Rapid Synthesis

Fostering an organizational culture supportive of evidence-informed policymaking

3 November 2017

McMaster University | McMaster HEALTH FORUM

EVIDENCE >> INSIGHT >> ACTION

Rapid Synthesis:
Fostering an Organizational Culture Supportive of Evidence-informed Policymaking
10-day response

3 November 2017

McMaster Health Forum

The McMaster Health Forum's goal is to generate action on the pressing health-system issues of our time, based on the best available research evidence and systematically elicited citizen values and stakeholder insights. We aim to strengthen health systems – locally, nationally, and internationally – and get the right programs, services and drugs to the people who need them.

Authors

François-Pierre Gauvin, PhD, Scientific Lead, Evidence Synthesis and Francophone Outreach, McMaster Health Forum

Kerry Waddell, M.Sc., Co-lead Evidence Synthesis, McMaster Health Forum

John N. Lavis, MD, PhD, Director, McMaster Health Forum, and Professor, McMaster University

Timeline

Rapid syntheses can be requested in a three-, 10- or 30-business-day timeframe. This synthesis was prepared over a 10-business-day timeframe. An overview of what can be provided and what cannot be provided in each of the different timelines is provided on the McMaster Health Forum's Rapid Response program webpage (www.mcmasterforum.org/find-evidence/rapid-response).

Funding

The rapid-response program through which this synthesis was prepared is funded by the Government of British Columbia. The McMaster Health Forum receives both financial and in-kind support from McMaster University. The views expressed in the rapid synthesis are the views of the authors and should not be taken to represent the views of the Government of British Columbia.

Conflict of interest

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

Merit review

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

Acknowledgments

The authors wish to thank Eilish Scallan for her assistance with identifying, reviewing and synthesizing literature. We are especially grateful to Michael Hillmer and Mathieu Ouimet for their insightful comments and suggestions.

Citation

Gauvin FP, Waddell K, Lavis JN. Rapid synthesis: Fostering an organizational culture supportive of evidence-informed policies. Hamilton, Canada: McMaster Health Forum, 3 November 2017.

Product registration numbers

ISSN 2292-7999 (online)

KEY MESSAGES

Question

- What is known about strategies to foster an organizational culture supportive of evidence-informed policymaking?

Why the issue is important

- Health-system policymakers are increasingly expected to use research evidence in their work.
- There are several challenges to using research evidence to inform policymaking (for example, research evidence competes with many other factors in the policymaking process and is not always valued as an information input).
- It is believed that health-system leaders could leverage 'organizational culture' to improve evidence use, but they often lack strategies to do so.
- In response to this challenge, this rapid synthesis aims to identify what is known about strategies to foster an organizational culture supportive of evidence-informed policymaking.

What we found

- We identified a total of 21 relevant documents, including one overview of systematic reviews, eight systematic reviews, four non-systematic review, seven primary studies, and one assessment tool.
- Most of the retrieved literature focuses on identifying barriers and facilitators to foster a culture shift or to increase policymakers' use of research evidence, and there was a paucity of literature examining the effectiveness of interventions to foster an organizational culture supportive of evidence-informed policymaking.
- Findings from the literature were grouped into three domains: 1) measuring organizational culture change and organizational readiness for change; 2) fostering organizational culture change (and its barriers and facilitators); and 3) sustaining organizational culture change. We address each domain in turn below and note the few instances where the findings are specific to an organizational culture supportive of evidence-informed policymaking (as opposed to findings about organizational culture in general that can be applied to the specific instance of evidence-informed policymaking).
- We found several tools to measure organizational culture and organizational readiness for change, but only one evaluating specifically how policymakers' engage with and use research evidence.
- The literature on fostering organizational culture change found:
    - relatively little evidence quantifying the extent to which decision-makers use evidence;
    - a variety of factors influencing organizational culture change (e.g., types of change, degree of change, financial stability of the organization, strategy fit between the proposed change and the organization, public opinion, staff perceptions, and readiness for change of internal and external stakeholders); and
    - some interventions that appear promising to improve decision-makers' use of evidence (e.g., communication and access to evidence interventions when coupled with efforts to increase motivation; interventions that built skills when coupled with efforts to enhance motivation; light-touch interactions between researchers and decision-makers; bulletins used to summarize findings from systematic reviews when they present a clear message, propose achievable change, and where there is a growing evidence base that change is required).
- The literature on sustaining cultural changes in health organizations found:
    - strategies that can be used to manage culture change include identifying existing commitments and connections, thinking about what needs to be changed, understanding management, practising and piloting the change, and capitalizing on existing momentum; and
    - six guiding principles to influence the sustainability of organizational culture change: align vision and action; make incremental change; foster distributed leadership; promote staff engagement; create collaborative interpersonal relationships; and continually assess and learn from cultural change.

QUESTION

- What is known about strategies to foster an organizational culture supportive of evidence-informed policymaking?

WHY THE ISSUE IS IMPORTANT

Health-system policymakers are increasingly expected to use research evidence in their day-to-day activities. Growing calls for 'evidence-based' or 'evidence-informed' policymaking highlight the need to use the best available research evidence – systematically and transparently – in the time available to set agendas, formulate policies, implement policies, and monitor and evaluate policies.(1)

Research evidence can be used in different ways by policymakers. Ways to use research evidence are commonly grouped into three categories: instrumental use (i.e., applying research evidence in specific, direct ways); conceptual use (i.e., using research evidence for general enlightenment, which may ultimately influence actions but not in a direct way); and symbolic use (i.e., using research evidence to legitimate and sustain predetermined positions).(2)

Yet, there are several challenges to using research evidence to inform policymaking, including: 1) research evidence competes with many other factors in the policymaking process (for example, institutional constraints, interest group pressure, competing sources of evidence, and 'external' factors like the state of the economy); 2) research evidence is not always relevant to address the problems that policymakers are facing; 3) research evidence is not always easy to use; and 4) research evidence is not always valued as an information input.(3)

Box 1: Background to the rapid synthesis

This rapid synthesis mobilizes both global and local research evidence about a question submitted to the McMaster Health Forum's Rapid Response program. Whenever possible, the rapid synthesis 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 rapid synthesis does not contain recommendations, which would have required the authors to make judgments based on their personal values and preferences.

Rapid syntheses can be requested in a three-, 10- or 30-business-day timeframe. An overview of what can be provided and what cannot be provided in each of these timelines is provided on the McMaster Health Forum's Rapid Response program webpage (https://www.mcmasterforum.org/find-evidence/rapid-response).

This rapid synthesis was prepared over a 10-business-day timeframe and involved four steps:

1) submission of a question from a health system policymaker or stakeholder (in this case, the Ministry of Health of British Columbia);
2) identifying, selecting, appraising and synthesizing relevant research evidence about the question;
3) drafting the rapid synthesis in such a way as to present concisely and in accessible language the research evidence; and
4) finalizing the rapid synthesis based on the input of at least two merit reviewers.

The latter challenge highlights the need to explore strategies to foster a general climate favourable to the use of research evidence in health-system organizations.(4; 5) This resonates with recent scholarship revealing a genuine interest among health-system leaders in creating a culture of evidence-informed policymaking in their organizations.(6) It also resonates with recent strategic initiatives, such as Cochrane's new Knowledge Translation Framework, which recognizes the need to improve the climate for the use of research evidence (particularly systematic reviews) at the same time as supporting others to:

1) prioritize and co-produce policy-relevant research;
2) package, push and support the implementation of policy-relevant research evidence;
3) facilitate the 'pull' on policy-relevant research evidence (e.g., through one-stop shops of pre-appraised synthesized research evidence); and
4) set up mechanisms for exchange among policymakers, stakeholders and researchers (e.g., stakeholder dialogue informed by pre-circulated evidence briefs).(7)

Organizational culture is commonly defined as the "values, beliefs and assumptions of people with shared organizational membership."(8) However, organizational culture is a more complex and multi-layered

concept. According to Edgar Schein, an organizational culture is comprised of three fundamental levels: 1) artifacts (for example, the visible and tangible organizational structures and processes); 2) the espoused values (for example, the strategies, goals and philosophies); and 3) basic underlying assumptions that are difficult to discern because they are often unconscious (for example, deeply embedded beliefs, perceptions, thoughts and feelings).(9) Organizational members draw on their organizational culture to understand, for instance, how work should be organized, how decisions should be made, or what type of input should be valued.(4) The underlying assumption is that organizational culture can facilitate or hinder the use of research evidence by shaping the values, beliefs and assumptions of organizational members.

Some are thus seeing organizational culture as a key variable that can be shaped to improve evidence use and organizational performance. However, health-system leaders often lack strategies to leverage organizational culture.(4) In response to this challenge, this rapid synthesis aims to identify what is known about strategies to foster an organizational culture supportive of evidence-informed policymaking.

WHAT WE FOUND

We identified a total of 21 relevant documents by searching Health Systems Evidence and running targeted searches in PubMed, with the search strategy for these databases detailed in Box 2. A document was included when it directly addressed the question posed for this rapid synthesis (i.e., it was specific to an organizational culture supportive of evidence-informed policymaking) or, when such evidence was sparse, when it addressed a more general question about organizational culture that can be applied to the specific instance of evidence-informed policymaking. Among the documents, we found one overview of systematic reviews, eight systematic reviews, four non-systematic reviews, seven primary studies, and one assessment tool that were deemed relevant. We provide more details about each review and single study in Appendix 1 and 2, respectively.

