen sink' approach is used for the choice of components in multifaceted interventions	• Professional practice (potentially based on prospectively identified barriers to change)	• Effects likely differ across varying combinations of interventions

No reviews were identified that focused on strategies targeted at the organizations within which cancer care is provided in order to improve the uptake of clinical practice guidelines.

Two reviews — one medium-quality and one low-quality — were identified that focused on approaches to monitoring and evaluating the uptake of guidelines, although neither were focused specifically on cancer care guidelines. The medium-quality review was relatively recent, and found that guidelines are frequently out-of-date, require a time-consuming process to update, and that ongoing monitoring can help to renew the evidence and identify when new evidence emerges that requires recommendations to be modified.(66) The low-quality review focused on relying on physicians to self-monitor (or 'self-audit') their own uptake of guidelines, but found only limited evidence and could not draw any meaningful conclusions.(67) With respect to establishing province-wide targets for guideline uptake, no reviews were identified.

Finally, while not directly relevant to cancer care, five reviews were identified that were related to the final element of this option (publicly reporting progress towards meeting established targets). Overall, the evidence was mixed, with one relatively recent medium-quality review suggesting that public reporting could lead to improvements in performance and patient outcomes,(68) and three other reviews, one recent and one older medium-quality review along with one recent low-quality review, reported either mixed or limited evidence.(69-71) However, despite the mixed evidence, it was suggested that targeting providers and managers with reports was a better strategy since they had the power to change things,(70) and that the following elements are needed in a public reporting strategy: 1) clear objectives that include accountability and quality improvement; 2) targets that include healthcare organizations; 3) report content that is transparent and comprehensive; 4) information provided in easy-to-use formats; and 5) wide distribution of reports using a variety of approaches.(72)

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 1.

Relevance of option 1to Ontario Cancer Plan IV

Option 1 and its sub-elements are relevant to specific objectives within three of the goals presented in Ontario Cancer Plan IV (see Table 1):

- The entire option addresses the goal of '**quality of life and patient experience**' and specifically the objective to support healthcare providers, patients and families with training, tools and resources to improve communication, decision-making, self-management and quality of life (given the focus is on translating best-practice guidelines to patients and their informal/family caregivers, providers and organizations)
- Sub-element 4 addresses the goal of '**safety**', and specifically the objective to advance peer review of care plans to ensure concordance with evidence-informed practice and appropriateness of care that will lead to improved patient safety and clinical effectiveness (because it focuses on monitoring and evaluation strategies to document the uptake of best-practice guidelines, which could include peer review)
- Sub-element 4 also addresses the goal of '**effectiveness**', and specifically the objective to expand all measurement of clinical and patient-reported outcomes to enable effective, high-quality care (because it focuses on the development of monitoring and evaluation strategies to document the uptake of best-practice guidelines, which could be considered a clinical process outcome)

Table 5: Summary of key findings from systematic reviews relevant to Option 1 – Strengthen efforts to translate knowledge about pain and symptom management best practices to patients and their families, to providers and to the organizations in which care is delivered

Category of finding	Summary of key findings
Benefits	• **Pursuing knowledge translation strategies targeted at patients and/or their families** o One recent high-quality review,(38) three medium-quality reviews (one older and two more recent),(36;40;42) and one older low-quality review (43) found that educating patients through a number of approaches including audio, booklets and brochures, interviews, phone calls and video reduced pain o Two relatively recent medium quality reviews,(36;42) one older medium-quality review (40) and one older and low-quality review (43) found that patient education improved patients' knowledge of their pain, treatments and medications o One older medium-quality review found that patient education could improve communication with providers (41) o One older medium-quality review (44) and one recently published medium-quality review (35) found that education provided by nurses improved patient knowledge about pain o One relatively recent medium-quality review found that education provided by pharmacists could increase patient satisfaction with care (39) o One recent low-quality review also found that helping patients to identify stressors and develop coping strategies could improve symptom management and reduce symptoms (45) o Another older review that wasn't focused specifically on cancer but was high quality found that involving patients in the development of information materials improved their knowledge (46) • **Pursuing knowledge translation strategies targeted at healthcare providers** o Two older low-quality reviews found that educating providers through lectures, workshops, booklets, teleconferences and role modelling improved their knowledge and attitudes towards cancer pain mangement (43-44)
Potential harms	• None identified
Costs and/or cost-effectiveness in relation to the status quo	• **Pursuing knowledge translation strategies targeted at healthcare providers** o One relatively recent costing study found that cancer management was more cost-effective when providers adhered to best-practice guidelines (47)
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	• Uncertainty because no systematic reviews were identified o **Pursuing knowledge translation strategies targeted at organizations** o **Establishing province-wide targets for the uptake of best-practice guidelines** • Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review o Not applicable • No clear message from studies included in a systematic review o **Developing monitoring and evaluation strategies to measure and document uptake of guidelines** ▪ One low-quality review that was relatively recent found limited evidence and could not draw firm conclusions about whether physicians could self-monitor their use of guidelines (67) o **Publicly reporting progress towards meeting targets** ▪ One recent medium-quality review,(71) one older medium-quality review (69) and one recent low-quality review (70) reported mixed or limited evidence

Key elements of the policy option if it was tried elsewhere	- **Developing monitoring and evaluation strategies to measure and document uptake of guidelines** o One relatively recent medium-quality review found that guidelines are frequently out of date, require a time-consuming process to update and ongoing monitoring is helpful for ensuring they remain up-to-date (66) - **Publicly reporting progress towards meeting targets** o One recent low-quality review found that public reports should target providers and managers who have the power to change things (70) o One older low-quality review suggested that the following elements are essential to a public reporting strategy: 1) clear objectives; 2) targets; 3) transparent and comprehensive content; 4) easy-to-use formats; and 5) wide distribution using a variety of approaches (72)
Stakeholders' views and experience	- None identified

Option 2 – Support the increased uptake of pain and symptom management guidelines by healthcare providers and organizations through targeted payments

While it isn't always the case that providing more money to healthcare providers and/or the organizations in which care is provided guarantees improvements in practice (i.e., the routine uptake of pain and symptom management guidelines), targeted payments to overcome specific challenges may be appropriate in some contexts. In particular, they can be used to overcome challenges that are identified as barriers to the uptake of guidelines in practice, such as time. They can also be used to signal for providers and organizations where priorities lie in terms of quality improvement. As such, in this brief we considered two types of targeted payments:

1) changes in payments made to healthcare providers that ensure the time spent consulting symptom management guidelines, and providing care based on the guidelines, is appropriately compensated, while making available financial support for those who are involved in "knowledge translation" activities related to promoting the uptake of guidelines; and
2) changes in payments to the full range of organizations in which pain and symptom management support is (or could be) delivered, that ensures resources are allocated to support care based on pain and symptom management guidelines (e.g. by earmarking funds to support evidence-based pain and symptom management within routine packages of care), complemented by bonus payments for organizations that are able to meet targets set in option 1.

Many reviews were identified that focused on targeted payments to providers and to organizations, with most of them more narrowly focused on payment for performance, and none of them focused specifically on cancer care.

Two overviews of a number of reviews were identified that focused on targeted payments to individual healthcare providers. One found that payment for specific activities or services could be effective for improving process of care, referrals, admissions and costs, although when payments weren't targeted the results were unclear.(55) Another overview found similar benefits, but also added that there is only evidence for improvements in short-term outcomes, and it is unclear how this strategy works over the long term.(73) The benefits of paying individual physicians for performance were also outlined in a medium-quality review.(74) In contrast, three high-quality reviews reported that the evidence still isn't clear about whether paying individual providers for performance improves care.(75-77)

The evidence identified in one overview and one high-quality review also identified the issue of unintended consequences as an important consideration. Some of the potential downfalls of paying for performance at the level of individual providers include ignoring other tasks, false reporting, reduced access for high-risk patients, corruption, widening the resource gap between rich and poor, dependency, demoralization and dilution of professional's will to do good.(73;75)

The most consistent finding from both medium- and low-quality reviews is that paying for healthcare organization performance targets may result in several negative unintended consequences including increasing inequalities in access to care and in health status (across race, gender and socio-economic status), as well as distortions in care delivery where non-rewarded care is ignored.(74;78-82) A range of medium- and low-quality reviews (some of which were older and some relatively recent) found that there were at least some potential benefits of paying for performance including improved quality, timeliness and patient satisfaction.(74;80-81;83-85) However, other older medium- and low-quality reviews reported unclear findings,(78;86-87) so there is no consensus about whether pay for performance is always an effective tool.

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 2.

Relevance of option 2 to Ontario Cancer Plan IV

While this entire brief, including option 2, addresses the Ontario Cancer Plan IV objective to 'Leverage and expand the use of evidence-based guidance to improve the appropriateness of care', no specific components of this option could be considered related to the other goals and objectives in the plan.

Table 6: Summary of key findings from systematic reviews relevant to Option 2 – Support the increased uptake of pain and symptom management guidelines by healthcare providers and organizations through targeted payments

Category of finding	Summary of key findings
Benefits	• **Targeted payments to providers** o One relatively recent overview of reviews (73) found that payments for specific activities could be effective for improving processes of care, referrals, admissions and costs, although the results aren't specific to cancer o One of the overviews also found that there is only evidence for improvements in the short term (73) o One older medium-quality review found paying individual providers for performance could improve care (74) • **Targeted payments to organizations** o Two older medium-quality reviews,(74;84) one recent medium-quality review (83) and three relatively recent low-quality reviews (80-81;85) found some evidence that paying for performance can improve quality, timeliness and patient satisfaction
Potential harms	• **Targeted payments to providers** o One older overview of reviews and a relatively recent high-quality review found a number of potential unintended consequences including ignoring other tasks, false reporting, reduced access for high-risk patients, corruption, widening the resource gap between rich and poor, dependency, demoralization and dilution of good will (73;75) • **Targeted payments to organizations** o One relatively recent medium-quality review,(79) three older medium-quality reviews (74;78;82) and two relatively recent low-quality reviews (80-81) found a number of potential unintended consequences including increasing inequalities in access to care, inequalities in health status across race, gender and socio-economic status, as well as distortions in care delivery where non-rewarded care is ignored
Costs and/or cost-effectiveness in relation to the status quo	• None identified
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	• Uncertainty because no systematic reviews were identified o Not applicable • Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review o Not applicable • No clear message from studies included in a systematic review o **Targeted payments to providers** ▪ One relatively recent high-quality review (75) and two older high-quality reviews (76-77) found mixed evidence about whether paying individual providers for performance improves care o **Targeted payments to organization** ▪ Two older medium-quality reviews (78;87) and one older low-quality review (86) found unclear evidence about the effectiveness of pay for performance
Key elements of the policy option if it was tried elsewhere	• None identified
Stakeholders' views and experience	• None identified

Option 3 – Strengthen the models of cancer care to optimize the integration of pain and symptom management best practices

In addition to supporting the uptake of best-practice guidelines through "knowledge translation" strategies and targeted payments, the nature of the problem outlined in this brief also suggests options to address system-level problems are needed. In particular, strengthening models of cancer care delivery in Ontario could be pursued to better support the integration of pain and symptom management and best practices into routine care. This brief focused on the following sub-elements within this option:

1) developing referral and transition protocols that prompt healthcare providers to provide a comprehensive overview of each patient's existing pain and symptom management needs at the time of transition from one provider or setting to another;
2) improving the extent to which patient records (and particularly information about their pain and symptom management needs) are electronically linked across providers and settings;
3) improving the extent to which the full range of healthcare providers involved in pain and symptom management engage in team-based, patient-centred and collaborative care; and
4) adopting new or strengthening existing home-based pain and symptom management services, including remote-monitoring, web-based and telehealth services, self-management support and support for informal/family caregivers.

With respect to the first sub-element of option 3 (developing referral and transition protocols that prompt providers to provide a comprehensive overview of patient pain and symptom management needs), there is very limited evidence available. However one relatively recent high-quality review flagged a potential barrier in the context of transitions to palliative care, stating that transitions can be challenging given lack of agreement between physicians and nurses about patient needs, combined with poor awareness among patients of their own needs.(88) Both a relatively recent high-quality review and an older medium-quality review found little evidence to support other models of care to improve care transitions and ensure continuity (e.g. care planning, case management, etc.).(89-90)

With respect to electronically linking patient records across providers and settings, several reviews were identified. Overall, the evidence suggests that there are benefits to this approach in promoting the uptake of practice guidelines, with an older, broadly-focused medium-quality review finding that widespread use of health information technology can increase clinicians' uptake (although these findings were not specific to cancer).(91) One relatively recent high-quality review found that reporting patient symptom information in an electronic system made care more patient-centred,(92) and another found that computers could help providers make decisions and improve the process of ordering tests for patients (although this wasn't specific to pain and symptoms).(93) The use of technology to promote communication between specialists and primary-care providers, and to prescribe chemotherapy treatment were also identified in medium-quality reviews as ways to improve care.(94-95) Despite these largely positive findings, one medium-quality review stated that the evidence about computerized decision supports was unclear.(96)

Only one very recently published medium-quality review was identified that assessed cancer care teams (sub-element 3).(97) The authors found that cancer teams that involve a range of providers from different disciplines could improve planning of therapy as well as pain control.

