

Towards systematic reviews that inform health care management and policy-making

John Lavis, Huw Davies¹, Andy Oxman², Jean-Louis Denis³, Karen Golden-Biddle⁴ and Ewan Ferlie⁵

Department of Clinical Epidemiology and Biostatistics, and Department of Political Science, McMaster University, Ontario, Canada; ¹Department of Management, University of St Andrews, St Andrews, Scotland; ²Informed Choice Research Department, Norwegian Health Services Research Centre, Oslo, Norway; ³Groupe de recherche interdisciplinaire en santé (GRIS) and Département d'administration de la santé, Université de Montréal, Montreal, Quebec, Canada; ⁴School of Business, University of Alberta, Edmonton, Alberta, Canada; ⁵The Management School, Royal Holloway, University of London, Egham, UK

Objectives: To identify ways to improve the usefulness of systematic reviews for health care managers and policy-makers that could then be evaluated prospectively.

Methods: We systematically reviewed studies of decision-making by health care managers and policy-makers, conducted interviews with a purposive sample of them in Canada and the United Kingdom ($n = 29$), and reviewed the websites of research funders, producers/purveyors of research, and journals that include them among their target audiences ($n = 45$).

Results: Our systematic review identified that factors such as interactions between researchers and health care policy-makers and timing/timeliness appear to increase the prospects for research use among policy-makers. Our interviews with health care managers and policy-makers suggest that they would benefit from having information that is relevant for decisions highlighted for them (e.g. contextual factors that affect a review's local applicability and information about the benefits, harms/risks and costs of interventions) and having reviews presented in a way that allows for rapid scanning for relevance and then graded entry (such as one page of take-home messages, a three-page executive summary and a 25-page report). Managers and policy-makers have mixed views about the helpfulness of recommendations. Our analysis of websites found that contextual factors were rarely highlighted, recommendations were often provided and graded entry formats were rarely used.

Conclusions: Researchers could help to ensure that the future flow of systematic reviews will better inform health care management and policy-making by involving health care managers and policy-makers in their production and better highlighting information that is relevant for decisions. Research funders could help to ensure that the global stock of systematic reviews will better inform health care management and policy-making by supporting and evaluating local adaptation processes such as developing and making available online more user-friendly 'front ends' for potentially relevant systematic reviews.

Journal of Health Services Research & Policy Vol 10 Suppl 1, 2005: 35–48 © The Royal Society of Medicine Press Ltd 2005

John N Lavis PhD, Associate Professor and Canada Research Chair in Knowledge Transfer and Uptake, Department of Clinical Epidemiology and Biostatistics, and Department of Political Science, McMaster University, HSC-2D3, 1200 Main St West, Hamilton, Ontario, Canada L8N 3Z5. **Huw TO Davies PhD**, Professor of Health Care Policy and Management, Department of Management, University of St Andrews, St Andrews, Scotland. **Andy Oxman MD**, Researcher, Informed Choice Research Department, Norwegian Health Services Research Centre, Oslo, Norway. **Jean-Louis Denis PhD**, Professor and CIHR/CHSRF Chair in the Governance and Transformation of Health Care Organizations, Groupe de recherche interdisciplinaire en santé (GRIS) and Département d'administration de la santé, Université de Montréal, Montreal, Quebec, Canada. **Karen Golden-Biddle PhD**, Professor and Director of Health Organization Studies, School of Business, University of Alberta, Edmonton, Alberta, Canada. **Ewan Ferlie PhD**, Professor, The Management School, Royal Holloway, University of London, Egham, UK.

Correspondence to: lavisj@mcmaster.ca

Introduction

Research evidence can be one of many inputs into decision-making by the general public and civil society groups, patients, clinicians, health care managers, and health care policy-makers. In the last 15 years, many health care researchers have become convinced that systematic reviews of research evidence constitute a more appropriate source of research evidence for decision-making than the latest or most heavily publicized research study. By systematic reviews, we mean reviews of the research literature with five components: an explicit question; an explicit description of the search strategy; an explicit statement about what types of research evidence were included and excluded; a critical examination of the quality of the studies included in the review; and a critical and transparent

process of interpretation of the findings of the studies included in the review. Research evidence from randomized controlled trials or (in their absence) controlled before/after studies and interrupted time series studies may help to answer questions about the effectiveness of an intervention (i.e. 'what works'), whereas research evidence from qualitative research may help to answer questions such as how and why some types of interventions work.