Box 2: Identification, selection and synthesis of research evidence

We identified systematic reviews about fostering an organizational culture supportive of evidence-informed policies. We conducted searches in October 2017 in Health Systems Evidence (www.healthsystemsevidence.org) and PubMed. In Health Systems Evidence, we conducted a search using the term 'culture' in combination with filters for organization-targeted strategy, and for specific types of documents (i.e., overviews of systematic reviews, systematic review of effects, and systematic reviews addressing other questions). In PubMed, we used the following search strategy: (organization* OR organisation) AND (culture change) AND (evidence OR research) AND (systematic review OR meta-analysis).

The results from the searches were assessed by one reviewer for inclusion. A document was included if it fit within the scope of the questions posed for the rapid synthesis.

For each systematic review we included in the synthesis, we documented the focus of the review, key findings, last year the literature was searched (as an indicator of how recently it was conducted), methodological quality using the AMSTAR quality appraisal tool (see the Appendix for more detail), and the proportion of the included studies that were conducted in Canada. For primary research (if included), we documented the focus of the study, methods used, a description of the sample, the jurisdiction(s) studied, key features of the intervention, and key findings. Note that the methodological quality of primary studies and non-systematic reviews was not appraised due to the shortened timeframe required to conduct a rapid synthesis. We then used this extracted information to develop a synthesis of the key findings from the included reviews and primary studies.

What is known about strategies to foster an organizational culture supportive of evidence-informed policymaking?

Findings from the retrieved literature were grouped into three domains: 1) measuring organizational culture change and organizational readiness for change; 2) fostering organizational change (and its barriers and facilitators); and 3) sustaining organizational culture change.

Domain 1: Measuring organizational culture change and readiness for change

We found two systematic reviews, one non-systematic review, and two assessment tools for measuring organizational culture change and assessing organizational readiness for change more broadly.(10-14) In addition, we found two primary studies examining measurement tools specifically designed to assess whether the organizational culture was supportive of research evidence use in health-system policymaking.(11; 15)

An older high-quality systematic review examined 13 quantitative measurements of organizational culture, but unfortunately none were specific to a culture of evidence-informed policymaking.(12) The instruments varied considerably in terms of their theory, format, scope and properties. The review found that the 13 instruments could be divided into two categories – those that take a typological approach (e.g., assess different types of organizational culture) and those that take a dimensional approach (e.g., describe a culture by its position along different dimensions).(12) The review highlights that all measurement approaches have strengths and limitations, and that ultimately choosing an instrument from which to derive a baseline measurement of the organizational culture depends on the purpose, intended use of results, and resources available.(12) Table 1 below provides a summary of the 13 instruments including a summary of their measurements, as well as their strengths and weaknesses identified in the review.

Table 1. Summary of quantitative tools for measuring organizational culture (adapted from Scott et al.)(12)

Instrument and dimensions	Strengths	Limitations
Competing values framework • Staff climate • Leadership style • Bonding systems • Prioritization of goals	• Easy to complete • High face validity • Assesses the strength of a culture	• Narrow classification of organizational types
Quality-improvement implementation survey • Character of organization • Managers' style • Cohesion • Prioritization of goals • Rewards	• Adds an additional dimension onto the competing values framework	• Narrow classification of organizational types
Organizational culture inventory • Shared norms and expectations that guide thinking and behaviour of group members	• High face validity • Widely used • Provides a graphic representation of results	• Limited view of culture • Long and complex to complete • May be expensive to use
Harrison's organizational ideology questionnaire • Assesses ideology based on orientation to power, roles, tasks and individuals	• High face validity • Addresses both existing and preferred culture	• Limited view of culture
Hospital culture questionnaire • Supervision • Employer attitude • Role significant • Hospital image • Competitiveness • Staff benefits • Cohesiveness • Workload	• Developed for use in a healthcare context	• No data on validity • Developed for private-sector so would require adaptation
Nursing unit cultural assessment tool • Individual and group preferred behaviour	• Provides a detailed assessment of one staff group within a larger organization	• No data on reliability • Limited to the assessment of one stakeholder group
Mackenzie's culture questionnaire • Employee commitment • Attitudes to and belief about innovation • Attitudes to change • Style of conflict resolution • Management style • Confidence in leadership • Openness and trust • Teamwork and cooperation • Action orientation • Human resource orientation • Consumer orientation • Organizational direction	• Easy to complete	• No data of reliability or validity
Survey of organizational culture • Orientation to customers • Orientation to employees • Congruence among stakeholders • Impact of mission • Managerial depth/maturity • Decision-making autonomy • Communication and openness • Incentives • Cooperation versus competition	• High internal reliability • Detailed qualitative work as part of the development process • Use is both public and private sectors	• Only used in the U.S. • Mostly used for senior leaders and managers rather than all levels of staff

• Organizational congruence • Performance under pressure		
Corporate culture questionnaire • Performance • Human resources • Decision-making • Relationships	• Systematically developed • Used widely as a management consulting tool	• Lengthy to complete
Core employee opinion questionnaire • Strength of the organization in 13 areas of employee satisfaction	• High face validity • Easy to complete	• Narrow view of cultural dimensions
Hofstede's organizational culture questionnaire • Need for security • Importance of work • Need for authority	• Strong theoretical basis • High face validity	• Not widely used in English speaking countries
Organizational culture survey • Teamwork and conflict • Climate and morale • Information flow • Involvement • Supervision • Meetings	• Easy to use • Comprehensive process of development	• Addresses only superficial issues of culture

As shown in the table above, the review further noted that there is little agreement among experts on what dimensions of culture are essential to measure or which are predictive of a conducive climate to introduce change.(12) Further, the review brings forward the challenge of measuring and assessing an organizational culture based on self-reported indicators due to social desirability bias.(12)

In the absence of tools for measuring organizational culture change specific to evidence-informed policymaking, we searched for and identified three tools that have been developed to measure evidence use in health-system organizations and that were psychometrically evaluated. First, one primary study documents the development of the SAGE tool, which evaluates how policymakers use evidence and what barriers have an impact on its use.(11) The tool was designed based on the SPIRIT Action Framework (i.e., a framework offering a structured approach to select and test strategies to increase the use of research in policy). The SAGE tool consists of an analysis of a recent policy or program followed by a semi-structured interview with a policymaker. The interviewee is asked to describe:

1) whether or not research was used to inform the development of the policy or program;
2) how this research was searched for, obtained, appraised, and/or generated;
3) how this research informed the development of the document; and
4) barriers that had an impact on the use of research to inform the document.

Answers to these questions are marked on a checklist according to whether or not actions were taken to engage with research, use research and overcome barriers to research evidence use by policymakers.(11)

Another primary study documents the development and validation of a measurement tool for evidence utilization in health policymaking.(15) The Evidence Utilisation in Policymaking Measurement Tool (EUPMT) is composed of 71 questions based on the three key constructs of the theory of planned behaviour (i.e., attitude towards behaviour, subjective norm, and perceived behavioural control). Findings revealed that the EUPMT has relatively good reliability and validity to assess evidence use in health policymaking. The authors concluded that the tool may be used to assess the status quo of evidence use in health policymaking, help health-system policymakers promote the use of research evidence, and ultimately transform it into an organizational culture.

Lastly, through a targeted search we found the assessment tool developed by the Canadian Foundation for Healthcare Improvement, which can help teams to strengthen their organization's ability to adapt and perform better.(14) This tool is drawn from their earlier and more germane 4As tool about organizational capacity to find and use research evidence (the 4As being acquire, assess, adapt and apply research evidence).(16) The new tool is based on six levers for healthcare improvement: 1) focusing on population

needs; 2) engaging healthcare providers and front-line managers in creating an improvement culture; 3) building organizational capacity; 4) creating supportive policy and incentives; 5) engaging patients and citizens; and 6) promoting evidence-informed decision-making. The latter principle emphasizes the importance of designing, implementing and monitoring strategies to support the use of evidence in health-system organizations. The tool allows respondents to rate their organization's capacity to promote evidence-informed decision-making with four statements:

1) we routinely search out high-impact innovations we should consider adopting;
2) we have the skills, structures, processes and corporate culture to promote and use research evidence in decision-making;
3) we have a strategy to develop healthcare providers' and front- line managers' ability to find, assess and apply the best available evidence in delivering services; and
4) we have resources dedicated to finding and synthesizing evidence to better support our decision-making (e.g., knowledge brokers).