With respect to strengthening home-based pain and symptom management services, many reviews were identified (although not all of these reviews focused specifically on cancer pain and symptom management). The one high-quality review related to this element suggested that self-management (supported by electronic symptom reporting) is at least as beneficial for patients as regular care.(92) Many medium-quality reviews were also identified that addressed this element. One recently published review found that providing patients who had a chronic condition with opportunities to communicate with their care provider online improved their knowledge and self-management skills.(98) Another recent medium-quality review suggested strategies to reduce anxiety and depression could be delivered effectively outside of traditional care settings via the internet (although this review focused on patients with chronic pain more generally).(99) Supervised exercise outside of the home, equipping patients with coping strategies, and educating them about self-care during end-of-life were all found to be beneficial to some extent.(41;100-101) While there were no definitive studies outlining the costs of this option, one suggested that home visits by nurses after cancer pain treatment may have the potential to decrease healthcare costs, but didn't necessarily improve health.(102) Another study found that there are no added costs associated with helping patients to identify and overcome barriers to reporting pain and symptoms over the phone.(103)

A summary of the key findings from the synthesized research evidence is provided in Table 7. For those who want to know more about the systematic reviews contained in Table 7 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 3.

Relevance of option 3 to Ontario Cancer Plan IV

Option 3 and its sub-elements are relevant to specific objectives within three of the goals presented in Ontario Cancer Plan IV (see Table 1):

- Sub-element 2 addresses the goal of '**safety**', and specifically the objective to expand the use of technologies and tools for providers that drive adherence to evidence-based guidelines across care settings, including the home (given the focus is on how to best link patient records and information about specific pain and symptom management needs electronically across providers and settings)
- Sub-element 4 also addresses the goal of '**safety**', and specifically the objective to develop and implement patient safety tools in collaboration with patients and families that enable safer care in settings outside of the hospital, including the home (given it focuses on strengthening home-based pain and symptom management services)
- Sub-element 1 addresses the goal of '**integrated care**', and specifically the objective to ensure that standardized care plans are developed and communicated to all members of the care team, across the cancer continuum, to facilitate an integrated approach to care that is centred on the patient (because it focuses on the development of referral and transition protocols to improve transitions across providers and settings)
- Sub-element 2 also addresses two objectives within the '**integrated care**' goal: 1) to enhance communication among all providers across the care continuum and care settings to facilitate smoother care transitions; and 2) to increase the availability of relevant patient clinical information to patients and providers across care settings to support informed decision-making (because of its focus on improving the linkage of electronic patient records across providers and settings to improve communication of patient needs during transitions, and more generally to increase the use of pain and symptom management guidelines)
- The entire option addresses the goal of '**sustainability**' and specifically the objective to optimize the model of care delivery to achieve the greatest benefit for patients and the cancer system (given its focus on strengthening models of care)

Table 7: Summary of key findings from systematic reviews relevant to Option 3 – Strengthen the models of cancer care to optimize the integration of pain and symptom management best practices

Category of finding	Summary of key findings
Benefits	• **Electronically linking patient records** o One relatively recent high-quality review found that reporting patient symptoms electronically made care more patient-centred (92) o One relatively recent high-quality review found computers helped improve test ordering processes (93) o One relatively recent medium-quality review found that technology-supported communication between specialists and primary-care providers improved care (94) o Another relatively recent medium-quality review found electronic chemotherapy prescribing helped to improve patient safety (95) o While not specific to cancer care, one older medium-quality review found that widespread use of information technology could increase physicians' use of practice guidelines (91) • **Improving the extent to which healthcare providers engage in team-based care** o One recent medium-quality review found that team-based care improved therapy planning and pain control (97) • **Strengthening home-based pain and symptom management services** o One relatively recent high-quality review found that self-management supported by electronic symptom reporting is at least as beneficial as regular care (92) o One recent medium-quality review found that enabling patients to communicate with their healthcare providers online resulted in improved knowledge and self-management skills,(98) and another found anxiety and depression reduction strategies could effectively be delivered via the internet for patients in chronic pain (99) o One relatively recent medium-quality review found supervised exercise not in the home setting could help relieve depressive symptoms among cancer survivors,(100) and another relatively recent medium-quality review found that providing cancer patients with coping strategies through psychosocial interventions could reduce pain (101) o One older medium-quality review found that educating advanced cancer patients about self-care at the end of life could reduce pain and improve other aspects of care (41)
Potential harms	• None identified
Costs and/or cost-effectiveness in relation to the status quo	• **Strengthening home-based pain and symptom management services** o One older costing study found that home visits by nurses after cancer pain treatment may reduce healthcare costs,(102) and another older costing study found no added costs associated with enabling patients to report pain and symptoms over the phone (103)
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	• Uncertainty because no systematic reviews were identified o Not applicable • Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review o Not applicable • No clear message from studies included in a systematic review o **Developing referral transition protocols** ▪ One relatively recent high-quality review (90) and one older medium-quality review (89) found little evidence about models to improve transitions in care and ensure continuity o **Electronically linking patient records** ▪ One older medium-quality review found unclear evidence about the benefits of computerized decision supports (96)
Key elements of the policy option if it was tried elsewhere	• **Developing referral transition protocols** o One relatively recent high-quality review found that healthcare providers may not agree on patient needs during transitions to palliative care, and patients have poor awareness of their own needs during transitions from one setting/provider to another (88)
Stakeholders' views and experience	• None identified

Additional equity-related observations about the three options

The reviews (and overviews of reviews) identified for each of the three options did not provide specific observations related to either of the prioritized groups in this brief (see Box 2). However, one review protocol was identified that did address equity considerations relevant to the first sub-element of option 3 (strengthening referral and transition protocols), with a primary focus on assessing the association between socio-economic status and transition time from diagnosis to first treatment.(104) Preliminary results of this review have been published as a conference abstract, and suggest that there are no differences across socio-economic groups in the time from initial diagnosis to the time a patient receives care.(105)

Additionally, the many positive findings related to option 3, and specifically the sub-element focused on strengthening home-based pain and symptom management support, has implications for how care is provided to those living in rural and remote communities. In particular, the reviews that address supports for care provided remotely, or for self-care are informative because they suggest that:

- we can support self-management that is at least as beneficial as regular care using online electronic symptom reporting (based on a recent high-quality review);(92)
- we can improve knowledge and self-management skills by facilitating communication between patients and providers (based on a recent medium-quality review);(98)
- we can successfully provide anxiety and depression reduction care at a distance over the internet (based on a recent medium-quality review);(99) and
- if we provide individuals with coping strategies they can use, and teach them about self-care, it can reduce their pain (based on one relatively recent and one older medium-quality review).(41;101)

IMPLEMENTATION CONSIDERATIONS

A number of barriers might hinder implementation of the three options presented in this evidence brief to improve pain and symptom management in Ontario, which needs to be factored into any decision about whether and how to pursue any given option (Table 8). While potential barriers exist at the level of patients, providers, organizations and systems, the biggest barrier likely lies in facilitating better linkages between patient needs (including those identified during routine ESAS-r screening), and the most appropriate evidence-based pain and management supports across the entire continuum of care (i.e. beyond regional cancer centres). Given the many different providers and settings involved in providing comprehensive pain and symptom management support – only some of which falls within the existing cancer care system – this presents a unique coordination challenge.

There are also a number of possible 'windows of opportunity' that may help to facilitate progress towards adopting these or other options designed to improve pain and symptom management in cancer care in the province (Table 9). While many of these windows depend on the nature of the strategies considered for improving pain and symptom management in Ontario, the alignment between the goals and objectives outlined in Cancer Plan IV and the many dimensions related to the issue likely constitute the biggest opportunity for sustained focus and targeted efforts that can bring about change.

Table 8: Potential barriers to implementing the options

Levels	Option 1 – Strengthen efforts to translate knowledge about pain and symptom management best practices to patients and their families, to providers and to the organizations in which care is delivered	Option 2 – Support the increased uptake of pain and symptom management guidelines by healthcare providers and organizations through targeted payments	Option 3 – Strengthen the models of cancer care to optimize the integration of pain and symptom management best practices
Patient/ Individual	• Patients and their families may not feel empowered to change the way care is provided to them, or to advocate for care that aligns with symptom management guidelines	• As taxpayers and healthcare consumers, patients may not support the allocation or re-allocation of healthcare dollars to encourage providers to take up pain and symptom management practices that are an expected standard of professional care	• Patients may be uncomfortable with an emphasis on self-management and care provided to patients in their home, feeling that it is a signal the system is abandoning them
Care providers and teams	• Healthcare providers may feel existing symptom management guidelines are difficult to incorporate into their routine practice given a lack of time and challenges with adapting the guidelines to meet the needs of complex patients • Healthcare providers may feel they are already providing care that aligns with the best practices outlined by the symptom management guidelines	• Healthcare providers may feel targeted payments and/or financial incentives send the wrong message by implying they are only willing to provide high-quality care if paid extra to do it	• Lack of role clarity about responsibilities for pain and symptom management among members of the healthcare team and provider resistance to adopting patient-centred approaches to care delivery are barriers to implementing new models of care that would facilitate the integration of the symptom management guidelines into routine practice

Organization	• Organizations may not have the resources or capacity to ensure pain and symptom management guidelines can easily be acquired, assessed, adapted and applied by their staff in clinical practice	None identified	• Within LHIN regions, variability among organizations (providing outpatient and community-based care) with respect to improvement priorities and differences in electronic documentation systems and care delivery processes are known barriers to implementing standardized, evidence-based pain and symptom management practices and facilitating linkages between practice settings to optimize pain and symptom management care (29)
System	• The need to contain healthcare costs while at the same time meeting increasing demands for care may limit the funding and resources available for innovation and the use of effective knowledge-translation interventions required to address the complex barriers to symptom management guideline uptake • If previous efforts to fund the uptake of pain and symptom management guidelines through knowledge-translation strategies are viewed as having no success, there is a risk that funding may be withdrawn	• Healthcare budgets are already stretched in the province, making it difficult to find additional funds for incentivized care and also for the resources required to allocate, monitor and evaluate the appropriateness of the funding	• Cancer care in Ontario has traditionally emphasized treatment provided in regional cancer centres, making it difficult to coordinate care transitions across many different settings and providers outside of these centres • Ontario is lagging in the implementation of electronic medical records, making it difficult (and in some cases impossible) to efficiently link data across providers and settings in order to communicate patients' pain and symptom management needs

Table 9: Potential windows of opportunity for implementing the options

Type	Option 1 – Strengthen efforts to translate knowledge about pain and symptom management best practices to patients and their families, to providers and to the organizations in which care is delivered	Option 2 – Support the increased uptake of pain and symptom management guidelines by healthcare providers and organizations through targeted payments	Option 3 – Strengthen the models of cancer care to optimize the integration of pain and symptom management best practices
General	• There is extensive overlap across the goals and objectives outlined by Ontario Cancer Plan IV and key dimensions of strengthening evidence-based pain and symptom management (20)		
Option-specific	• Patients and their families are likely to welcome the opportunity to receive more information about the best evidence-based approaches to support the management of their pain and symptoms • Healthcare providers are open to opportunities that will enable them to provide the best possible care to patients • Regional cancer centres in Ontario have already developed and implemented 'knowledge translation' plans to try and promote the uptake of symptom management guidelines in best practices	• Additional payments would be welcome among providers and organizations wanting to provide the best possible care to patients • Funds previously provided by the Ontario Government and Cancer Care Ontario to support the work of the OCSMC suggests there is a willingness to allocate additional resources to improve the uptake of pain and symptom management guidelines •	• Team care is already provided in several cancer treatment centres (although this varies significantly across centres, as well as within centres and across different types of cancer) • Enhancing the model of care delivery provides opportunity to optimize the under-utilized roles, and scope of practice of nurses and other members of the healthcare team. Re-allocation of roles and changes to how healthcare teams deliver care may result in more efficient and effective use of existing human resources. • Improving cancer services and outcomes through the introduction of innovative models of care delivery is a strategic priority of Cancer Care Ontario (e.g., the Models of Care Initiative).(20)