We also found documents relevant to measuring organizational readiness for change. Two systematic reviews (one older medium-quality and one older high-quality) and one non-systematic review identified the need to understand the current organizational culture to assess levels of organizational readiness for change.(10; 12; 13) One non-systematic review found that the elements of organizational readiness may include:

- a sense of urgency for change (e.g., staff perception that maintaining the status quo is intolerable);
- broad support for the change;
- dedication of time and resources towards the change process; and
- capacity to monitor and evaluate the change process.(10)

One older medium-quality systematic review examined analytical tools to measure organizational readiness for change.(13) While the review identified 43 tools, only seven were found to have undergone systematic assessments of validity and reliability. Each of the seven instruments were found to have varying levels of reliability and variability. Two instruments, Organizational e-Readiness Scale and the Organizational Readiness Scale, were developed specifically for the adoption and implementation of information systems in healthcare organizations. An organizational readiness instrument derived from subscales of the Pasmore Sociotechnical Systems Assessment Survey was created specifically to measure employee commitment towards patient-focused redesign. The final four instruments may be more broadly applied to organizations across the health system, however, the first instrument has demonstrated wide variability across studies. The four instruments are:

- Texas Christian University Organizational Readiness for Change instrument;
- Readiness for Organizational Change;
- Change-Related Commitment measure; and
- Commitment to Change measure.

It should be noted however, that these instruments have been developed to predict individual-level readiness for change and have not been assessed for their utility in predicting organizational-level outcomes such as successful implementation or changes in organizational performance.(13)

Domain 2: Fostering organizational culture change

We found one overview of systematic reviews, eight systematic reviews and three primary studies about fostering organizational culture change. This literature focused on identifying: 1) factors that can influence a culture shift towards evidence use; and 2) strategies to foster a cultural shift supportive of evidence-informed policymaking.

Factors that can influence a culture shift towards evidence use

One older high-quality review focused on the use of research evidence by public-health decision-makers in universal health systems.(17) The review found two studies concluding that changing the organizational

culture within which policymakers work (i.e., the structures, rewards and training) so that more value is placed on the use of research evidence for decisions might encourage its use.

Another older high-quality systematic review and one non-systematic review focused on factors that influence broad culture change. These include:

- types of change (i.e., process change or product change);
- degree of change (i.e., ranging from minor to radical change);
- facilitators and inhibitors of change (revisited below);
- financial stability of the organization;
- strategic fit between the proposed change and the organization;
- public opinion;
- staff perceptions of change; and
- readiness for change among both external and internal stakeholders.(17; 18)

In addition, one older medium-quality systematic review highlighted barriers to evidence use in decision-making and suggested a number of possible strategies to overcome these challenges (some focusing specifically on organizational culture).(19) These findings have been summarized in Table 2 below.

Table 2. Barriers and facilitator to evidence use in health organizations (adapted from Humphries et al.)(19)

Themes	Barriers to evidence use	Facilitators to evidence use
Information	• Irrelevance of research evidence • Unclear definition of evidence • Negative perceptions of research • Limited access to information • Mismatch of research to complex reality • Time required to produce research • Excess quantity of research evidence	• Clearly define and document what constitutes 'evidence' within the organization • Research-producing organizations should have a clear understanding of the priorities and needs of their target audience • Putting in place complex intervention evaluation methods • Use targeted dissemination strategies
Organizational processes	• Time limitations • Lack of internal research resources • Human resource constraints • Financial constraints • Deficient planning • Poor support from senior management • Rigid program silos • Competing priorities • Poor communication	• Administrative support and intra-organizational linkages that promote knowledge sharing across the organization • Developing internal expertise on research utilization • Formalizing the integration of evidence into decision-making processes • Availability of operational data to support decision-making
Organizational culture	• Poor crisis management • Resistance to change • Politically influenced decisions • Challenging the promotion of evidence use	• Culture that is supportive of evidence use • Providing required supports and demonstrating action that evidence use is valued • Make research one of the main pillars of the organizational culture • Ensure the visibility of research evidence use within the organization
Individual skills	• Low-levels of research literacy • Low-levels of research utilization • Poor management abilities	• Training in research utilization and research application
Interaction	• Gap between researchers and decision-makers • Mutual mistrust	• Increase interactions between researchers and decision-makers through opportunities for direct contact and communication • Sustained dialogue and development partnerships between researchers and decision-makers • One-on-one interaction with the researcher to discuss findings, their potential implications for practice, and the opportunity to brainstorm implementation strategies

Similarly, through a series of interviews with Ontario public servants, one primary study identified seven critical factors for building evidence-informed decision-making capacity in the public service, including:

- leadership;
- organizational structure;
- human resources
- organizational culture;
- knowledge management;
- communications; and
- change management.(20)

A second primary study conducted a literature review and examined key organizational capabilities that facilitate research evidence use in public-health policy.(21) The study identified eight groupings of capabilities, including:

- training;
- access to research;
- organizational policies;
- supportive leaders;
- analysis of research;
- generation of research;
- evaluation of policies and programs; and
- a diverse range of researchers.(21)

Following the literature review, interviews were conducted to evaluate the real-world relevance of these capabilities. Generally, respondents agreed with the list, but prioritized the importance of information and felt that analysis and generating knowledge were relatively less important than the other capabilities. In addition, respondents felt that training was not a capability, but rather a policy tool that should be used alongside templates and checklists for implementation.(21)

A third primary study identified barriers and facilitators to implementing supports for evidence-informed decision-making in Canadian healthcare organizations.(6) Study findings revealed that the limited resources (i.e., money or staff), time constraints and negative attitudes (or resistance) toward change were the most frequently identified barriers to implementing supports for evidence-informed decision-making. Genuine interest from health-system decision-makers (e.g., their willingness to invest money and resources and to create a knowledge translation culture over time) was the most frequently identified facilitator to implementing supports for evidence-informed decision-making. In addition, implementing accessible and efficient systems to support the use of research in decision-making (e.g., documentation and reporting tools, communication tools, and decision support tools), and an infrastructure or position where the accountability for encouraging knowledge use lies, were the most often cited supports.

Strategies to foster a cultural shift supportive of evidence-informed policymaking

One overview of systematic reviews, three systematic reviews and three primary studies focused on strategies and interventions to support evidence-informed policymaking. The overview of systematic reviews examined the effectiveness of interventions to improve the use of evidence among health-system decision-makers. The overview found:

- interventions to support communication and access to evidence were effective when coupled with efforts to increase opportunity and motivation of evidence use, for example, by framing evidence use as a desirable social norm or by highlighting the consequences of not using evidence;
- interventions to build skills for using evidence were only effective when coupled with efforts to increase motivation to use evidence, for example, through co-production;
- some evidence that suggests changes to decision-making structures and processes may be effective at

increasing evidence use, for example, through changes to supervision or providing formal access to evidence;
- unstructured interactions between decision-makers and researchers were ineffective at improving evidence use, however, there was some evidence to support the use of light-touch approaches such as journal clubs to encourage the use of evidence; and
- a more robust evidence base supporting the use of simple interventions to increase the use of evidence as opposed to multi-mechanism interventions.(22)

An older high-quality systematic review examined the effectiveness of strategies to change organizational culture to improve healthcare performance. This review did not find any rigorous evidence to demonstrate the effectiveness of strategies to change organizational culture on healthcare performance due to the paucity of robust empirical studies.(23)

Two other high-quality reviews found insufficient evidence to draw conclusions about the effectiveness of interventions that have been designed for encouraging the use of research evidence by health policymakers and managers.(24; 25)However, one of these reviews found that information products designed to support the uptake of systematic review evidence were effective under certain conditions: there is a single clear message, the change is relatively simple to accomplish, and there is a growing awareness by users of the evidence that a change in practice is required.(24)

One primary study described a variety of interventions for building evidence-informed decision-making capacity in the public service, including:
- offering training and skills-enhancement workshops;
- developing/selecting methods and tools for conducting literature reviews;
- creating clubs and other forums for sharing knowledge;
- restructuring the library and expanding its service capacity;
- creating and supplementing decision-making positions;
- accessing external expertise;
- commissioning literature reviews; and
- committing significant base budget funding to evidence informed decision-making.(20)

A second primary study documented the tools implemented by the Ontario Ministry of Health and Long-Term Care to support a shift towards evidence use in policy development.(26) The tools and their functions have been documented in Table 3 below. The study did not assess which of these tools were most effective in closing the research-policy gap, but noted that building staff capacity through dedicated hiring and training sessions were seen as being critical to this work.

Table 3. Summary of tools, functions of evidence, and use of evidence among civil servants at each stage of policymaking (adapted from Lomas and Brown)(26)

Area of policy activity	Setting agendas	Policy development	Monitoring policies
Available tools	• Undirected work of funded external research centres • Hiring career scientists • Creating a database to store evidence • Use and distribute newsletters, bulletins and trend reports • Undertake long-range scenario planning	• Eliciting upcoming evidence priorities from staff • Directed work of funded external research centres • Commissioned studies • Data and data analytics branches of the ministry • Rapid literature reviews • Research evidence use training workshops for staff • Consolidated searchable evidence sources • Evidence-base checklist for policy submissions	• Data and data analytics branches of the ministry • Ad hoc program evaluations • Career scientist internships shadowing ministry staff • External networks of researchers
Functions of evidence	• May signal emerging or neglected area for attention • Helps screen the validity of interest groups	• Reduces uncertainty • Increases confidence • Prevents duplication • Gives external validation for recommendation	• Provides basis for ongoing program improvement • Creates accountability
Relationship between evidence and civil servants	• May be defensive to evidence being pushed	• Motivated to pull in evidence	• Ongoing exchange that develops collaborative production of evidence

Lastly, a primary study identified the supports and instruments that healthcare organizations currently have in place and which ones were perceived to facilitate evidence-informed decision-making.(6) These include: facilitating roles that actively promote research evidence use within the organization; establishing ties to researchers and opinion leaders outside the organization; a technical infrastructure that provides access to research evidence, such as databases; and provision of and participation in training programs to enhance staff's capacity building. Such supports were identified as key for having a receptive climate, which laid the foundation for the implementation of other tangible initiatives and supported the use of research in decision-making.

Domain 3: Sustaining organizational culture change

One systematic review and four non-systematic reviews examined the spread and sustainability of cultural changes in health organizations in general. One older medium-quality systematic review and two non-systematic reviews identified guiding principles to influence the sustainability of organizational culture change.(8; 27; 28) Table 4 provides a summary of these principles along with actionable interventions and contextual factors that can facilitate or constrain long-term cultural change.

Table 4. Guiding principles for sustainable organizational culture change (adapted from Willis et al.; Scott et al.; and Barnsley et al.)(8; 27; 28)

Guiding principle and associated interventions	Enabling factors	Constraining factors
Align vision and action • Create consistent plans, processes, information and resources • Implement incentives • Provide training on new processes • Allow for mid-level action	• Perception of change should be legitimate and credible • Presence of a shared vision • Organization has pre-existing values and beliefs that change is the right approach • Distributive leadership is present across the organization	• Perception of change as illegitimate and non-credible • Change is a divergence from pre-existing values and beliefs • Change is insensitive to dynamics and existing power bases and loyalty structures
Make incremental change • Small changes should build on each other • Institutionalize change as it unfolds • Stick to simple actions with a gradual roll-out	• Organization has a strong sense of experimentation • Organization has the ability to maintain focus on sustained process of change, with changing practices	• Perception of change as illegitimate and non-credible • Perceived complexity of the change
Foster distributed leadership • Create varying leadership roles across the organization • Promote leaders who support learning through opportunity • Identify non-leaders • Build teams of leaders	• Staff freedom to engage in leadership opportunities • Environment that is supportive of pro-active management • Organizational support for leadership duties • Broad support and buy-in for the initiative across organizational staff	• High degree of bureaucracy, confusion, and resentment or resistance to current leadership • Change is insensitive to dynamics and existing power bases and loyalty structures • Lack of ownership over the change
Promote staff engagement • Create focus groups or improvement teams • Engage in regular brainstorming sessions • Site visits • Host teleconferences with all staff members • Create and define new roles and responsibilities	• Availability of communication channels • Readiness for change • Recognition of change agency roles • Commitment over time • Sensitivity to dynamics of power distribution and loyalty	• Degree of staff resentment and resistance to existing leadership • Extent of competing demands • Presence of legitimate fears and anxiety around change • Change is insensitive to dynamics of existing power bases and loyalty structures
Create collaborative interpersonal relationships • Create task forces and problem-specific committees • Invest in relationships of different intensities • Invest in retaining long-serving staff • Communicate through diverse channels to maximize knowledge transfer	• Organization's mission statements are supportive of change including reward and incentive structure	• Change is insensitive to dynamics of existing power bases and loyalty structures
Continually assess and learn from cultural change • Use a mix of quantitative and qualitative approaches to assess changes • Create tangible and intangible data elements • Use feedback	• Perceived organizational value of data and associated reward structures • Environment built around shared data and data ownership • A supportive learning environment • Carefully consider the impact of change on particular groups • Careful monitoring of change	• Competing demands • Dynamics of power distribution • Unintended consequences

Another non-systematic review examined how organizational change and organizational culture play in successfully implementing evidence-based practice.(18) The review found strategies that can be used to manage culture change, including: identifying existing commitments and connections; thinking about what needs to be changed; understanding management; practising and piloting the change; and capitalizing on existing momentum.

One non-systematic review examined how innovations can be spread and sustained in health-service delivery and organization (as well as how health-system leaders can foster a culture and climate that supports and enables change).(10) Innovations were referred to here as "a novel set of behaviors, routines, and ways of working that are directed at improving health outcomes, administrative efficiency, cost effectiveness, or users' experience and that are implemented by planned and coordinated actions."(10) The authors developed a conceptual model derived from their synthesis of theoretical and empirical findings, which reveals the various determinants of diffusion, dissemination and implementation of innovations in health-service delivery and organization. The review found that innovations are more likely to be adopted and sustained if they: are advantageous; are compatible with organizational values and norms; are simple; are able to be experimented with; have observable benefits; and can be adapted or refined to suit the organization's needs.(10) The review found that these factors are considered to be the 'standard' attributes necessary to explain the adoption of innovations, but that both individual- and system-level factors can also challenge adoption. At the individual level, psychological factors such as intellect, motivation and learning style can affect a staff member's ability or desire to adopt a new way of working. At the systems level, the structure and quality of a social network (e.g., horizontal or vertical), and presence of strong leadership can greatly affect the spread and sustainability of an initiative. In terms of leadership, the review revealed the fundamental role of opinion leaders, champions and 'boundary spanners' (i.e., people who have significant social ties both inside and outside the organization and who are able and willing to link an organization to the outside world in relation to a specific innovation). Lastly, the presence of external influences such as inter-organizational networks and policy context were also found to be important variables to consider when examining the sustainability of an initiative.

Beyond examples found in the retrieved literature, other innovations are currently being implemented and tested to institutionalize evidence-informed policymaking. Examples of promising innovations include:

- strong messages routinely sent from all levels of the organization that research evidence is a key input to the decision-making process;
- performance criteria for staff that includes at least one criterion related to their use of research evidence in policy and program development;
- completing a research-evidence checklist before briefing materials are submitted to the minister, cabinet or other key decision-makers; and
- requiring expert review committees to draw on research evidence, involve a methodologist and citizens in their deliberations, and link the recommendations in their reports to the best available research evidence.(29)

REFERENCES

1. Lavis J, Moat K, editors. Evidence and insight in context: Key steps toward evidence-informed policymaking. KT Canada Webinar; 2016.
2. Amara N, Ouimet M, Landry R. New evidence on instrumental, conceptual, and symbolic utilization of university research in government agencies. *Science Communication* 2004; 26(1): 75-106.
3. Wilson M, Lavis J, Grimshaw J. Supporting the use of research evidence in the Canadian health sector. *Healthcare Quarterly* 2012; 15 Spec No: 58-62.
4. Scott-Findlay S, Golden-Biddle K. Understanding how organizational culture shapes research use. *The Journal of Nursing Administration* 2005; 35(7-8): 359-65.
5. Davies H, Nutley S, Mannion R. Organisational culture and quality of health care. *Quality in Health Care* 2000; 9(2): 111-119.
6. Ellen M, Leon G, Bouchard G, Ouimet M, Grimshaw J, Lavis J. Barriers, facilitators and views about next steps to implementing supports for evidence-informed decision-making in health systems: A qualitative study. *Implementation Science* 2014; 9(179).
7. Cochrane. Cochrane knowledge translation framework. Cochrane; 2017. http://community.cochrane.org/sites/default/files/uploads/inline-files/Cochrane Knowledge Translation Framework.pdf (accessed 5 December 2017)
8. Willis CD, Saul J, Bevan H, et al. Sustaining organizational culture change in health systems. *Journal of Health Organization Management* 2016; 30(1): 2-30.
9. Schein E, Schein F. Organizational culture and leadership. Hoboken: John Wiley and Sons Inc.; 1985.
10. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Quarterly* 2004; 82(4): 581-629.
11. R. Makkar S, Brennan S, Turner T, Williamson A, Redman S, Green S. The development of SAGE: A tool to evaluate how policymakers' engage with and use research in health policymaking. *Research Evaluation* 2016; 25(3): 315-328.
12. Scott T, Mannion R, Davies H, Marshall M. The quantitative measurement of organizational culture in health care: A review of the available instruments. *Health Services Research* 2003; 38(3): 923-45.
13. Weiner BJ, Amick H, Lee SY. Conceptualization and measurement of organizational readiness for change: A review of the literature in health services research and other fields. *Medical Care Research and Review* 2008; 65(4): 379-436.
14. Canadian Foundation for Healthcare Improvement. Accelerating healthcare improvement: Canadian Foundation for Healthcare Improvement's assessment tool. Ottawa: Canadian Foundation for Healthcare Improvement; 2014. http://www.cfhi-fcass.ca/Libraries/Documents/Self-Assessment-Tool-2014-E.sflb.ashx (accessed 5 December 2017)
15. Imani-Nasab M, Yazdizadeh B, Salehi M, Seyedin H, Majdzadeh R. Validity and reliability of the evidence utilisation in policymaking meaurement tool (EUPMT). *Health Research Policy and Systems* 2017; 15(66).
16. Canadian Foundation for Healthcare Improvement. Is research working for you? A self-assessment tool and discussion guide for health services management and policy organizations. Ottawa: Canadian Foundation for Healthcare Improvement; 2014. http://www.cfhi-fcass.ca/Libraries/Documents/SAT-Self-Assessment-Tool.sflb.ashx (accessed 5 December 2017)
17. Orton L, Lloyd-Williams F, Taylor-Robinson D, O'Flaherty M, Capewell S. The use of research evidence in public health decision making processes: Systematic review. *PLoS One* 2011; 6(7): e21704.