REFERENCES

1. Cancer Care Ontario. Ontario Cancer Plan 2011-2015: Cancer Care Ontario, 2011.
2. Canadian Cancer Society's Advisory Committee on Cancer Statistics. Canadian Cancer Statistics 2015. Toronto, ON: Canadian Cancer Society, 2015.
3. Canadian Partnership Against Cancer. Canadian Partnership Against Cancer: 2012-2017 Strategic Plan. Toronto, Canada: Canadian Partnership Against Cancer, 2012.
4. Cancer Care Ontario. Cancer Statistics. Toronto, ON available online :https://www.cancercare.on.ca/cms/One.aspx?portalId=1377&pageId=8630: Cancer Care Ontario, 2014.
5. Canadian Cancer Society's Advisory Committee on Cancer Statistics. Canadian Cancer Statistics 2013. Toronto, Canada: Canadian Cancer Society, 2013.
6. van den Beuken-van Everdingen MH, de Rijke JM, Kessels AG, Schouten HC, van Kleef M, Patijn J. Prevalence of pain in patients with cancer: a systematic review of the past 40 years. *Ann Oncol* 2007; **18**(9): 1437-49.
7. Green E, Zwaal C, Beals C, et al. Cancer-related pain management: a report of evidence-based recommendations to guide practice. *Clin J Pain* 2010; **26**(6): 449-62.
8. Barbera L, Seow H, Howell D, et al. Symptom burden and performance status in a population-based cohort of ambulatory cancer patients. *Cancer* 2010; **116**(24): 5767-76.
9. Canadian Partnership Against Cancer. The 2014 Cancer System Performance Report. Toronto, Canada: Canadian Partnership Against Cancer, 2014.
10. Canadian Partnership Against Cancer. Screening for Distress, the 6th Vital Sign: A Guide to Implementation of Best-Practices in Person-Centred Care. Toronto, Canada: Canadian Partnership Against Cancer, 2012.
11. Carlson LE, Angen M, Cullum J, et al. High levels of untreated distress and fatigue in cancer patients. *Br J Cancer* 2004; **90**(12): 2297-304.
12. Zabora J, Brintzenhofeszok K, Curbow B, Hooker C, Paiantadosi S. The prevalance of psychological distress by cancer site. *Psychooncology* 2001; **10**: 19-28.
13. Carr D, Goudas L, Lawrence D, et al. Management of cancer symptoms: pain, depression, and fatigue. *Evid Rep Technol Assess (Summ)* 2002; (61): 1-5.
14. Bryant-Lukosius D, Browne G, DiCenso A, et al. Evaluating health-related quality of life and priority health problems in patients with prostate cancer: a strategy for defining the role of the advanced practice nurse. *Can Oncol Nurs J* 2010; **20**(1): 5-14.
15. Fortner BV, Demarco G, Irving G, et al. Description and predictors of direct and indirect costs of pain reported by cancer patients. *J Pain Symptom Manage* 2003; **25**(1): 9-18.
16. Pereira J, Green E, Molloy S, et al. Population-based standardized symptom screening: Cancer Care Ontario's Edmonton Symptom Assessment System and performance status initiatives. *J Oncol Pract* 2014; **10**(3): 212-4.
17. Dudgeon DJ, Knott C, Chapman C, et al. Development, implementation, and process evaluation of a regional palliative care quality improvement project. *J Pain Symptom Manage* 2009; **38**(4): 483-95.

18. Fillion L, Cook S, Blais M-C, et al. Implemetatoin of Screening for Distress with professional cancer navigators. *Oncologie* 2011; **13**: 277-89.
19. Cancer Care Ontario. Symptom Assessment and Management Tools: Edmonton Symptom Assessment System (ESAS). May 5, 2014 2015. https://www.cancercare.on.ca/toolbox/symptools/ (accessed May 22 2015).
20. Cancer Care Ontario. Ontario Cancer Plan IV: 2015-2019. Toronto, Canada: Cancer Care Ontario; 2015.
21. Canadian Agency for Drugs and Technology in Health. Environmental Scan: Health Interventions in Ambulatory Care Centres. Ottawa: CADTH; 2015.
22. Task Force on Taxonomy. Pain terms: A current list with definitions and notes on usage. In: Merskey H, Bogduk N, eds. Classification of Chronic Pain. 2nd ed. Seattle, USA: IASP Press; 1994: 209-13.
23. Merriam-Webster Online. Symptom [Def. 1]. http://www.merriam-webster.com/dictionary/symptom: Merriam-Webster; 2015.
24. Hammes B. Having your own say - getting the right care when it matters most. Washington, D.C., 2012.
25. Katz A, Martens P, Chateau D, et al. Understanding the Health System Use of Ambulatory care Patients. Winnipeg, Canada: Manitoba Centre for Health Policy, 2013.
26. Ministry of Health and Long-Term Care. Bringing Care Home. Report of the Expert Group on Home & Community Care. Toronto, Canada: Government of Ontario; 2015.
27. Starfield B. Primary Care: Balancing Health Needs, Services and Technology. 2nd Ed. ed. New York: Oxford University Press; 1998.
28. Bainbridge D, Seow H, Sussman J, et al. Multidisciplinary health care professionals' perceptions of the use and utility of a symptom assessment system for oncology patients. *J Oncol Pract* 2011; **7**(1): 19-23.
29. Bryant-Lukosius D, Carter N, Martelli-Reid L, Mahase W. Knowledge translation strategies to improve the uptake of symptom management guidelines in Ontario regional cancer centres. Webinar held on June 29th, 2015: Canadian Centre of Excellence in Oncology APN (OAPN); 2015.
30. Dudgeon D, King S, Howell D, et al. Cancer Care Ontario's experience with implementation of routine physical and psychological symptom distress screening. *Psychooncology* 2012; **21**(4): 357-64.
31. Bryant-Lukosius D. Healthcare Providers' Perspectives on Symptom Management Guidelines Use in Ontario. Webinar held on July 29, 2015: Canadian Centre of Excellence in Oncology APN (OAPN); 2015.
32. Gilbert JE, Howell D, King S, et al. Quality improvement in cancer symptom assessment and control: the Provincial Palliative Care Integration Project (PPCIP). *J Pain Symptom Manage* 2012; **43**(4): 663-78.
33. Cancer Quality Council of Ontario. Cancer System Quality Index: Symptom Assessment and Management, 2012.
34. Berkman N, Sheridan S, Donahue K, et al. Health literacy interventions and outcomes: An updated systematic review. Rockville, MD: Agency for Healthcare Research and Quality, 2011.
35. Zhou L, Liu XL, Tan JY, Yu HP, Pratt J, Peng YQ. Nurse-led educational interventions on cancer pain outcomes for oncology outpatients: a systematic review. *Int Nurs Rev* 2015; **62**(2): 218-30.
36. Jho HJ, Myung SK, Chang YJ, Kim DH, Ko DH. Efficacy of pain education in cancer patients: a meta-analysis of randomized controlled trials. *Support Care Cancer* 2013; **21**(7): 1963-71.
37. Coolbrandt A, Wildiers H, Aertgeerts B, et al. Characteristics and effectiveness of complex nursing interventions aimed at reducing symptom burden in adult patients treated with chemotherapy: a systematic review of randomized controlled trials. *Int J Nurs Stud* 2014; **51**(3): 495-510.

38. Lee YJ, Hyun MK, Jung YJ, Kang MJ, Keam B, Go SJ. Effectiveness of education interventions for the management of cancer pain: a systematic review. *Asian Pac J Cancer Prev* 2014; **15**(12): 4787-93.

39. Bennett MI, Bagnall AM, Raine G, et al. Educational interventions by pharmacists to patients with chronic pain: systematic review and meta-analysis. *Clin J Pain* 2011; **27**(7): 623-30.

40. Bennett MI, Bagnall AM, Jose Closs S. How effective are patient-based educational interventions in the management of cancer pain? Systematic review and meta-analysis. *Pain* 2009; **143**(3): 192-9.

41. Johnston B, McGill M, Milligan S, McElroy D, Foster C, Kearney N. Self care and end of life care in advanced cancer: Literature review. *European Journal of Oncology Nursing* 2009; **13**(5): 386-98.

42. Johannsen M, Farver I, Beck N, Zachariae R. The efficacy of psychosocial intervention for pain in breast cancer patients and survivors: a systematic review and meta-analysis. *Breast Cancer Res Treat* 2013; **138**(3): 675-90.

43. Oldenmenger WH, Sillevis Smitt PA, van Dooren S, Stoter G, van der Rijt CC. A systematic review on barriers hindering adequate cancer pain management and interventions to reduce them: a critical appraisal. *Eur J Cancer* 2009; **45**(8): 1370-80.

44. Allard P, Maunsell E, Labbe J, Dorval M. Educational interventions to improve cancer pain control: a systematic review. *J Palliat Med* 2001; **4**(2): 191-203.

45. Lee YH, Chiou PY, Chang PH, Hayter M. A systematic review of the effectiveness of problem-solving approaches towards symptom management in cancer care. *J Clin Nurs* 2011; **20**(1-2): 73-85.

46. Nilsen ES, Myrhaug HT, Johansen M, Oliver S, Oxman AD. Methods of consumer involvement in developing healthcare policy and research, clinical practice guidelines and patient information material. *Cochrane Database Syst Rev* 2006; (3): Cd004563.

47. Perrier L, Buja A, Mastrangelo G, et al. Clinicians' adherence versus non adherence to practice guidelines in the management of patients with sarcoma: a cost-effectiveness assessment in two European regions. *BMC Health Serv Res* 2012; **12**: 82.

48. Grimshaw JM, Eccles MP, Lavis JN, Hill SJ, Squires JE. Knowledge translation of research findings. *Implement Sci* 2012; **7**: 50.

49. Wilson MG, Randhawa H, Lavis JN. Rapid Synthesis: Identifying Risk and Protective Factors for Quality Clnical Practice. Hamilton, Canada: McMaster Heatlh Forum, 2015.

50. Lavis JN, Wilson MG, Grimshaw J. Evidence Brief: Optimizing Clinical Practice in Ontario Based on Data, Evidence and Guidelines. Hamilton, Canada: McMaster Heatlh Forum, 2015.

51. Giguere A, Legare F, Grimshaw J, et al. Printed educational materials: effects on professional practice and healthcare outcomes. *Cochrane Database Syst Rev* 2012; **10**: CD004398.

52. Forsetlund L, Bjorndal A, Rashidian A, et al. Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2009; (2): CD003030.

53. O'Brien MA, Rogers S, Jamtvedt G, et al. Educational outreach visits: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2007; (4): CD000409.

54. Soumerai SB, Avorn J. Principles of educational outreach ('academic detailing') to improve clinical decision making. *JAMA* 1990; **263**(4): 549-56.

55. Flodgren G, Eccles MP, Shepperd S, Scott A, Parmelli E, Beyer FR. An overview of reviews evaluating the effectiveness of financial incentives in changing healthcare professional behaviours and patient outcomes. *Cochrane Database Syst Rev* 2011; (7): CD009255.

56. Grimshaw J, Eccles MP, Greener J, et al. Is the involvement of opinion leaders in the implementatoin of research findings a feasible strategy? *Implementation Sciene* 2006; **1**(3).

57. Doumit G. Opinion leaders: Effectiveness, identification, stability, specificity, and mechanism of action (PhD thesis). Ottawa, Canada: University of Ottawa; 2006.
58. Ivers N, Jamtvedt G, Flottorp S, et al. Audit and feedback: effects on professional practice and healthcare outcomes. *Cochrane Database Syst Rev* 2012; **6**: CD000259.
59. Gardner B, Whittington C, McAteer J, Eccles MP, Michie S. Using theory to synthesize evidence from behaviour change interventions: The example of audit and feedback. *Social Science and Medicine* 2010; **70**(10): 1618-25.
60. Adams AS, Soumerai SB, Lomas J, Ross-Degnan D. Evidence of self-report bias in assessing adherence to guidelines. *International Journal for Quality in Health Care* 1999; **11**(3): 187-92.
61. Shojania KG, Jennings A, Mayhew A, Ramsay CR, Eccles MP, Grimshaw J. The effects of on-screen, point of care computer reminders on processes and outcomes of care. *Cochrane Database Syst Rev* 2009; (3): CD001096.
62. Chaudhry B, Wang J, Wu S, et al. Systematic review: impact of health information technology on quality, efficiency, and costs of medical care. *Ann Intern Med* 2006; **144**(10): 742-52.
63. McDonald CJ. Protocol-based computer reminders, the quality of care and the non-perfectability of man. *N Engl J Med* 1976; **295**(24): 1351-5.
64. Baker R, Camosso-Stefinovic J, Gillies C, et al. Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2010; (3): CD005470.
65. Grimshaw JM, Thomas RE, MacLennan G, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess* 2004; **8**(6): iii-iv, 1-72.
66. Martinez Garcia L, Arevalo-Rodriguez I, Sola I, Haynes RB, Vandvik PO, Alonso-Coello P. Strategies for monitoring and updating clinical practice guidelines: a systematic review. *Implement Sci* 2012; **7**: 109.
67. Gagliardi AR, Brouwers MC, Finelli A, Campbell CM, Marlow BA, Silver IL. Physician self-audit: a scoping review. *J Contin Educ Health Prof* 2011; **31**(4): 258-64.
68. Totten A, Wagner J, Tiwari A, O'Haire C, Griffen C, Walker M. Closing the Quality Gap: Revisiting the State of the Science (Vol. 5: Public Reporting as a Quality Improvement Strategy). Rockville, M.D.: Agency for Healthcare Research and Quality 2012.
69. Fung CH, Lim YW, Mattke S, Damberg C, Shekelle PG. Systematic review: the evidence that publishing patient care performance data improves quality of care. *Ann Intern Med* 2008; **148**(2): 111-23.
70. Lemire M, Demers-Payette O, Jefferson-Falardeau J. Dissemination of performance information and continuous improvement: A narrative systematic review. *J Health Organ Manag* 2013; **27**(4): 449-78.
71. Berger ZD, Joy SM, Hutfless S, Bridges JF. Can public reporting impact patient outcomes and disparities? A systematic review. *Patient Educ Couns* 2013; **93**(3): 480-7.
72. Wallace J, Teare G, Verrall T, Chan B. Public reporting on the quality of healthcare: Emerging evidence on promising practices for effective reporting. Ottawa, Canada: Canadian Health Services Research Foundation, 2007.
73. Oxman AD, Fretheim A. Can paying for results help to achieve the Millennium Development Goals? A critical review of selected evaluations of results-based financing. *J Evid Based Med* 2009; **2**(3): 184-95.
74. Petersen L, Woodard L, Urech T, Daw C, Sookanan S. Does Pay-for-Performance Improve the Quality of Health Care? *Ann Intern Med* 2006; **145**(4): 265-72.
75. Houle SK, McAlister FA, Jackevicius CA, Chuck AW, Tsuyuki RT. Does performance-based remuneration for individual health care practitioners affect patient care?: a systematic review. *Ann Intern Med* 2012; **157**(12): 889-99.