18. Austin MJ, Claassen J. Impact of organizational change on organizational culture: implications for introducing evidence-based practice. *Journal of Evidence Based Social Work* 2008; 5(1-2): 321-59.

19. Humphries S, Stafinski T, Mumtaz Z, Menon D. Barriers and facilitators to evidence-use in program management: A systematic review of the literature. *BMC Health Services Research* 2014; 14(1): 171.

20. Peirson L, Ciliska D, Dobbins M, Mowat D. Building capacity for evidence informed decision making in public health: A case study of organizational change. *BMC Public Health* 2012; 12: 137.

21. Huckel Schneider C, Campbell D, Milat A, Haynes A, Quinn E. What are the key organisational capabilities that facilitate research use in public health policy? *Public Health Research Practice* 2014; 25(1).

22. Langer L, Tripney J, Gough D. The science of using science: Researching the use of research evidence in decision-making. London: EPPI-Centre; 2016.

23. Parmelli E, Flodgren G, Beyer F, Baillie N, Schaafsma ME, Eccles MP. The effectiveness of strategies to change organisational culture to improve healthcare performance: A systematic review. *Implementation Science* 2011; 6: 33.

24. Murthy L, Shepperd S, Clarke MJ, et al. Interventions to improve the use of systematic reviews in decision-making by health system managers, policy makers and clinicians. *Cochrane Database of Systematic Reviews* 2012; (9): Cd009401.

25. Perrier L, Mrklas K, Lavis J, Straus S. Imterventions encouraging the use of systematic reviews by health policymakers and managers: A systematic review. *Implementation Science* 2011; 6(43).

26. Lomas J, Brown AD. Research and advice giving: A functional view of evidence-informed policy advice in a Canadian Ministry of Health. *Milbank Quarterly* 2009; 87(4): 903-26.

27. Scott T, Mannion R, Davies HT, Marshall MN. Implementing culture change in health care: Theory and practice. *International Journal of Quality in Health Care* 2003; 15(2): 111-8.

28. Barnsley J, Lemieux-Charles L, McKinney MM. Integrating learning into integrated delivery systems. *Health Care Management Review* 1998; 23(1): 18-28.

29. McMaster Health Forum. Embed supports. Hamilton: McMaster Health Forum; 2017. https://www.mcmasterforum.org/embed-supports/overview (accessed 3 November 2017).

APPENDICES

The following tables provide detailed information about the systematic reviews and primary studies identified in the rapid synthesis. The ensuing information was extracted from the following sources:

- systematic reviews - the focus of the review, key findings, last year the literature was searched, a rating of the overall quality of the review, and the proportion of studies conducted in Canada; and
- primary studies (in this case, economic evaluations and costing studies) - the focus of the study, methods used, study sample, jurisdiction studied, key features of the intervention and the study findings (based on the outcomes reported in the study).

For the appendix table providing details about the systematic reviews, the fourth column presents a rating of the overall quality of each 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).

All of the information provided in the appendix tables was taken into account by the authors in describing the findings in the rapid synthesis.

Appendix 1: Summary of findings from systematic reviews about strategies to foster an organizational culture supportive of evidence-informed policymaking

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Overview of systematic reviews	Examining the effectiveness of interventions to increase the use of research evidence by decision-makers (22)	The overview of systematic reviews included 36 reviews that identified inventions to increase the use of research evidence by decision-makers. Interventions were mapped along six mechanisms: 1) awareness; 2) agree; 3) communication and access; 4) interact; 5) skills; and 6) structure and process. For the first and second mechanisms, awareness (e.g., building awareness for, and positive attitudes towards evidence-informed decision-making) and agree (e.g., building mutual understanding and agreement on policy-relevant questions and the kind of evidence needed to answer them), the overview of systematic reviews was unable to draw conclusions of the efficacy of interventions. For the third mechanism, access to and communication of evidence, the overview found that interventions providing communication of, and access to evidence can improve decision-makers' motivation and opportunity to use evidence. The overview also found that these mechanisms improve decision-makers' use of evidence. These interventions may include combining an online database of systematic reviews with targeted messages to decision-makers. When these interventions only provide the opportunity to use evidence (e.g., do not communicate evidence), they are ineffective at increasing decision-makers' use of evidence. For the fourth mechanism, interact, the overview of systematic reviews found that unstructured interaction was ineffective at improving decision-makers' capability to use evidence. The overview noted that there was some evidence to suggest that a light touch approach through user-engagement or consultation may have a positive effect. It was not however, possible to establish a causal link. For the fifth mechanism, skills (e.g., supporting decision-makers to develop skills in accessing and making sense of evidence), the overview of systematic reviews found that these interventions can improve capability and motivation to use evidence, but when used as part of a multi-mechanism intervention were found to be ineffective, as well as for passive educational interventions. For the sixth mechanism, structure and process (e.g., influencing decision-making structures and processes), there is evidence to indicate that multi-mechanism interventions that include changes to decision-making structures,	Not reported in detail	No rating tool available for this document	Not reported in detail

		for example, changes in supervision, were effective in increasing opportunity and motivation to use evidence. There is also some evidence to suggest that combining structure and process with skills development is effective to embed the use of evidence among decision-makers. There is also some evidence to suggest that formalizing access to evidence through an integrated evidence-on-demand service is effective to increase decision-makers' use of evidence. The overview found limited evidence on the use of multi-mechanism interventions.			
Systematic review	Examining the impact of interventions encouraging the use of systematic reviews by health policymakers and managers (25)	This review showed a paucity of experimental research on interventions that encourage the use of systematic reviews by health policymakers. There is insufficient evidence to draw definitive conclusions about the effectiveness of interventions that encourage health policymakers and managers to use systematic reviews in decision-making. Implications for future research include assessing the contexts under which systematic reviews are most effective, which may include: (1) how systematic reviews are accessed; (2) how they are used; (3) identifying the types of reviews needed in policymaking; (4) understanding the applicability of systematic reviews in the local context; and (5) the specific characteristics that make systematic reviews easy to use.	2010	9/10 (AMSTAR rating from McMaster Health Forum)	3/3
Systematic review	Examining the effects of information products designed to support the uptake of systematic review evidence by health-system managers, policymakers and healthcare professionals (24)	The overall quality of the included studies was very low to moderate. The findings showed that passive dissemination of an information product, based on systematic review evidence, on a national or regional basis, can be effective in instances where there is a single clear message and a growing awareness by users that changes in practice are needed. Although there is some face validity for a multifaceted intervention in development awareness for using and finding evidence, additional evidence on the effectiveness of this approach is required. Future implications for research include the challenge to classify outcome measures due to the variety of measures reported in the included studies. The researchers suggested that increasing awareness and accessibility to evidence for decision-making processes may lead to contamination of the delivery of interventions.	2011	9/10 (AMSTAR rating from McMaster Health Forum)	1/8
Systematic review	Examining the use of research evidence by public-health decision-makers in universal health systems (17)	The review included 18 studies that examined: 1) the extent to which research evidence is used by public-health decision-makers; 2) types of research evidence used by public-health decision-makers; 3) the process of using research evidence; 4) factors, other than research, influencing public-health decision-making processes; and 5) barriers and facilitators in the use of research evidence. Relatively little evidence was found that quantified the extent to which research evidence is used in public-health decision-making processes. One study found that 63% of participating Ontario public-health staff reported using at least one systematic review, and one study conducted in Australia found that 28% of public-health policymakers reported using academic research.	2010	9/10 (AMSTAR rating from McMaster Health Forum)	8/18

		Two studies explored the types of research evidence used by public-health decision-makers, which included primary research studies, systematic reviews, internal program evaluations, local and provincial best practices, observation studies, household studies, controlled evaluations of interventions, natural policy experiments, and historical evidence. Relatively few studies revealed the process through which research evidence was used in decision-making. Two qualitative studies explored how research evidence was accessed by decision-makers and found senior bureaucrats used experts, technical reports, monographs and bulletins, the internet, statistical data, policymakers in other jurisdictions, academic literature, internal expertise, government policy documents, and consultants. One quantitative study found that the most used sources of evidence about chronic disease prevention and control was printed academic literature followed by websites and provincial health and recreation organizations. Five qualitative studies explored the process through which research evidence was applied to decision-making and found that it was generally used to justify decisions after they had been made. The bulk of the literature found addressed factors that influence public-health decision-making processes. The review found that other factors from studies in the U.K. and Canada include: financial sustainability; local competition; strategic fit; pressure from stakeholders; and public opinion. The studies included in the review also highlighted the influence of key personnel in the decision-making process, either by judgments based on common sense and expert opinion or by acting as a filter through which evidence is transferred. The majority of qualitative literature explored barriers and facilitators to the use of research evidence. There is a general consensus across the literature on the most important factor limiting the use of research evidence, which is a perceived lack of research evidence. Other barriers included negative perceptions of available research, an undue focus on RCTs, too much scientific uncertainty, poor local applicability, a lack of focus on the social determinants of health, and a lack of complexity to address multi-component health systems. The evidence base on how to overcome these barriers is less extensive, but included: improved communication and sustained dialogue between researchers and end users; establishing trust between researchers and policymakers; capacity building among researchers to effectively disseminate evidence; and capacity building about decision-makers to critically appraise research. In two studies, it was believed that changing the organizational culture within which policymakers work (in terms of structures, rewards and training) so that more value is placed on the use of research evidence for decisions might encourage its use.			

		While changing the culture towards one that places greater value on research evidence was often cited in the literature, no actionable interventions were suggested to enable this shift.			
Systematic review	Examining the effectiveness of strategies to change organizational culture in order to improve healthcare performance (23)	No studies met the methodological quality criteria used by the Cochrane EPOC Group and evaluated the effectiveness of strategies to change organizational culture to improve healthcare performance. Thus, the authors were unable to draw any conclusions about the effectiveness of strategies to change organizational culture.	2009	5/6 (AMSTAR rating from McMaster Health Forum)	Not reported in detail
Systematic review	Assessing how organizational readiness for change has been defined and measured in health services research and other fields (13)	The review defines organizational change as any modification to organization composition, structure or behaviour, while readiness refers to being psychologically and behaviourally prepared to implement organizational change. The review included 106 articles, 34 of which offered only conceptual discussions on organizational readiness for change, with the remainder reporting on empirical research. Little consistency was found around the language used to describe readiness for change, with other terms being used such as change acceptance, change commitment, attitudes toward change, reactions to change, and agent capacity. A number of authors referred to the planned theory of action, whereby readiness would be equivalent to the preparation stage (e.g., take action in the next 30 days). Other authors take a structural approach whereby they emphasize organizational capabilities and resources at their disposal. The review identified 43 instruments for measuring organizational readiness for change that had been used in empirical research and that had close-ended questions with response formats permitting psychometric assessment. However, only half of these have undergone a process for ensuring content validity. Ultimately, only seven tools had undergone a systematic assessment of validity and reliability. Generally, there is a lack of reliable and valid instruments for assessing organizational readiness for change, particularly at the organizational-level, for which none of these instruments can be applied.	2007	6/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail
Systematic review	Identifying guiding principles underlying efforts to stimulate sustained cultural change; the mechanisms by which these principles operate; and the contextual factors influencing the	The review included 68 studies that focused on identifying the actionable factors that influence cultural change, and determining what works, for whom and in what contexts. The review identified six guiding principles associated with sustaining organizational culture change: align vision and action; make incremental changes within a comprehensive transformation strategy; foster distributed leadership; promote staff engagement; create collaborative interpersonal relationships; and assess cultural change.	2011	5/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail

	likelihood of these principles being effective (8)	The review points out that these guiding principles interact with contextual elements such as local power distributions, pre-existing values and beliefs, and readiness to engage. In addition, a variety of facilitators and barriers influence whether these guiding principles are of use to sustain change, and may include activation of a shared sense of urgency and fostering flexible levels of engagement.			
Systematic review	Identifying quantitative instruments available to health service researchers who want to measure culture and cultural change (12)	The review included 13 instruments to assess organizational culture. For each instrument, the review examined cultural dimensions, the number of items for each questionnaire, the measurement scale adopted, examples of studies, which has used the tools, the scientific properties of the instrument, and any additional comments. The review divided the instruments into either typological approaches, whereby the instrument assesses one or more types of organizational culture, or dimensional approaches, which describes a culture by its position on a number of continuous variables. The majority of the instruments adopted a dimensional approach and use Likert scales to assess agreement. All of the instruments assess employee perceptions and opinions about their working environment, but only a few such as the Competing Values Framework and the Organizational Culture Inventory, try to examine the values and beliefs that inform those views. Ultimately, while a range of instruments is available to measure the culture of health organizations, all have limitations in their scope, ease of use or scientific properties. Ultimately, choosing an ideal instrument depends on the purpose of the investigation and the intended use of the results. In addition, the costs of instrument administration and data analysis are important factors to consider, and some instruments are freely available, while others are sold commercially at varying prices. Even when free instruments are used, the cost of data analysis should always be considered.	2001	8/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail
Systematic review	Identifying potential barriers and facilitators experienced by managers to the use of evidence in program management within healthcare organizations (19)	The review includes 14 studies. These studies involved 3,584 decision-makers including senior managers, chief operating officers, clinicians and front-line staff. The majority of studies (12) identified barriers to evidence use. These could be divided according to five main themes: 1) information (e.g., irrelevance of research, unclear definition of evidence, negative perceptions of research, limited access to information, mismatch of research to complex reality, time required to produce research, and excess quantity of information); 2) organizational processes (e.g., time limitations, lack of internal research resources, human resources constraints, financial constraints, deficient planning, absence of processes, poor support from senior management, rigid program silos, competing priorities, and poor communication); 3) organizational culture (e.g., decision-making, crisis management, resistance to change, politically influenced decisions, and challenging the promotion of	2011	6/9 (AMSTAR rating from McMaster Health Forum)	10/14

		evidence use); 4) individual skills (e.g., research literacy, research utilization and management); and 5) interaction (e.g., gap between researchers and decision-makers and mutual mistrust). Ten of the included studies identified facilitators of evidence use for program management. The majority of these facilitators were informational including access to information as well as targeted dissemination of research findings. The advancement of research methods to meet the needs for evaluating complex interventions was also identified as a facilitator of evidence-informed decision-making. Four other facilitators were also found: 1) organizational structure and process (e.g., inter-organizational linkages, expertise in research utilization, processes for integration of evidence, administrative support and operational data availability); 2) organizational culture (e.g., supporting evidence use, human resource training and rewards, inter-organizational collaboration and visible research utilization); 3) individual skills (e.g., research and decision-maker focus on application); and 4) interaction (e.g., contact between researchers and decision-makers and mutual respect).			
Non-systematic review	Examining how organizational change and organizational culture play in successfully implementing evidence-based practice (18)	This non-systematic review identifies 43 articles examining organizational change and organizational culture. The focus of this review was separated into three areas: organizational change processes that facilitate positive organizational change; organizational culture; and the management of organizational culture and change within the human service field. The organizational factors that influence change were divided into five categories: types of change, degree of change, facilitators and inhibitors of change, staff perceptions of change, and the readiness for change. First, the two main types of change were found to be administrative (process) – for instance, a new performance evaluation tool - and technical (product) – for instance, a new delivery system. Second, the current review also emphasized the importance of measuring the degree of change within an organization. These measures of change ranged from minor to radical change across a number of continuums, such as routine versus non-routine and peripheral versus core. A manager must assess the degree of change on these continuums before implementing change, as this will inform the best strategy. Third, factors associated with the change itself must be identified in order to understand the facilitation or inhibition of the process. These factors include the size of the organization, leadership, and characteristics of the change itself, such as its compatibility, complexity and observability. Fourth, human factors must also be taken into account; one must consider the way in which a change affects workers' self-confidence, self-competence and self-efficacy. As change can elicit negative feelings among workers, organizations must provide transitional space to allow for this process. Finally, the organization and its staff must be ready for the change to occur. Assessment of this readiness must examine the individual and organizational perspective, as well as external and internal stakeholders.	Not reported in detail	No rating tool available for this document	Not reported in detail

		Organizational culture must be recognized as a key element in the management of change. This non-systematic review of the literature came to define culture on three levels: basic assumptions (the fundamental dynamics of an organization); values and beliefs (the ideologies and attitudes within the organization); and cultural artifacts (the languages, rewards and symbols of an organization). As organizations create change, it must be assessed at all levels to promote sustainability. The role that organizational culture plays in facilitating or inhibiting change merits further research. Lastly, it is important to examine the types of organizational cultures that exist when assessing readiness for change. The "club" culture in an organization emphasizes relationships and teamwork – historically, these organizations have undergone quick decisions and changes. The "role culture" is very formal and structured, and its stability resists change. In preparing for change, managers must examine organizational culture and find ways to promote comfort in instability. Managing an organization's culture is crucial to improving performance. In this sense, the private sector outperforms the public sector, as public-sector managers are constrained in their efforts to manage culture. This constraint has fostered debate, which sees disagreement between whether organizational culture is manageable or implicit. While there is little empirical evidence on either side of the debate, the literature points to certain strategies that can be used to manage and understand culture. These include identifying commitments and connections, thinking about what needs to be changed, understanding management, practising change, and capitalizing on change. All change requires a considerate and effective leader. Overall, this non-systematic review focused on organizational change and organizational culture, exploring change processes, organizational culture, and the management of this culture.			
Non-systematic review	Examining theory, empirical research, and real-world examples of learning in healthcare and other organizations to suggest ways in which integrated delivery systems can create a climate for system-wide learning, and facilitate the rapid dissemination and use of new managerial and clinical knowledge (28)	This non-systematic review found that three conditions are necessary for the generation, dissemination and use of knowledge in integrated delivery systems: a shared vision of learning and system goals; leaders who promote learning through providing opportunities, resources and incentive; and a structure with diverse channels of communication for knowledge transfer. When existing staff acquire and share new knowledge with new staff, organizational learning occurs. This form of learning is influenced by predisposing, enabling and reinforcing factors. Predisposing factors, such as a person's knowledge, attitudes and beliefs, determine whether they are ready to learn and set the stage for change. Enabling factors include the skills, resources and facilities that provide opportunities for knowledge dissemination. Leaders within systems play a significant role in creating these opportunities for change. Reinforcing activities promote creativity and growth by rewarding learning, experimentation and innovation. While these factors aid in promoting organizational learning, expanded integrated delivery systems	Not reported in detail	No rating tool available for this document	Not reported in detail