76. Sturm H, Austvoll-Dahlgren A, Aaserud M, et al. Pharmaceutical policies: effects of financial incentives for prescribers. *Cochrane Database Syst Rev* 2007; (3): CD006731.

77. Giuffrida A, Gosden T, Forland F, et al. Target payments in primary care: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2000; (3): Cd000531.

78. Rosenthal MB, Frank RG. What is the empirical basis for paying for quality in health care? *Med Care Res Rev* 2006; **63**(2): 135-57.

79. Eijkenaar F. Pay for Performance in Health Care: An International Overview of Initiatives. *Medical Care Research and Review* 2012; **69**(3): 251-76.

80. de Bruin S, Baan C, Struijs J. Pay-for-performance in disease management: a systematic review of the literature. *BMC Health Services Research* 2011; **11**(1): 272.

81. So J, Wright J. The Use of Three Strategies to Improve Quality of Care at a National Level. *Clinical Orthopaedics and Related Research* 2012; **470**(4): 1006-16.

82. Chien AT, Chin MH, Davis AM, Casalino LP. Pay for performance, public reporting, and racial disparities in health care: how are programs being designed? *Med Care Res Rev* 2007; **64**(5 Suppl): 283s-304s.

83. Olisemeke B, Chen YF, Hemming K, Girling A. The Effectiveness of Service Delivery Initiatives at Improving Patients' Waiting Times in Clinical Radiology Departments: A Systematic Review. *Journal of Digital Imaging* 2014; **27**(6): 751-78.

84. Mehrotra A, Damberg CL, Sorbero MES, Teleki SS. Pay for Performance in the Hospital Setting: What Is the State of the Evidence? *American Journal of Medical Quality* 2009; **24**(1): 19-28.

85. Gillam SJ, Siriwardena AN, Steel N. Pay-for-Performance in the United Kingdom: Impact of the Quality and Outcomes Framework—A Systematic Review. *Annals of Family Medicine* 2012; **10**(5): 461-8.

86. Eldridge C, Palmer N. Performance-based payment: some reflections on the discourse, evidence and unanswered questions. *Health Policy and Planning* 2009; **24**(3): 160-6.

87. Van Herck P, De Smedt D, Annemans L, Remmen R, Rosenthal MB, Sermeus W. Systematic review: Effects, design choices, and context of pay-for-performance in health care. *BMC Health Services Research* 2010; **10**: 247-.

88. Gott M, Ingleton CG, C, Richards N, et al. Transitions to palliative care for older people in acute hospitals: a mixed-methods study. *Health Services and Delivery Research* 2013; **1**(11).

89. Brink-Huis A, van Achterberg T, Schoonhoven L. Pain management: a review of organisation models with integrated processes for the management of pain in adult cancer patients. *J Clin Nurs* 2008; **17**(15): 1986-2000.

90. Aubin M, Giguere A, Martin M, et al. Interventions to improve continuity of care in the follow-up of patients with cancer. *Cochrane Database Syst Rev* 2012; **7**: CD007672.

91. Jamal A, McKenzie K, Clark M. The impact of health information technology on the quality of medical and health care: a systematic review. *HIM J* 2009; **38**(3): 26-37.

92. Johansen MA, Henriksen E, Horsch A, Schuster T, Berntsen GK. Electronic symptom reporting between patient and provider for improved health care service quality: a systematic review of randomized controlled trials. part 1: state of the art. *J Med Internet Res* 2012; **14**(5): e118.

93. Main C, Moxham T, Wyatt JC, Kay J, Anderson R, Stein K. Computerised decision support systems in order communication for diagnostic, screening or monitoring test ordering: systematic reviews of the effects and cost-effectiveness of systems. *Health Technol Assess* 2010; **14**(48): 1-227.

94. Foy R, Hempel S, Rubenstein L, et al. Meta-analysis: effect of interactive communication between collaborating primary care physicians and specialists. *Ann Intern Med* 2010; **152**(4): 247-58.

95. Kullberg A, Larsen J, Sharp L. 'Why is there another person's name on my infusion bag?' Patient safety in chemotherapy care - a review of the literature. *Eur J Oncol Nurs* 2013; **17**(2): 228-35.

96. Smith MY, DePue JD, Rini C. Computerized Decision-Support Systems for Chronic Pain Management in Primary Care. *Pain Medicine* 2007; **8**: S155-S66.

97. Taplin SH, Weaver S, Salas E, et al. Reviewing cancer care team effectiveness. *Journal of Oncology Practice* 2015; **11**(3): 239-46.

98. de Jong CC, Ros WJ, Schrijvers G. The effects on health behavior and health outcomes of Internet-based asynchronous communication between health providers and patients with a chronic condition: a systematic review. *J Med Internet Res* 2014; **16**(1): e19.

99. Eccleston C, Fisher E, Craig L, Duggan GB, Rosser BA, Keogh E. Psychological therapies (Internet-delivered) for the management of chronic pain in adults. *Cochrane Database Syst Rev* 2014; **2**: CD010152.

100. Craft LL, Vaniterson EH, Helenowski IB, Rademaker AW, Courneya KS. Exercise effects on depressive symptoms in cancer survivors: a systematic review and meta-analysis. *Cancer Epidemiol Biomarkers Prev* 2012; **21**(1): 3-19.

101. Sheinfeld Gorin S, Krebs P, Badr H, et al. Meta-analysis of psychosocial interventions to reduce pain in patients with cancer. *J Clin Oncol* 2012; **30**(5): 539-47.

102. Sorensen J, Frich L. Home visits by specially trained nurses after discharge from multi-disciplinary pain care: a cost consequence analysis based on a randomised controlled trial. *Eur J Pain* 2008; **12**(2): 164-71.

103. Ward SE, Wang KK, Serlin RC, Peterson SL, Murray ME. A randomized trial of a tailored barriers intervention for Cancer Information Service (CIS) callers in pain. *Pain* 2009; **144**(1-2): 49-56.

104. Forest L, Sowden S, Rubin G, White M, Adams J. Socio-economic inequalities in patient, primary care, referral, diagnostic, and treatment intervals on the lung cancer pathway: Protocol for a systematic review and meta-analysis. *Systematic Reviews* 2014; **3**(30).

105. Forest L, Sowden S, Ruben G, White M, Adams J. Socio-economic inequalities in stage at diagnosis, and in time from first symptom to treatment, for lung cancer: Systematic review and meta-analysis. *The European Journal of Public Health* 2014; **24**(Suppl 2).

106. Kotronalous G, Kearney N, Maguire R, et al. What is the value of routine use of patient-reported outcome measures toward improvement of patient outcomes, process of care, and health service outcomes in cancer care? A systematic review of controlled trials. *Clinical Oncology* 2014; **32**(14): 1480-501.

107. Kastner M, Bhattacharyya O, Hayden L, et al. Guideline uptake is influenced by six implementability domains for creating and communicating guidelines: a realist review. *J Clin Epidemiol* 2015; **68**(5): 498-509.

108. Emmert M, Eijkenaar F, Kemter H, Esslinger AS, Schoffski O. Economic evaluation of pay-for-performance in health care: a systematic review. *Eur J Health Econ* 2012; **13**(6): 755-67.

109. Lu W, Greuter MJ, Schaapveld M, Vermeulen KM, Wiggers T, de Bock GH. Safety and cost-effectiveness of shortening hospital follow-up after breast cancer treatment. *Br J Surg* 2012; **99**(9): 1227-33.

110. Johansen MA, Berntsen GK, Schuster T, Henriksen E, Horsch A. Electronic symptom reporting between patient and provider for improved health care service quality: a systematic review of randomized controlled trials. part 2: methodological quality and effects. *J Med Internet Res* 2012; **14**(5): e126.

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 option 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 cancer pain and symptom management. 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 cancer pain and symptom management.

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 Option 1 - Strengthen efforts to translate knowledge about pain and symptom management best practices to patients and their families, to providers and to the organizations in which care is delivered

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
Introducing knowledge translation strategies that target three levels: patients and/or their informal/family caregivers, healthcare providers, and organizations	Evaluating the effects of nurse-delivered educational interventions on improving cancer pain outcomes for oncology (35)	Five randomized controlled studies and one quasi-experimental study included educational interventions such as *Passport to Comfort* intervention, *Pro-self-Pain Control Program*, the representational interventions for cancer pain (*RIDcancerPAIN* and *RIDcancerPAIN+*). Generally these educational sessions included audio, video, computer facilities, or written methods. Three studies focused on the effects of educational interventions on patients' knowledge and attitudes towards analgesics and cancer pain treatment, and demonstrated statistical significance between the control and intervention groups, with increased pain knowledge among patients in the intervention groups. Four studies indicated that there is no evidence that nurse-led educational interventions (i.e. coaching, PEP, RIDcancerPAIN and RIDcancerPAIN+) had an effect patients' quality of life. There is mixed evidence on the effects of educational interventions on pain intensity. Two of the three studies that focused on patient pain intensity found no statistically significant impact on pain relief, whereas one study showed greater long-term decreases in pain severity than those in the control group. Only one study reported on the effects of educational interventions on anxiety, depression and satisfaction of cancer pain management. There was no statistically significant impact on patient anxiety and depression. Overall, the included studies demonstrated that educational interventions have positive effects for improving cancer pain management.	2014	7/10 (AMSTAR rating from McMaster Health Forum's Impact Lab)	0/6	0/6	6/6
	Evaluating the overall efficacy of pain education on improving cancer pain	In the meta-analysis, the intervention group demonstrated lower pain intensity than the control group after pain education (i.e. face-to-face interview, follow-up telephone calls, printed	2012	5/11 (AMSTAR rating from	1/12	0/12	12/12

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
	management among patients (36)	materials, video and audio). A positive effect of pain education was seen for a prognosis of three months, a follow-up within two weeks of the first follow-up, tailored education, and general pain management education by healthcare providers. However, the authors indicated a randomized controlled study with a placebo control may be needed to determine whether pain education has a true efficacy on pain control or if there is a placebo effect.		McMaster Health Forum)			
	Evaluating the effectiveness of nurse-led interventions targeting symptom management among cancer patients (37)	Eleven studies focused on the characteristics and effectiveness of complex nursing interventions that target multiple symptoms in patients receiving chemotherapy. Identified interventions included patient education, symptom assessment, coaching, and re-evaluation of symptoms and strategies. Based on the limited and weak evidence, it is not possible to determine the effectiveness of complex nursing interventions and which parts of the interventions are most important.	2012	8/10 (AMSTAR rating from McMaster Health Forum)	0/11	0/11	11/11
	Examining educational interventions for cancer pain management (38)	A meta-analysis indicated that education intervention reduced the pain of cancer patients. Among the many material sources of pain education, booklets were the most commonly used material source. Other source materials included videos, audiotapes, phone calls and brochures. Two studies that focused on the effects of pain education on quality of life found no statistically significant effect.	2012	8/10 (AMSTAR rating from McMaster Health Forum)	2/32	0/32	32/32
	Examining the effects of psychosocial interventions on pain in breast cancer patients and survivors (42)	Psychosocial interventions such as patient education, supportive group therapy, relaxation (i.e. imagery, yoga, meditation or hypnosis) and couples therapy, significantly reduced pain in breast cancer patients and survivors. Patient education had the largest effect, followed by relaxation therapy and couples therapy. However, it is not possible to determine if patient education is the most efficacious intervention for pain due to limited evidence.	2012	7/11 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	26/26
	Examining the effects of pharmacist-delivered educational interventions	Only four studies were identified in the review. Different educational interventions included: face-to-face consultation by pharmacists and follow-up; telephone call from pharmacist with	2009	7/11 (AMSTAR rating from	0/4	0/4	1/4

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
	for chronic pain management (39)	follow-up and specialized prescription service; and face-to-face group sessions conducted by pharmacist educator. These interventions focused on pain assessment and medication advice and review. A meta-analysis of the four studies found significant benefits (reduced adverse effects and improvement in satisfaction with treatment). However, two randomized controlled studies found no significant differences for pain intensity and improving self-efficacy at three months.		McMaster Health Forum)			
	Examining problem-solve approach interventions on symptom management in cancer care (45)	The problem-solving approach (PSA) involves two processes: 1) problem orientation, identifying stressful issues and developing positive behavioural changes; and 2) problem-solving style, applying problem-solving skills to find the most effective solution for a particular problem. PSA interventions generally consisted of face-to-face or telephone counselling to develop coping mechanisms, decision-making skills and cognitive behavioural techniques. Five of the seven studies demonstrated that PSA can help improve symptom management, reduce the impact of symptoms and help patients develop coping strategies. However, making conclusions is not possible due to limited evidence.	2009	4/9 (AMSTAR rating from McMaster Health Forum)	0/7	0/7	7/7
	Examining the effects of patient-based educational interventions in cancer pain management (40)	Educational interventions involve providing pain information, developing coping strategies and advice on pain management, which are delivered by a heath provider through different source materials (i.e. face-to-face counselling, information booklet, follow-ups by phone call). A meta-analysis of nine studies that compared educational intervention and usual care found significant improved knowledge and attitudes towards cancer pain than with usual care. Sixteen studies that focused on the effects of educational intervention on pain intensity found significantly reduced pain intensity.	2007	6/11 (AMSTAR rating from McMaster Health Forum)	2/21	0/21	21/21

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		Six studies found no statistically significant benefit of educational intervention on self-efficacy, medication adherence and pain with daily activities.					
	Examining self-care and end-of-life care for advanced cancer patients (41)	Three studies focused on educational interventions (i.e. homecare program, video and computer-formatted materials, face-to-face workshops, and self-reported questionnaires) for pain management that were administered by nurses. The studies found that educational interventions improved knowledge and attitudes to pain medication, in addition to improving communication with healthcare providers. Cancer symptom-focused interventions (i.e. self-management resource materials and face-to-face workshops with nurses) were identified among three studies. Interventions reported reduced symptom distress, and improvement in both physical and psychological symptoms.	2008	6/10 (AMSTAR rating from McMaster Health Forum)	3/18	0/18	6/18
	Evaluating the efficacy and the cost effectiveness of tailored barriers interventions (TBI) for cancer pain management (103)	The economic evaluation focused on tailored barriers interventions (TBI), which involves education tailored to each participant's attitudinal barriers toward reporting pain and using analgesics. These are generally delivered verbally over the telephone, followed by printed educational material. The economic evaluation compared assessment-only group, where individuals responded to baseline measures but did not receive educational intervention, and the TBI group. The evaluation found that the TBI group had positive changes about reporting pain and using analgesics, but there was no effect on pain severity. Compared to the assessment-alone group, TBI was more effective in decreasing attitudinal barrier scores and was also cost-effective. It was found that TBI that involved short proactive communication was effective in changing both attitude and behaviour.	2009	No rating tool available for this type of document	N/A	N/A	N/A
	Examining the effects of patient-reported outcome measures (PROMs) on patient outcomes,	The review focused on patient-reported outcome measures (PROMs), and may involve the utilization of questionnaires, electronic resources, booklets, mailed assessments and telephone interviews. Overall, there were limited studies that reported	2012	6/10 (AMSTAR rating from McMaster	3/26	0/26	26/26

Option element	**Focus of systematic review or economic evaluation**	**Key findings**	**Year of last search**	**AMSTAR (quality) rating**	**Proportion of studies that were conducted in Canada**	**Proportion of studies that deal explicitly with one of the prioritized groups**	**Proportion of studies that focused on pain and symptom management**
	processes of care and health service outcomes in cancer care (106)	statistically significant findings on the effects of PROMs toward the improvement of patient outcomes (health status), processes of care (patient satisfaction and patient behaviour), and health service outcomes (patient safety, cost-effectiveness) in cancer care. Six randomized controlled trials that focused on the effects of PROMs on patient outcomes found an overall positive effect with reduced symptom severity. There are mixed results on the effects of PROMs on quality of life. Nine controlled studies that reported on the effects of PROMs on processes of care found mixed results on patient satisfaction. Five controlled studies explored the effects of PROMs on health service outcomes and found small positive changes among women with breast cancer; however, the patients with advanced breast, colorectal, or prostate cancer showed minimal effects.		Health Forum)			
	Examining the effects of consumer involvement in developing healthcare policy and research, clinical practice guidelines, and patient information material (46)	The review only identified one study about consumer priorities for healthcare policy, three studies in healthcare research, and two studies about consumer involvement in developing patient information material. However, there were no studies of consumer involvement in developing practice guidelines. There is moderate evidence from two studies that consumer involvement in the development of patient information material may improve a consumer's knowledge and clarity on the specific healthcare topic in the material. There is very low-quality evidence from one study to suggest that telephone conversations and face-to-face group workshops with consumers are better than mailed surveys. Overall, there is little evidence to determine the effects of consumer involvement in developing healthcare policy and research, clinical practice guidelines and patient information material.	2005	9/11 (AMSTAR rating from www.rxforchange.ca)	2/6	0/6	0/6

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
	Examining educational interventions to improve cancer pain management (44)	Educational interventions (i.e. lectures on cancer pain management, face-to-face workshops, management booklet for nurses, educational home visits, and teleconferences) can successfully improve cancer pain knowledge and attitudes of healthcare providers; however, no effect was seen with educational interventions on patients' pain levels. The intervention with the greatest impact involved brief interventions with nurses advising patients about pain and their symptoms in combination with a daily pain diary. Seven studies focused on role model training for healthcare providers and found that these individuals became actively involved in implementing targeted cancer pain control activities. Six studies focused on educational interventions (i.e. home visits from nurses, audiotapes, tailored pain information, daily pain diary, and teleconferences) that targeted cancer patients found lower pain intensity than baseline; however, the cause of pain reduction remains undetermined. Four studies reported improvement in cancer pain knowledge and positive behavioural changes after nurse counselling and home visits, short video presentations, or provision of information. The authors indicated that further research is required to assess the effectiveness of cancer pain control with more rigorous methodologies.	1999	3/9 (AMSTAR rating from McMaster Health Forum)	1/33	0/33	33/33
	Assessing the cost-effectiveness between clinicians' adherence or non-adherence to clinical practice guidelines in cancer management (47)	The economic evaluation assessed the cost-effectiveness of adherence with clinical practice guidelines (CPGs) in sarcoma management by comparing health outcome and resource consumption among cancer patients. Overall, the average cost per patient of the CPG compliant group (€23, 571) was lower than in the non-compliant CPG (€27, 313); however, it was not statistically significant. There was a lower average cost in the CPG compliant group than the non-compliant CPG group for gastrointestinal stromal cancer and dermatofibrosarcoma, and it was statistically significant.	2012	No rating tool available for this type of document	N/A	N/A	N/A

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		The economic evaluation conducted an incremental cost-effective ratio (ICER) between clinicians' adherence versus non-adherence to CPGs illustrated compliance, and found that CPGs were less costly and more effective. CPGs particularly decreased costs in surgery and chemotherapy.					
	Identifying and examining factors associated with the implementability of clinical practice guidelines (107)	Guideline implementability is associated with creation of guideline content and effective communication of content. The review identified six domains for guideline implementability: stakeholder involvement, evidence synthesis, considered judgment, implementation feasibility, message and format. For stakeholder involvement, the findings reported that guideline uptake is associated with credibility from stakeholders, disclosure of any conflicts of interest, and funding sources. The review identified barriers to stakeholder involvement such as industry contributions and recommendations based on expert opinion alone. For evidence synthesis, the authors indicated that this domain is the most developed aspect of guideline development in current literature, and is necessary in order to identify recommendations based on expert consensus and maintain consistent reporting of elements. The excessive frequency of revision is considered a barrier to this domain. For considered judgment, the facilitators of this domain included perceived clinical relevance for patient population, and indicators of relative strength of recommendations. The authors indicated there is a need for considered judgment while formulating evidence-based recommendations. However, existing barriers included lack of fit between clinicians' experiences and recommendations, lack of applicability and the use of low-quality or conflicting evidence. For implementation feasibility, limit on recommendations that require time or resources, availability of data, and minimization of change required for systems were considered facilitators of implementation feasibility. The barriers to this domain entail requirement for new knowledge and inconsistency of changes	2010	No rating tool available for this type of document	N/A	N/A	N/A

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		among needs. For message, the facilitators of this domain included actionability, simple and clear guidelines, and persuasive use of language. The studies in the realist review indicated that there is a lower chance of adopting guidelines if they are too complex to understand. The identified barriers included: the evidence is too complex to simplify; ambiguity of simple guidelines; and poorly framed guidelines. For format, the review identified many facilitators including: creating a version for clinicians and managers, and a lay-language version for patients; incorporating important components (i.e. purpose, methods and recommendations); and changing the layout, structure and design to make the guidelines more visually stimulating. No barriers to this domain were identified by the review. The authors indicated that further research is needed to determine which combination of domains will be most effective.					
	Examining barriers associated with cancer pain management (43)	Eleven studies focused on interventions (i.e. patient education, involving single sessions, academic detailing session tailored to patients with prior knowledge with written instructions, and follow-ups via telephone or home visits) to reduce patient-related barriers. Five of the 11 studies found a statistically significant reduction in pain, following patient education. Eight of the 11 studies reported statistically significant improvement in knowledge about cancer pain and its management, following brief nurse counselling sessions and follow-up by telephone or provision of pain education booklets. Three of the six studies that reported on patients' adherence to analgesics found statistically significant improvement. Six studies focused on interventions (i.e. professional education, pain assessment and pain consultation or protocol) to reduce professional-related barriers. The most frequently mentioned barriers that hinder cancer care included inadequate pain management, patients' reluctance to report pain, and inadequate	2007	3/9 (AMSTAR rating from McMaster Health Forum)	0/17	0/17	17/17

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		knowledge of pain management. One study reported statistically significant improvement in nurses' knowledge about pain management. Two studies that evaluated the effect of pain assessment did not find any improvements. Between two studies that assessed patients' pain by a pain consultation or pain protocol, only one reported statistically significant reduction in pain.					
Developing monitoring and evaluation strategies to measure and document the uptake of best-practice guidelines by healthcare providers and/or organizations	Identifying self-audit mechanisms and factors influencing self-audit conduct and outcomes for physicians (67)	All six studies evaluated the impact of self-audit programs, and reported improvement in compliance with care delivery guidelines and improved patient outcomes (satisfaction, behaviour and health). However, it is not possible to determine which program features were associated with beneficial outcomes. Overall, there is limited evidence to make conclusions about the impact of self-audit programs.	2010	2/10 (AMSTAR rating from McMaster Health Forum)	0/6	0/6	0/6
	Examining strategies for monitoring and updating clinical practice guidelines (66)	One of the four studies that assessed strategies evaluating if clinical practice guidelines (CPGs) were out of date found that 76.5% of the guidelines needed to be updated. Three studies assessed strategies for updating CPGs and reported that new evidence is identified by exhaustive searches, which is followed by updating recommendations. However, the process is time-consuming. One study focused on a continuous monitoring strategy in 20 CPGs, which included four steps: continuous searching, renewing evidence, revising recommendations and announcing new evidence and modified recommendations. Among the 20 CPGs, six of the guidelines changed following the monitoring process. Overall, there is limited research about monitoring and updating of CPGs.	2012	7/10 (AMSTAR rating from McMaster Health Forum)	1/8	0/8	0/8
Establish province-wide targets for the uptake of best-practice guidelines by healthcare providers and/or organizations	No particularly relevant reviews found	N/A	N/A	N/A	N/A	N/A	N/A