		face unique challenges, such as instability, complexity of coordination, difficulties of multiple organizational and professional cultures, and difficulties with maintaining balance between central and local accountability. In light of these difficulties, this non-systematic review found that a shared vision of learning and system goals is key. A system's first challenge is to create an environment that encourages people to develop common understandings. Learning within an organization should occur primarily for the purpose of achieving its vision. This vision should foster purpose, interest and excitement, while clarifying how each component of the organization can contribute. For example, Bell Atlantic achieved great success in developing its organizational goals and strategies when it informed all employees of the role they played in this development. To create and sustain productive learning environments in an organization, leaders must perform three roles: the designer role, which involves developing opportunities and resources; the stewardship role, which involves ensuring the system's vision guides system activities; and the teaching role, which involves the demonstration of system values at a local level. While these roles are key, an organization must also have flexibility in their approach to goal achievement, as teams may self-organize and learn. Several integrative management practices encourage collaboration and communication, including employee rewards, employee development, and multi-functional teams. Budget practices must also invest in system-wide learning. For instance, Motorola found that every dollar invested in employee training programs yielded $33.00 in return. This non-systematic review found that the structure of an integrated delivery system affects the learning environment. Organic and open structures with fluid job responsibilities and thorough communication processes support system learning. The decentralization of authority and responsibility, emphasis on teamwork, collaboration and problem solving, and an informal approach to assigning responsibilities all promote the learning and application of new skills in changing environments. The development of communication networks is essential for promoting knowledge transfer across systems, and a delivery system's ability to change is related to the effort devoted to communication. This communication must cross boundaries, whether they be, for instance, ideological, geographical, vertical or horizontal. This process can be facilitated through a flexible workforce, education and training programs, and other clinical innovations. This non-systematic review examined the ways in which integrated delivery systems can enhance system-wide learning. Effective delivery systems must create nurturing environments that promote experimentation and creativity. This must occur with the support of strong leaders who are willing to learn, invest in development, and encourage communication.			

Non-systematic review	Examining the spread and sustainability of innovations in health-service delivery and organization (10)	This non-systematic review used 495 articles examining the spread and sustainability of innovations in health service delivery and organization. Of these studies, 213 were empirical and 282 were non-empirical. This review synthesized research evidence across a number of disciplines, including medical sociology, marketing, health promotion and evidence-based medicine. From the literature, eight broad themes were elucidated on the spread and sustainability of innovations in health service: the innovation; adoption by individuals; assimilation by the system; diffusion and dissemination; system antecedents for innovation; system readiness for innovation; inter-organizational networks and collaboration; and implementation and routinization. This non-systematic review supports the idea that innovations have key attributes, which affect their subsequent adoption. Innovations are more likely to be adopted if they are advantageous, compatible, simple, are able to be experimented with, if their benefits are observable, and if they can be reinvented. These are considered to be the "standard" attributes that are necessary to explain the adoption of innovations, but additional key attributes also contribute to this phenomenon. For instance, the adaptability of the peripheral attributes of an innovation contribute to its adoptability. Further, innovations that are safer, improve task performance, are easy to learn to use, and are supported by other products are more likely to be adopted. People actively seek out innovations, and certain personal characteristics can affect the adoption process. Psychological antecedents, such as intellect, motivation and learning style, can affect the adoption of an innovation. The personal meaning of an innovation to a person is an important component of this process, and the final decision to adopt is often dependent on other decisions. Further, a person can have concerns at numerous stages during this process: before the innovation, during early use, and after use has been established. Successful individual adoption of an innovation is only one component of the process; the innovation must also be assimilated by the system. Evidence demonstrates that this process is often messy, with organizations moving between initiation, development and implementation. Various system components work to diffuse and disseminate an innovation. The structure of a network, the homophilous nature of innovation-users, and strong leaders who influence their colleagues, support the innovation, and have ties both in and out of the organization, are all factors that promote the adoption of an innovation. Further, planned and effective dissemination programs that consider the needs of organizations promote adoption of the innovation. Some features of organizations have been shown to influence the assimilation	Not reported in detail	No rating tool available for this document	Not reported in detail

		of innovations. The structure of an organization affects innovation adoption; a large, mature, functionally differentiated and specialized organization will take up new innovations more readily. Innovations will be taken up more easily by organizations that are able to absorb and apply new knowledge, and receive and incorporate change. A system must be ready to adopt an innovation. The elements of system readiness include tension for change, the innovation-system fit, the assessment of the implications for this innovation, support for the innovation, dedication to time and resources, and an organization's capacity to evaluate the innovation. The adoption of an innovation is affected by external influences. Inter-organizational networks, networking initiatives, and policy context are important variables to consider when examining the adoptability of an innovation by an organization. The implementation of innovations depends on the structure of an organization, its leadership, human resources, funding, communication, external networks, feedback during the process, and adaptability of the innovation itself.			
Non-systematic review	Examining the processes and outcomes of culture change programs across a range of health and non-healthcare settings (27)	This non-systematic review found that culture change strategies can either be targeted at first order or second order change. First order change refers to doing what you do better while second order change represents a larger shift and is often in response to a growing crisis or deficiency. The review highlighted three dimensions of culture change: 1) the structural dimension (e.g., the need to collect information on the current culture and how it could change); 2) the process dimension (e.g., determining how a culture should change, which includes using existing momentum, reframing strategies, new wave strategies, and opportunistic strategies); and 3) the contextual dimension (e.g., assessing the fit or alignment between culture and the wider environment). The review examined six key sources of organizational inertia and resistance: 1) lack of ownership (e.g., need to get sufficient buy-in to culture change); 2) complexity (e.g., having realistic timeframes and multi-level changes); 3) external influence (e.g., need to work with, not against, core public values and use this frame to push change forward); 4) lack of appropriate leadership (e.g., focus on transformational leadership which inspires change, which can be combined with reward behaviour patterns that typify a transactional approach); 5) cultural diversity (e.g., carefully consider the impact of change on specific groups, and determine whether one group should dominate or whether greater integration should be established in sub-cultures); and 6) dysfunctional consequences (e.g., awareness of possible unintended consequences through careful monitoring).	Not reported in detail	No rating tool available for this document	Not reported in detail

Appendix 2: Summary of findings from primary studies about strategies to foster an organizational culture supportive of evidence-informed policymaking

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
Identifying the supports and instruments (i.e., programs, interventions, instruments or tools) that healthcare organizations currently have in place, and which ones were perceived to facilitate evidence-informed decision-making (6)	*Publication date:* 2013 *Jurisdiction studied:* Ontario and Quebec *Methods used:* In-depth semi-structured telephone interviews	Fifty-seven interviews were conducted in 25 organizations in Ontario and Quebec (i.e., regional health authorities, hospitals and primary care practices). Interviews were conducted with individuals in three different types of positions (i.e., a senior management team member, a library manager, and a 'knowledge broker').	No intervention	Study findings suggest that the following supports facilitate evidence-informed decision-making: facilitating roles that actively promote research evidence use within the organization; establishing ties to researchers and opinion leaders outside the organization; a technical infrastructure that provides access to research evidence, such as databases; and provision and participation in training programs to enhance staff's capacity building. Such supports were identified as key for having a receptive climate, which laid the foundation for the implementation of other tangible initiatives and supported the use of research in decision-making.
Identifying barriers and facilitators to implementing supports for evidence-informed decision-making in Canadian healthcare organizations, the views about emerging development of supports for evidence-informed decision-making, and the views about the priorities to bridge the gaps in the current mix of supports that these organizations have in place (6)	*Publication date:* 2014 *Jurisdiction studied:* Ontario and Quebec *Methods used:* In-depth semi-structured telephone interviews	Fifty-seven interviews were conducted in 25 organizations in Ontario and Quebec (*i.e.*, regional health authorities, hospitals and primary care practices). Interviews were conducted with individuals in three different types of positions (*i.e.*, a senior management team member, a library manager, and a 'knowledge broker').	No intervention	Study findings revealed that the limited resources (i.e., money or staff), time constraints, and negative attitudes (or resistance) toward change were the most frequently identified barriers to implementing supports for evidence-informed decision-making. Genuine interest from health-system decision-makers, notably their willingness to invest money and resources and to create a knowledge translation culture over time in healthcare organizations, was the most frequently identified facilitator to implementing supports for evidence-informed decision-making. Implementing accessible and efficient systems to support the use of research in decision-making (e.g., documentation and reporting tools, communication tools, and decision support tools) and developing and implementing an infrastructure or position where the accountability for encouraging knowledge use lies, were the most often cited supports. The most frequently stated priorities were the implementation of technical infrastructures to support research evidence use and to ensure access to research evidence, and establishing formal or informal ties to researchers and knowledge brokers outside the organization who can assist in evidence-informed decision-making.
Supporting evidence-informed policy advice in the Ontario Ministry of Health and Long-Term Care (26)	*Publication date:* 2009 *Jurisdiction studied:* Ontario *Methods used:* Mixed methods of literature review and qualitative interviews	Interviewed assistant deputy minister and directors in three divisions of the Ontario government	The study focused on determining whether the tools used to bring research into the clinical work could be applied to civil servants offering advice to politicians.	There are large contrasts in the expectations of how evidence is used and treated by civil servants for policy advice compared to how it is used by medical authorities for clinical guidance. The study identified a variety of tools that the ministry uses to improve its use of evidence for policy and divided these tools into the three main areas of ministry activity: 1) setting agendas; 2) developing new policies; and 3) monitoring and modifying existing policies. For setting agendas the study identified the use of research groups and funding research as being key tools to improve the translation of research. In addition, they identified the hiring of career scientists to