Option element	**Focus of systematic review or economic evaluation**	**Key findings**	**Year of last search**	**AMSTAR (quality) rating**	**Proportion of studies that were conducted in Canada**	**Proportion of studies that deal explicitly with one of the prioritized groups**	**Proportion of studies that focused on pain and symptom management**
Publicly reporting progress towards meeting established province-wide targets for the uptake of best-practice guidelines to promote accountability and quality improvement	Examining the effects of public reporting on patient care to promote quality of care (69)	Overall, there is mixed evidence on the impact of public reporting in improving patient outcomes, while the impact on improving patient safety and patient-centeredness remains relatively unknown. Eight studies found mixed results on the effects of public reporting on selection of health plans. Some studies found that individuals were willing to switch their current health plans to a higher consumer-rated health plan. Nine studies found that publicly reporting performance data did not affect selection of hospitals by individuals. However, 11 studies found an increase in quality improvement activity due to releasing performance data to the public. There is mixed evidence for using publicly released performance results to improve outcomes (i.e. effectiveness, patient safety, patient-centeredness, decrease in mortality rates). Five studies found that publicly released performance data affected consumers' choice of providers. Individuals were less likely to select a provider with higher published mortality rates. Some studies indicated that public reporting may cause unintended consequences such as reluctance among surgeons to operate on high-risk patients in fear of receiving low ratings.	2006	5/11 (AMSTAR rating from McMaster Health Forum)	0/45	0/45	0/45
	Evaluating the effectiveness of public reporting of healthcare quality as a quality improvement approach (68)	The report found that public reporting is associated with improvement in healthcare performance. Nineteen medium-quality studies that focused on public reporting in hospitals, found a decrease in mortality. Among 19 high-quality studies that involved health plans and long-term care, there was generally a positive impact on patient outcomes (i.e. satisfaction with care, reduced pain). Studies that examined harms (i.e. reduced access to services and patient engagement) resulting from public reporting found more evidence of no harm than evidence of harm. In one study, there was an increase in mortality that was attributed to public reporting. Thirteen low-quality studies found that public reporting does not contribute to reduced access for patients.	2011	7/10 (AMSTAR rating from McMaster Health Forum)	2/198	0/198	0/198

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		Ten studies showed that healthcare providers made positive changes after public reports, including offering new services, policy changes, and participating in quality improvement activities. Forty-seven medium-quality studies found little to no impact of public reporting on the selection of healthcare providers by patients or their caregivers. The studies indicated qualitative studies indicate public reports may not have been readily accessible to patients when they were selecting healthcare providers. The characteristics of public reports and the context were rarely described among the quantitative studies. One study found that the communication method affected the use of public reports. The report's findings indicated that public reports have more of an impact in competitive markets, and that improvements are more likely among providers with lower ratings in initial public reports.					
	Examining the impact of public reporting on patient outcomes and disparities (71)	Three studies in nursing homes assessed quality measures and found improvements in measures of pain, delirium and activities of daily living. There is limited evidence that public reporting has a favourable effect on outcomes in nursing homes. Two of the 14 studies conducted in hospitals showed positive effect on patient outcomes (i.e. reduced mortality rates, general quality of care). The remaining studies showed no effect or a mixed effect. The review found no studies that focused on the effect of public reporting in the outpatient setting.	2013	7/10 (AMSTAR rating from McMaster Health Forum)	0/25	0/25	0/25
	Identifying successful key factors of an effective reporting program (72)	The report identified six key components of effective public reporting programs: objective(s), audience, content, products, distribution and impacts (intended and unintended).	Not reported	2/9 (AMSTAR rating from McMaster	1/13	Not reported in detail	Not reported in detail

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		The authors suggested that the objectives of public reporting programs should include accountability, quality improvement and consumer choice. The view of accountability sees citizens as active participants in health systems transformation. For quality improvement, there is mixed evidence on whether making reports public has a greater impact. Consumer choice is more applicable to market-based healthcare systems rather than publicly funded healthcare. The audience of public reporting is key to developing the remaining components. Five studies indicated that reports that are intended to promote quality improvement should be targeted to healthcare organizations that can bring changes. The content of public reporting may need to address the level of aggregation in reports, limitation of existing data, usefulness, and context for providers and healthcare organizations that can be acted on directly. The product must reduce cognitive effort for citizens (i.e. visual cues, readable text size) and address the needs of multiple audiences. Distribution encompasses paper reports, websites and news media; however, there is little evidence in the literature that describes which method of distribution is more effective. Direct engagement may get information and key messages distributed, without the use of traditional reporting material. The authors found no studies to evaluate effective accountability. Three studies found improvement among quality measures (i.e. number of health regions that are using a report in their planning, number of referenced journal citations, number of media stories) after the implementation of public reporting.		Health Forum)			

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
	Examining the factors associated with dissemination of performance information and continuous improvement (70)	The review focused on potential factors that are associated with the dissemination of performance information in health organizations. Dissemination is not enough to produce improvement initiatives, but depends on the cohesion of interrelated factors, which include: context of governance; organizational context of potential users; nature of knowledge; and processes and incentives. Coherence is an important factor on the dissemination of performance information, as organizations that value cumulative knowledge-based changes are more likely to succeed. Producers of knowledge and potential users play a key role in dissemination of performance information. Knowledge producers play a key role through their leadership and credibility during knowledge dissemination and providing user support. Potential users are important to develop user capacity to interpret the information and apply changes. The review suggests that managers and clinicians are the preferred beneficiary of performance information due to their key roles in a health system. The review suggests that it is preferable to use more than one incentive, but also to ensure balance between the incentives used, and ensure that they are in line with the context of system governance.	2010	3/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	Not reported in detail

Appendix 2: Systematic reviews relevant to Option 2 – Support the increased uptake of pain and symptom management guidelines by healthcare providers and organizations through targeted payments

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
Changing provider remuneration mechanisms to include bonus payments for those who engage in efforts to promote the uptake of symptom management guidelines	Evaluating the effectiveness of financial incentives on healthcare behaviours and patient outcomes (55)	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. 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. 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 medium- quality of evidence of the studies included in each review. Payment for working for a specified time period was generally ineffective, improving 3/11 outcomes from one study reported in one review. Payment for each service, episode or visit, providing care for a patient or specific population, and providing a pre-specified level or providing a change in activity or quality of care, were all generally effective. Mixed and other systems were of mixed effectiveness. Assessing the effect of financial incentives overall across categories of outcomes, they were: of mixed effectiveness on consultation or visit rates; generally effective in improving processes of care; generally effective in improving referrals and admissions; generally ineffective in improving compliance with guidelines outcomes; and generally effective in improving prescribing costs outcomes.	2010	No rating tool available for this type of document	Not reported in detail	Not reported in detail	Not reported in detail
	Examining the effectiveness of results-based financing for achieving health goals (73)	The overview of systematic reviews suggests financial incentives targeting recipients of healthcare and individual healthcare providers could be effective for short-term outcomes (i.e. improved access to health services), particularly in low- and middle-income countries. Results-based financing have undesirable behaviours such as	2007	No rating tool available for this type of document	N/A	N/A	N/A

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		motivating unintended behaviours, distortion effect (ignoring other tasks that are not rewarded), gaming (changes in reporting rather than changes in practice), inaccessibility for high-risk patients, corruption, widening the resource gap between the rich and poor, dependency, demoralization, bureaucracy, and dilution of providers' intrinsic motivation of doing their job well. There is limited evidence of the effectiveness and cost-effectiveness of results-based financing for the long term.					
	Evaluating the effects of pay-for-performance remuneration targeting individual healthcare providers (75)	The effect of pay-for-performance targeting individual healthcare providers on the quality of care and outcomes are largely unclear due to insufficient evidence. There is mixed evidence among the 10 studies that focused on the effect of pay-for-performance on preventive care or screening. Uncontrolled studies suggested that pay-for-performance improves quality of care (i.e. measles/mumps/rubella vaccination rates, colorectal cancer screening, glycosylated hemoglobin monitoring), but higher-quality studies with controls could not confirm these findings. However, controlled before-after studies demonstrated that cervical cancer screening and influenza vaccination rates improved significantly in pay-for-performance programs. Additionally, a non-randomized controlled study found no significant differences in rates of papanicolaou smears, mammography, or childhood immunizations. Twenty studies that focused on the effect of pay-for-performance on quality of care for chronic conditions reported mixed results. Two randomized controlled studies reported low success rates for smoking cessation among pay-for-performance programs. Among five interrupted time series studies, two studies did not detect any improvement in processes of care or clinical outcomes (i.e. blood pressure measurement, rate of initiating antihypertensive treatment, number of antihypertensive drugs prescribed per patient). One study reported improvement in guideline adherence, and two studies found	2012	9/10 (AMSTAR rating from McMaster Health Forum)	1/30	0/30	0/30

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		statistically significant improvements in blood pressure in patients with diabetes. The authors noted there are potential unintended consequences such as the decline of continuity of care among patients, job satisfaction among individual physicians, gaming, and falsifying data.					
	Examining the effects of financial incentives on drug use, healthcare utilization, health outcomes and costs of policies for prescribers (76)	Overall, there is weak evidence to support that drug budgets many decrease the volume of prescriptions and drug expenditure. No studies on the effects of pay-for-performance were identified.	2005	9/11 (AMSTAR rating from www.rxforchange.ca)	0/13	0/13	0/13
	Evaluating the effects of target payments on the practice of primary-care physicians and healthcare outcomes (77)	The review identified only two studies that evaluated the impact of target payments on the professional practice of primary -are physicians. One study reported improvements in immunization rates following primary-care physicians receiving target payments (5.9% higher than the control group); however, the results were not statistically significant. The second study found an improvement in primary and pre-school immunization rates; however, there was no evidence that the overall trend had changed as a result of the introduction of target payments to primary-care physicians. Therefore, there is insufficient evidence to attribute the increase in immunization rates between primary and pre-school children to target payments. The evidence from the studies identified in the review is not sufficient to determine the impact and cost-effectiveness of target payments on primary care practice and healthcare outcomes.	1997	10/11 (AMSTAR rating from McMaster Health Forum)	0/2	0/2	0/2
	Examining the effects of financial incentives on quality improvement (74)	Five of six studies found partial or positive effects of financial incentives directed at individual physicians. One study found an overall 25.3% improvement in immunizations among a pediatric population following incentives for physicians. However, the authors noted that	2005	6/11 (AMSTAR rating from McMaster Health	0/17	0/17	0/17

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		the sample size for the study was relatively small.		Forum)			
Change organizational funding mechanisms to include bonus payments for healthcare providers and/or organizations who are able to meet specific targets	Examining the effects of pay-for-performance, surgical safety checklists and practice guidelines to improve quality of care (81)	Pay-for-performance has a small and highly context specific effect on improving quality of care. Stakeholder improvement in design and evaluation of measures followed by strong dissemination processes further enhanced improvement. The review found that pay-for-performance had a greater effect on low performers than high performers, especially when paying clinicians rather than hospitals. An increase in health inequalities especially among high-risk patients is a potential unintended consequence of pay-for-performance.	2010	1/10 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	Not reported in detail
	Examining the effects of financial incentives on quality improvement (74)	One study that focused on financial incentives provided at the payment system level found improved health and lower overall healthcare expenditure. The authors cannot conclude from a single study that financial incentives are cost-effective. Nine studies focused on the effect of pay-for-performance on quality of healthcare. The domains of quality were defined as access to care (timely and appropriate healthcare), structure of care (healthcare organization), process of care (healthcare service provided to a patient), outcomes of care (health state after care), and patient experience of care. Seven of nine studies that evaluated the use of financial incentives directed to provider groups found partial or positive effects on measures of quality of care (i.e. improvement in rates of screening and immunization). Four studies indicated that there are potential unintended consequences of financial incentives such as the increase in health inequalities especially among high-risk patients or most severely ill patients (adverse selection), and gaming (changes in reporting rather than changes in practice). The authors suggested further research is needed to determine the effectiveness of financial incentives and other possible unintended consequences on quality of care.	2005	6/11 (AMSTAR rating from McMaster Health Forum)	0/17	0/17	0/17

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
	Examining pay-for-performance on quality improvement (78)	There is limited and weak evidence regarding the effectiveness of pay-for-performance in healthcare. Most of the studies yielded null results, while only two positive findings were shown through improved compliance with preventive healthcare guidelines. The review indicated possible unintended consequences to pay-for-performance such as gaming and adverse selection (selecting healthier patients over high-risk patients). The authors indicated that unilateral, small-scale bonus arrangements will be insufficient to motivate substantial changes to healthcare.	2003	5/10 (AMSTAR rating from McMaster Health Forum)	0/6	Not reported in detail	Not reported in detail
	Examining the effects of service delivery initiatives (SDIs) on wait times within radiology departments (83)	The authors identified service delivery initiatives (SDI) that may improve patients' waiting times in clinical radiology departments, which included: extended scope of practice; quality management; productivity-enhancing technologies; multiple interventions; outsourcing; and pay-for-performance. Only one study among the 57 studies focused on pay-for-performance, and indicated there were significant reduced time intervals between the completion of an examination and the finalized radiology report among all clinical radiology departments.	2013	6/10 (AMSTAR rating from McMaster Health Forum)	0/57	0/57	0/57
	Examining the impact of quality and outcomes framework on quality of primary care (85)	The review focused on the Quality and Outcomes Framework (QOF) which involves financial incentives and information technology (computerized prompts and decision support) to improve health outcomes. Forty-seven studies that assessed the effectiveness of QOF found that the framework consolidated evidence-based methods by increasing the use of computers, decision support, clinician prompts, patient reminders, and recalls. It resulted in better recorded care, enhanced processes, and teamwork among healthcare providers. Improvements were seen at a faster rate than the measured baseline. In some studies, there were modest cost-effective reductions in mortality and hospital admissions.	2011	3/9 (AMSTAR rating from McMaster Health Forum)	0/94	0/94	0/94