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
				work within the ministry as well as technology assessment staff in a Medical Advisory Secretariat. A set of interrelated tools was developed to transform the outputs from ministry-funded groups into more accessible and usable products. This includes distributing journals, newsletters and trend reports. For developing new policies, the ministry elicits work from one of 17 ministry-funded external research centres which provide peer-reviewed supplication to support the development of new policy. To deal with more timely issues, the ministry houses a small team to conduct rapid responses. Over the long term more ministry staff may be able to conduct this work themselves through a one day "how to use research evidence" course. Finally, a checklist has been made to remind staff about available research prior to submitting policy proposals. To facilitate ongoing linkages with researchers, external career scientists are expected to spend six months to five years working directly with ministry staff who overlap with their areas of expertise. While these tools may help to close the gap, the study revealed that the understanding of evidence differs substantially between policymakers and researchers. Policymakers tend to consider evidence as being synonymous with data, using peer-reviewed research alongside grey literature, raw data, policies from other jurisdictions, views of experts or advisory committees, and opinion polls. Finally, the study noted the importance of top-level support able to sustain the change towards evidence-informed policy.
Capacity building for evidence-informed decision-making in public health (20)	*Publication date:* 2012 *Jurisdiction studied:* Ontario *Methods used:* Semi-structured interviews	Semi-structured interviews were conducted with 70 members of a provincial public health unit.	Investments in tools and processes to support evidence-informed decision making	Efforts to improve evidence-informed decision-making included: offering training and skills-enhancement workshops; developing/selecting methods and tools for conducting literature reviews; creating clubs and other forums for sharing knowledge; restructuring the library and expanding its service capacity; creating and supplementing decision-making positions; accessing external expertise; commissioning literature reviews; and committing significant base budget funding to evidence-informed decision-making. Through interviews, the study identified seven critical factors and dynamics for building evidence-informed decision-making capacity: leadership; organizational structure; human resources; organizational culture; knowledge management; communications; and change management. The study emphasized the importance of continuous high-level

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
				leadership to facilitate the adoption of evidence-informed decision-making practices. In terms of organizational structure, the study discussed how the opportunity to learn about evidence-informed decision-making allowed staff to make formal and informal connections across the organization. The library was also seen as a critical change to organizational structure, as library services are a vital resource to support cost effective and efficient literature reviews. To support knowledge management, the public health unit put in place a knowledge-management system that would include all tools, templates and manuals. The following features were included in the system: direct links to companion resources; an evidence repository of all completed search strategies; critical appraisal forms and literature reviews; and the capacity to generate comprehensive audit trails for every decision. To build staff capacity, the public health unit created dedicated staff including hiring a Manager of Education and Research, who managed half-day and full-day training sessions on qualitative research appraisal. During interviews, shifting the organizational culture was seen as being one of the biggest challenges. Interview participants emphasized the importance of 'readiness' within the organization to ease change, as well as being aware of communication to the entire organization. Change management was the final facilitator discussed in the study. This included ensuring that the leaders of healthcare organizations are the catalysts of change and are able to provide long-term stable leadership.
Developing and validating a measurement tool for evidence utilization in health policymaking based on the theory of planned behaviour (15)	*Publication date:* 2017 *Jurisdiction studied:* Iran *Methods used:* Mixed approach using confirmatory factor analysis	All the specialized units and their employees in the five deputies of Iran's Ministry of Health and Medical Education (n=373 participants)	The initial version of Evidence Utilisation in Policymaking Measurement Tool (EUPMT) comprised 71 questions based on the three key constructs of the Theory of Planned Behavior (i.e., attitude towards behaviour, subjective norm, and perceived behavioural control)	Findings revealed that the EUPMT has relatively good reliability and validity to assess evidence use in health policymaking. The authors concluded that the tool may be used to assess the status quo of evidence use in health policymaking, to design interventions for its improvement and to assess the outcomes of interventions. They also argued that the EUPMT can effectively help health-system policymakers promote the use of research evidence and transform it into an organizational culture.

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
Developing a tool to evaluate how policymakers use research and what barriers have an impact on its use (11)	*Publication date:* 2016 *Jurisdiction studied:* Not reported in detail *Methods used:* Conceptual framework	No sample was used in the development of the SAGE interview guide.	A measure that combines an interview and document analysis to evaluate how policymakers engage with research, use research, and what barriers impact the use of research	The SAGE tool is based on the SPIRIT framework which describes the steps, barriers, facilitators and contextual influences along the pathway to research evidence use in policymaking. The SPIRIT framework does not assume that policymaking is linear, but rather once the need for research to inform policy is identified, policymakers initiate a number of research engagement actions such as searching for or obtaining research, appraising its relevance and quality, and generating new research or analyses. The literature revealed that existing methods of evaluating the use of research evidence in health policy had a number of limitations. To overcome this issue, an interview guide was developed to focus on: 1) whether or not research was used to inform the development of policy; 2) how this was searched for, obtained, appraised, and/or generated; 3) how this research informed the development of the document; and 4) barriers that have an impact on the use of research. The final SAGE interview guide contains 22 questions that address each of the SPIRIT domains and are framed in relation to the development of a specific policy or program document. SAGE has a number of features that address limitations of previous measures. SAGE is based on an explicit conceptual framework and so it is designed to comprehensively capture not only the extent of research evidence use but the factors underlying research evidence use.
Examining key organizational capabilities that facilitate research evidence use in public-health policy (21)	*Publication date:* 2014 *Jurisdiction studied:* Australia *Methods used:* Mixed methods of literature review and semi-structured interviews	Purposeful sample of nine Australian health policymakers holding positions at the level of policy unit management or higher	Semi-structured interviews examining what organizational strategies facilitate the use of research in policy and program decision-making	This study examined perceptions of organizational capabilities that facilitate research uptake in policy decision-making. Organizational capabilities that make policy agencies more attuned to evidence were identified from literature from the past 10 years. Following this, interviews were conducted with Australian health policymakers to evaluate the relevance and applicability of these selected capabilities. The review of the literature identified eight groupings of capabilities that encourage research evidence use in policy environments. These capabilities were training, access to research, organizational policies, supportive leaders, analysis of research, generativity of research, evaluation of policies and programs, and relationships between a diverse range of researchers. Interviews were conducted to evaluate the relevance of these capabilities among policymakers. Respondents indicated that all capabilities were relevant and legitimate in terms of increasing the use of research in health policy and program decision-making, but emphasized the importance of different capabilities. Staff competence was emphasized the most by interviewees, and training, leadership, and

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
				relationships were rated as one of the three most important capabilities. Organizational policies were seen to contribute to the ethos of "evidence-based policy", reduce obstacles to research evidence use, and ensure the consideration of research. Access to research was considered fundamental, and many interviewees emphasized the importance of leadership as a key capability. Analysis was not emphasized consistently by respondents, some of whom considered this to be an ambiguously defined capability. Generating knowledge was considered to have less impact on an organization's uptake of research. The evaluation of policies and programs was seen to be important in order to make an informed decision, but was seen as difficult, due in part to the need for financial, staff and infrastructure support. Relationships with researchers was seen as a key capability in facilitating research uptake. There was consensus among the interviewees that the capabilities drawn from the literature were relevant to real-world contexts. However, these capabilities can be refined before being applied to intervention development. For instance, training itself was not considered a key capability – a variety of staff competencies are necessary. Templates and checklists were emphasized as important policy tools, and may be considered as separate capabilities. The ambiguity of the term "analysis" suggests that this capability should be more clearly defined. This review examined the use of organizational capabilities that facilitate research uptake in policy decision-making. The literature identified eight main capabilities that health policymakers supported in interviews. However, respondents indicated that the nature of research evidence use is complex and unique depending on factors such as resources and external factors.

McMaster University

McMaster HEALTH FORUM

>> Contact us

1280 Main St. West, MML-417
Hamilton, ON, Canada L8S 4L6
+1.905.525.9140 x 22121
forum@mcmaster.ca

>> Find and follow us

mcmasterforum.org
healthsystemsevidence.org
mcmasteroptimalaging.org

mcmasterforum

FORUM+

McMaster University