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		There is limited evidence on the impact of the QOF on efficiency and costs. Twenty-five studies that focused on the impact of the QOF on equity found narrowed health inequalities among low socio-economic individuals, among different age groups, and across ethnicities. Disparities between men (who more often receive better care) and women for cardiovascular disease and diabetes persisted or increased. Seven studies identified the impact of the QOF on patient experience, and found that there were no significant changes in quality of care in nursing care, coordination, or overall satisfaction.					
	Examining the effects of pay-for-performance schemes in the delivery of chronic disease management (80)	Five studies evaluated the effects of pay-for-performance on healthcare quality. These studies showed positive effects of pay-for-performance on healthcare quality (i.e. improvement of quality and continuity of care, and enrolment of patients in disease management programs). The review identified that pay-for-performance may be more effective when payment is based on scoring process-based incentives, a blend of individual and group-level incentives, or rewarding absolute performance. Most of the pay-for-performance schemes were part of an integrated approach rather than a sole implementation. Thus, the authors noted that it is not possible to determine the characteristics of pay-for-performance schemes that may contribute to improved healthcare quality. No studies were found that evaluated the effects of pay-for-performance on healthcare costs. A potential negative consequence is known as "distortion effect", where pay-for-performance aspects are prioritized over tasks that are not included in the pay-for-performance scheme.	2010	2/9 (AMSTAR rating from McMaster Health Forum)	0/8	0/8	0/8
	Examining the effects of pay-for-performance	Only three of the eight studies included a control group to evaluate the effect of pay-for-performance programs.	2007	4/9 (AMSTAR	0/8	0/8	0/8

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
	on clinical process measures, patient outcomes and experience, safety, and resource utilization (84)	Among these studies, there was a consistent 2-4%improvement in pay-for-performance than in the control groups. Two studies found a decrease in complication rates and length of stay among surgical and obstetric patients. Patient satisfaction increased from 78% to 79%. However, these studies did not include a control group. One study estimated the cost-effectiveness of a pay-for-performance program (Blue Cross Blue Shield of Michigan Participating Hospital Agreement Incentive Program), and found that the observed improvements on process measures had savings of 733 to 1.701 Quality Adjusted Life Years nd determined that the program is cost-effective. One study surveyed hospitals on pay-for-performance programs and whether these programs induced structural changes. 75% of the respondents indicated that they made at least one change. However, the quality improvement may not correlate with performance improvement.		rating from McMaster Health Forum)			
	Examining the effects of pay-for-performance on clinical effectiveness, access and equity, coordination and continuity, patient-centredness, cost effectiveness (87)	Effect domains include clinical effectiveness, access and equity, coordination and continuity, patient-centredness, and cost-effectiveness. There was mixed evidence on the clinical effectiveness of pay-for-performance. Positive clinical effects were seen in chronic care (i.e. diabetes, asthma, smoking cessation). A null effect was seen in acute care and coronary heart disease care. The 28 studies that assessed the access and equity of care found no negative effects on patients of certain age groups, ethnicity, or socio-economic status. Four of the 28 studies found a small difference in access to care between men and women, where men had more access. There is limited evidence on the impact of coordination and continuity of care, patient-centredness and cost-effectiveness. Three studies that focused on the impact of pay-for-performance on patient-centredness found no significant effect. Four studies found positive effects of	2009	7/10 (AMSTAR rating from McMaster Health Forum)	0/128	0/128	0/128

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		cost-effectiveness of pay-for-performance. There is limited evidence to draw firm conclusions about gaming and other unintended consequences. The authors made six recommendations based on evidence from the 128 studies: 1) select and define pay-for-performance targets based on baseline room for improvement; 2) utilize process and outcome indicators as target measures; 3) involve stakeholders throughout development, implementation and evaluation; 4) implement uniform pay-for-performance design; 5) focus on quality improvement and achievement; and 6) distribute incentives at the individual level and/or at the team level.					
	Examining the meaning and the use of the concept of performance-based payment (86)	The review found little consensus about the meaning or the concept of performance-based payment (PBP). Most of the studies indicated PBP is a way to increase accountability, efficiency and equity of service delivery. However, there is a lack of evidence on the effectiveness of PBP due to inconsistent methodology among the studies. Further research is needed about the appropriateness of transferring PBP schemes to LMIC, how performance is defined and measured, appropriateness and achievability of performance targets, long-term effects, cost-effectiveness and unintended consequences.	2008	3/9 (AMSTAR rating from McMaster Health Forum)	0/27	0/27	0/27
	Reviewing pay-for-performance programs in nine countries(79)	The review identified 13 pay-for-performance programs, which all had the following common features: incentivized clinical quality, positive incentives, involving healthcare providers throughout program design, targeting primary care providers, and pay on an annual basis. The current pay-for-performance programs are lacking aspects to prevent undesired behaviour and unintended consequences. The authors suggest creating reliable and easy-to-apply methods for processing patient-level data, improving coordination and alignment of incentives for all providers in the continuum of care, and evaluating programs	Not reported in detail	4/10 (AMSTAR rating from McMaster Health Forum)	2/54	0/54	0/54

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		to assess the overall effectiveness. Overall, there is limited evidence to draw conclusions about the effectiveness of pay-for-performance in healthcare.					
	Examining economic evaluations of pay-for-performance in healthcare delivery (108)	Nine studies were identified as economic evaluations of pay-for-performance programs. Three studies were full economic evaluations (type I studies), and six studies were partial economic evaluations with either separate cost-effect evaluations or cost comparisons (type II and IV respectively). The review did not find any type III studies, where only the program costs are evaluated, but that make inference regarding the possible impact on quality. Type I studies showed improvements in quality of care (i.e. heart care, increase referrals of smokers to a quit-line, improved immunization rates in the elderly). Based on these studies, pay-for-performance efficiency could not be determined. Partial economic evaluations indicated mixed results, but with significant flaws in methodology. Type II studies demonstrated improved quality of care (i.e. increases in follow-up visits and physical examinations, access to healthcare, residents' health status); however these programs were not cost-effective. Among the type II studies, one program that used relative targets with a small incentive size, and a penalty for low performers, was demonstrated to be inefficient in the reduction of mortality. Type IV studies showed a positive financial impact, but were heavily flawed in methodology. Overall, pay-for-performance efficiency could not be determined due to the limited and inconclusive evidence.	2010	6/10 (AMSTAR rating from McMaster Health Forum)	0/9	0/9	0/9
	Examining the effects of performance incentive programs on racial disparities in healthcare(82)	The review identified only one study about the effects of performance incentive programs on racial disparities in healthcare. The study identified coronary artery bypass graft (CABG) rates for different ethnicities among U.S. states that have or do not have a reporting program. The study found that Caucasians were more likely to receive CABGs; this	2006	4/9 (AMSTAR rating from McMaster Health Forum)	0/1	0/1	0/1

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		disparity seemingly increased among hospitals that had public reporting programs. The review cannot draw conclusions on whether reporting programs increase disparities. The authors conducted interviews with 15 performance incentive programs and found that current programs do not have the characteristics to reduce disparities. The authors suggest the following recommendations: collection of racial and ethnic information; implementing tailored programs for minority subgroups; evading "cherry-picking"; and limiting the resource gap between high-income and low-income populations.					

Appendix 3: Systematic reviews relevant to Option 3 – Strengthen the models of cancer care to optimize the integration of pain and symptom management best practices

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
Developing referral and transition protocols that prompt healthcare providers to provide a comprehensive overview of each patient's existing pain and symptom management needs at the time of transition	Examining transitions to palliative care for older people in acute hospitals and identify the best practice considered by clinicians and service users (88)	This review explores how transitions to a palliative care approach are managed and experienced in acute hospitals. It also attempted to identify best practice from the perspective of clinicians and service users, and examined the extent of potentially avoidable hospital admissions amongst hospital in-patients with palliative care needs. The most common Gold Standards Framework (GSF) prognostic indicator is frailty, with nearly one-third of patients meeting these criteria. There are very poor levels of agreement between medical and nursing staff with the GSF in identifying patients with palliative care needs. Interviews with patients found that many of those interviewed had little insight into their understanding of their prognosis or trajectory of the disease. There is also evidence that shows for more than half of patients who died following admission to hospital there was some evidence of a transition to a palliative care approach prior to death. There is a common perception among healthcare providers that 'old age' was a barrier to accessing specialist palliative care. The review found that patients with palliative care needs represent a large proportion of the acute hospital inpatient population, and that there are gaps in NHS policy in palliative and end-of-life care management in England and with current practice.	2013	9/10 (AMSTAR rating from McMaster Health Forum's Impact Lab)	0/12	0/12	0/12
	(Review protocol) Socio-economic inequalities in patient, primary care, referral, diagnostic and treatment intervals on the lung cancer care pathway: Systematic review and meta-analysis (104)	Thirty-three studies are included in the interim results of the review. Socio-economic inequalities in stage at diagnosis were not found in the meta-analysis for lung cancer when comparing the most deprived and least deprived groups (n= 5, odds ratio= 1.04, 95% confidence interval= 0.89 to 1.20). No consistent pattern was observed in pre-diagnostic intervals. The review reported no socio-economic inequalities in the length of time from diagnosis to first treatment.	2015	N/A	N/A	N/A	N/A

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
	(Preliminary results published as conference abstract) Socio-economic inequalities in stage at diagnosis, and in time from first symptom to treatment, for lung cancer: Systematic review and meta-analysis(105)						
	Evaluating the clinical effects and costs for four different strategies for follow-up after breast cancer treatment (109)	This economic evaluation evaluates the clinical effects and costs of four different strategies for follow-up after breast cancer treatment in the Netherlands. The strategies evaluated the current practice where of breast cancer patients having the first five years of follow-up in a hospital with annual mammography. For patients over age 60 who have undergone mastectomy, care is shifted to the National Screening Programme (NSP) for biennial mammography and annual physical examination. After breast-conserving therapy, follow-up is performed by the general practitioner (GP), with mammography every second year and physical examination annually. In the second strategy, follow-up time in hospitals was shortened by a shift of care from the hospital to the NSP or GP after two years. In the third strategy, hospital follow-up time is reduced through shifting care from the hospital to the NSP or GP after two years and lowering the referral age from 60 to 50 years. The fourth strategy is the same as the third with the addition of terminating annual physical examinations in general practice. Shortening the follow-up time in hospital by shifting care to the NSP or GP after two instead of fiveyears of hospital follow-up, lowering the age of referral to the NSP or GP from 60 to 50 years, and termination of annual physical examination by the GP after hospital follow-up did not lead to a decrease in tumour detection. Moreover, a substantial decrease in costs was observed with follow-up. Decreasing hospital follow-up time, lowering the age of referral to the NSP or GP, and termination of annual physical examinations would lead to a substantial	2012	N/A	N/A	N/A	N/A

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		reduction in costs and maintain levels of breast cancer detection.					
	Identifying organization models in cancer pain management containing integrated care processes, and its effectiveness (89)	This review aims to identify organization models in cancer pain management that involve integrated care processes and their effectiveness. Institutional models, clinical pathways and consultation services are models for the integration of care processes in cancer pain management. The clinical pathway is a holistic institutionalization model and consultation services are 'stand-alone' models that can be integrated into a clinical pathway. There is limited evidence to suggest that patients have reported positive outcomes for all of the models. Evidence also suggests that standardized measurements of both patient and process outcomes should involve evaluation of the quality of pain management.	2006	5/11 (AMSTAR rating from www.rxforchange.ca)	0/12	0/12	12/12
Electronically linking patient records (including information about their pain and symptom management needs) across providers and settings	Examining the effects and benefits of electronic symptom reporting between patient and provider for improved healthcare service quality (110)	The aim of this review is to understand components of the field including patient groups, health service innovations, and research targets relevant to electronic symptom reporting. It found that RCT-based research on electronic symptom reporting has significantly grown since 2002. Much of this research is conducted in western countries. Most included studies focused on long-term conditions. Four categories of health service innovations were identified: consultation support, monitoring with clinician support, self-management with clinician support, and therapy. Most of the research is conducted within four combinations: consultation support innovation in the cancer group, monitoring innovation in the respiratory and lung diseases group, and self-management innovations in psychiatry, and in the respiratory and lung diseases group. Research targets in the consultation support studies focused on increased patient centredness, while monitoring and self-management mainly aimed at	N/A	8/10 (AMSTAR rating from McMaster Health Forum)	0/32	0/32	0/32

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		documenting health benefits. Research focused on additional patient groups or new combinations of patient groups within the four identified health service innovations will grow in the future. Evidence suggests developing a generic model for electronic patient symptom reporting for long-term conditions may have benefits for the field.					
	Examining the factors associated with clinician or patient acceptance of computerized decision support systems and its cost-effectiveness in diagnostic, screening or monitoring order communication systems in comparison to order communication systems without computerized decision support systems (93)	The aim is to investigate which computerized decision support systems (CDSS) in order communication systems (OCS) are used in the U.K., and the impact of CDSS in OCS for diagnostic, screening or monitoring test ordering compared to OCS in the absence of CDSS. Moreover, to also determine what CDSS features are related to clinician/patient acceptance, and the cost-effectiveness of CDSS in diagnostic, screening or monitoring test OCS compared to OCS without CDSS. There was not enough evidence to address which CDSS in order communication systems (OCS) for test ordering is used predominantly within the U.K., or the main characteristics and intended scope of use. CDSS showed a statistically significant benefit on either process or practitioner performance outcomes in nearly two-thirds of studies. Those studies focused on the impact of CDSS plus OCS versus OCS alone reported results that were mixed and equivocal. Evidence shows no significant detrimental effects in terms of additional utilization of healthcare resources, or adverse events, were observed. There is no evidence on the use of CDSS for curtailing unnecessary tests or increasing test appropriateness, and their timing can potentially improve healthcare outcomes. No evidence was found to assess the features of CDSS that are associated with clinician or patient acceptance of CDSS in OCS in the test ordering process. Limited data was available on the cost-effectiveness of CDSS plus OCS	2009	8/10 (AMSTAR rating from McMaster Health Forum)	0/23	0/23	0/23

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		compared with OCS alone.					
	Evaluating the effects of interactive communication between collaborating primary-care physicians and specialists on outcomes for patients with diabetes, psychiatric conditions, or cancer (94)	Evidence suggests that interactive communication is associated with improved patient outcomes. Although this meta-analysis focused specifically on collaborations with psychiatrists and endocrinologists, evidence suggests there is a high potential of interactive communication to improve the effect of collaboration. There is evidence that shows that effectiveness is enhanced by interventions to improve the quality of information exchange. Moreover, no significant difference in effect sizes between studies based in integrated systems and those based in non-integrated systems was found, given concerns about the generalizability of evidence on collaboration to typical primary care practices outside of large integrated healthcare systems.	2008	7/11 (AMSTAR rating from McMaster Health Forum)	2/23	0/23	0/23
	Identifying and evaluating interventions for improved patient safety in chemotherapy care (95)	The aim of this review was to identify and evaluate intervention safety for patients undergoing chemotherapy care. The following interventions were described: Computerized Prescription Order Entry (CPOE), Failure Mode and Effect Analysis (FMEA) and Lean Sigma, Error reporting and surveillance systems, Administration Checklist, and Education for nurses. There is weak evidence to suggest that the five interventions showed positive outcomes with relation to patient safety. There is some high-quality evidence to suggest that computerized chemotherapy prescriptions were significantly safer than manual prescription. More evidence is needed to assess the effect of these and other interventions on improving patient safety in chemotherapy.	2011	7/10 (AMSTAR rating from McMaster Health Forum)	1/12	0/12	0/12
	Evaluating the effectiveness of interventions directed to improve continuity of cancer care on patient, healthcare provider and process outcomes (90)	The aim of this review was to classify, describe and evaluate the effectiveness of interventions aiming to improve continuity of cancer care on patient, healthcare provider and process outcomes. Case management, shared care, and interdisciplinary team were the models investigated. Moreover, the interventional	2009	9/11 (AMSTAR rating from McMaster Health Forum)	4/50	0/50	0/50

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		strategies explored were: patient-held record, telephone follow-up, communication and case discussion between distant healthcare providers, change in medical record system, care protocols, directives and guidelines, and coordination of assessments and treatment. There is no significant difference in patient health-related outcomes between patients assigned to interventions and those on usual care. There is limited evidence that reported on the psychological health, satisfaction of providers, or process of care measures. Therefore a conclusion on the effectiveness of included interventions to improve continuity of care on patient, healthcare provider or process of care outcomes cannot be made.					
	Examining the impact of health information technology (HIT) or health information systems (HIS) on the quality of healthcare, clinicians' adherence to evidence-based guidelines and the impact on patient clinical outcomes (91)	The aim of this study was to review the impact of health information technology (HIT) on the quality of healthcare, focusing on clinicians' adherence to evidence-based guidelines and the impact of this on patient clinical outcomes. Interventions examined included Electronic Health Record (EHR), Computerized Provider Order-Entry (CPOE), or Decision Support System (DSS).There were limited studies which included an assessment of patient outcomes and showed significant improvements. Evidence shows the wide scale use of HIT increases clinician's adherence to guidelines.	2008	5/10 (AMSTAR rating from McMaster Health Forum)	1/23	0/23	0/23
	Examining the feasibility, effectiveness and use of computerized decision-support systems in chronic pain management (96)	The aim of this review was to examine the use of Computerized decision-support systems (CDSSs) in chronic pain management, and to review the evidence for their feasibility and effectiveness. In the evidence reviewed, all CDSSs were designed to assist clinicians to manage pain. Patient and clinician acceptability ratings of CDSSs ranged from moderate to high. Due to limited data, conclusions concerning the impact of CDSSs on provider performance and patient outcomes are not possible. Research on CDSSs in chronic pain management is	2006	4/10 (AMSTAR rating from McMaster Health Forum)	0/9	0/9	0/9

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		limited. There is very limited evidence on the effects of CDSSs on provider and patient outcomes.					
Improving the extent to which the full range of healthcare providers involved in pain and symptom management engage in team-based and collaborative care	Examining the effectiveness of cancer care teams (97)	The aim of this review was to assess team-based cancer care. The review identified limited but positive findings on the effectiveness of multidisciplinary care teams (MDTs) for cancer care. MDTs involve primary care physician-led teams that include registered nurses, nursing assistants, and a desk clerk, and those involved in other disciplines (e.g. oncology, pathology, radiology, surgery, and nursing). There was an increase in guideline-compliant follow-up and improved timeliness after screening when MDTs were involved. The review also reported improved adherence to pain medication, pain control, planning of therapy and adherence to recommended perspective assessments. All 16 studies demonstrated improvement in one or more of the patient metrics of care (e.g. satisfaction with care experience, quality of life, and mortality). However, the majority of the studies focused on evaluating the effects of MDTs during active treatment, with a limited number of studies focusing on the impact of team-based approaches to screening or diagnosis, and palliative care or end-of-life care. There is little evidence on linking MDTs to patient survival. The included studies did not evaluate teamwork processes, which consequently do not provide information about which processes were successful for MDTs.	2014	4/10 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	0/16	2/16
Adopting new or strengthening existing home pain and symptom management services, including remote-monitoring, web-based and telehealth services, self-management support and support for informal/family	Examining the use and usability of patient-provider asynchronous communication for chronically ill patients and the effects of asynchronous communication on health behaviour, health outcomes, and patient satisfaction (98)	The aim of this study was to review the use and usability of patient-provider asynchronous communication for chronically ill patients while also exploring the effects of such communication on health behaviour, health outcomes, and patient satisfaction. There is evidence that patients' knowledge about their chronic condition increased and they showed appreciation for asynchronous communication with their providers by having specific questions and communicating feelings of illness. They not only had specific questions but also	2013	5/9 (AMSTAR rating from McMaster Health Forum)	0/15	0/15	0/15

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
caregivers.		wanted to communicate about feeling ill. Increases in self-management/self-efficacy for patients with back pain, dyspnea or heart failure were found. There is some evidence that shows improved health outcomes. The effect of asynchronous communication is not shown unequivocally in these studies so a definite conclusion cannot be made.					
	Examining the effects and benefits of electronic symptom reporting between patient and provider for improved healthcare service quality (110)	The aim of this review was to assess the methodological quality of the electronic symptom reporting RCTs, and summarize their effects and benefits. There is evidence to suggest self-management interventions are equally effective or better than the control options for patients, healthcare providers and the healthcare system. The evidence in the field of electronic symptom reporting is generally of low quality. The field would benefit from increased focus on methods for conducting and reporting RCTs, particularly improvements in the blinding of outcome assessment and the precise definition of primary outcomes to, avoid selective reporting. Supporting self-management seems to be especially promising, but consultation support also shows encouraging results.	N/A	8/10 (AMSTAR rating from McMaster Health Forum)	0/32	0/32	0/32
	Evaluating internet-delivered psychological therapies for the management of chronic pain in adults (99)	The aim of this review was to evaluate internet-delivered psychological therapies that improve pain symptoms, reduce disability, and improve depression and anxiety for adults with chronic pain. There is limited evidence regarding the effectiveness of psychological therapies delivered via the internet in participants with headache conditions. Psychological therapies reduced pain and disability post-treatment. No clear evidence of benefit is found for depression and anxiety. For participants with non-headache conditions, there is evidence that psychological therapies delivered via	2013	7/11 (AMSTAR rating from McMaster Health Forum)	0/15	0/15	15/15

Option element	**Focus of systematic review or economic evaluation**	**Key findings**	**Year of last search**	**AMSTAR (quality) rating**	**Proportion of studies that were conducted in Canada**	**Proportion of studies that deal explicitly with one of the prioritized groups**	**Proportion of studies that focused on pain and symptom management**
		the internet reduced pain, disability, depression and anxiety post-treatment. Follow-ups found the positive effects on disability were maintained.					
	Examining the antidepressant effect of exercise in cancer survivors (100)	The aim of this study was determine the antidepressant effect of exercise in cancer survivors. Evidence exists to suggest that exercise has modest positive effects on depressive symptoms with larger benefits found in supervised or partially supervised programs, not at home, and at least half an hour in duration.	2011	7/11 (AMSTAR rating from McMaster Health Forum)	4/14	0/14	0/14
	Examining the effect of psychosocial interventions to reduce pain in cancer patients (101)	This study aimed to obtain a comprehensive estimate of the effect of psychosocial interventions on pain. Psychosocial interventions had medium-size effects on both pain severity and interference.	2010	7/11 (AMSTAR rating from McMaster Health Forum)	3/37	0/37	37/37
	Examining self-care and end-of-life care for advanced cancer patients (41)	The aim of the review was to assess the clinical effectiveness of interventions for managing the illness of patients by themselves who were experiencing end-of-life care at advanced stages of cancer. There is evidence that educational programs with a cognitive-behavioural approach were more successful in improving care by improving control, knowledge and attitudes to pain medication, and improving communication with providers about pain. Pain levels through this intervention were significantly reduced. There is evidence that reported reduced symptom distress and improvements in pain and psychological symptoms, and information where some patients became more prepared for end of life.	2008	6/10 (AMSTAR rating from McMaster Health Forum)	3/18	0/18	0/18
	Evaluating the efficacy and the cost-effectiveness of a tailored barriers interventions (TBI) for cancer pain management (103)	This economic evaluation tested the efficacy and effectiveness of tailored barriers interventions, which included tailored information about pain management by telephone and printed resources sent by mail. The evaluation tested participants' attitudinal barriers towards reporting pain and using analgesics. At follow-up, 60.7% of participants in the TBI group experienced a decrease in barriers scores (i.e. changed negative attitudes about reporting pain and using analgesics), in comparison to	2009	N/A	N/A	N/A	N/A

Option element	Focus of systematic review or economic evaluation	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pain and symptom management
		decreased scores experienced by 44.9% of participants in the assessment-alone group (i.e. baseline measurements with no intervention). The average cost-effectiveness for the intervention group was $7.18, and the assessment-only group was $7.09, showing that the cost-effectiveness is similar between the two groups. Overall, TBI has a beneficial effect on attitudes that are considered barriers to effective pain management. However, TBI did not affect outcomes such as pain severity, duration and interference.					
	Evaluating the cost consequences of home visits by specially trained nurses after discharge from multidisciplinary pain care for chronic non-malignant pain patients (102)	This economic evaluation reported on the cost consequences of nurse follow-up intervention for cancer patients discharged from pain treatment. This intervention included home visits to help maintain relevant pharmacotherapy, guide patients with coping strategies and knowledge about pain management, and detect symptoms of pain-associated depression. The economic evaluation found that the intervention did not improve patients' health, as there were no statistically significant differences between the control and intervention group. The control group's healthcare resource expenditure totalled €7,464, while the intervention group totalled 4,004€. However, the cost analysis indicated that this difference was not statistically significant.	2008	N/A	N/A	N/A	N/A

>> Contact us

McMaster Health Forum
1280 Main St. West, MML-417
Hamilton, ON Canada L8S 4L6
Tel: +1.905.525.9140 x 22121
Email: mhf@mcmaster.ca

>> Follow us

mcmasterhealthforum.org
healthsystemsevidence.org
healthsystemslearning.org

tinyurl.com/mhf-**YouTube**
tinyurl.com/mhf-**Facebook**
tinyurl.com/mhf-**Twitter**

EVIDENCE >> INSIGHT >> ACTION