Systematic reviews offer four advantages to potential target audiences outside the research community, the first two of which apply primarily to reviews that answer questions about 'what works.' First, the likelihood of being misled by research evidence is lower with a systematic review than with an individual study.¹ Second, confidence in what can be expected from an intervention is higher with a systematic review than with an individual study.¹ Third, drawing on an existing systematic review constitutes a more efficient use of time. Why comb through the research literature and struggle with appraisals of its quality when this has already been done in a systematic and transparent way? Fourth, a systematic review can be more constructively contested than an individual study. Without a systematic review, one study can be used in a debate to undermine an argument based on another study with a different result. The transparency in each phase of a systematic review means that debates can instead be focused on the decisions made in each phase of a review as well as on the applicability of the review in different contexts.

Despite the advantages of systematic reviews for all these potential target audiences, much of what has been written about systematic reviews of the health care literature pertains to systematic reviews of randomized controlled trials with clinicians as the target audience.¹ Systematic reviews of other types of studies (e.g. qualitative research or combinations of qualitative and quantitative research)^{2,3} or systematic reviews that address much broader questions (e.g. how can we spread and sustain innovations in health service delivery and organization?)^{4,5} appear less commonly in the health care literature. Health care managers and policy-makers are less commonly seen as a target audience for systematic reviews, albeit a target audience for which systematic reviews will address only one type of uncertainty.⁶⁻¹⁰

Few national efforts exist to engage health care managers and policy-makers in producing systematic reviews. Some notable exceptions include the National Health Service (NHS) Service Delivery and Organization R&D Programme (in the United Kingdom) and the Evidence-based Practice Centres funded by the Agency for Healthcare Research and Quality (in the United States). We know of no national efforts to engage health care managers and policy-makers prospectively in adapting the existing stock of systematic reviews to enhance their local applicability, but we do know of one nascent national effort (in Norway) to respond to urgent requests for research evidence from

health care policy-makers by identifying and adapting potentially relevant systematic reviews over a period of hours and days, not weeks and months.

Existing sources that provide one-stop shopping for quality-appraised systematic reviews, such as The Cochrane Library, contain a small but growing stock of systematic reviews that address one of the most important types of questions asked by health care managers and policy-makers – what works? The Library includes Cochrane reviews that have met the standards of a Cochrane review group as well as other systematic reviews that have been (or soon will be) quality appraised by two independent raters. The reviews increasingly provide (even if they do not always highlight) some of the information most relevant to health care managers and policy-makers (e.g. differential effects by ethno-cultural group). The reviews typically fail to provide information about the contextual factors that may influence applicability in other contexts, which leaves health care managers and policy-makers to struggle through assessments of local applicability on their own. Moreover, as befits a global resource, these sources of quality-appraised reviews do not include reviews that have been adapted in ways that enhance their applicability in particular contexts. We know of no source that provides one-stop shopping for quality-appraised systematic reviews that address other types of questions that are asked by health care managers and policy-makers.

We undertook an exploratory study to identify ways in which researchers and research funders could improve the usefulness of systematic reviews for health care managers and public policy-makers that could then be evaluated prospectively. We asked five questions in the course of our research:

1. What is the nature of decision-making and the approach to research evidence in health care management and policy-making?
2. What types of questions are asked in health care management and policy-making that could be informed by systematic reviews?
3. How is research evidence assessed before it is used to inform health care management and policy-making?
4. How much value is placed on researchers providing recommendations about a preferred course of action for health care managers and policy-makers and on using language that is locally applicable?
5. What is the optimal way to present research evidence for use in health care management and policy-making?

Methods

We systematically reviewed studies of decision-making by health care managers and policy-makers, conducted our own interviews with managers and policy-makers, and reviewed websites that include managers and

policy-makers among their target audiences. We provide here an overview of our methods. Additional details are available in the full report.¹¹

Studies of decision-making by managers and policy-makers

We conducted a systematic review to answer the question: what factors influence the use of research evidence in decision-making by health care managers and health care policy-makers? Our approach to answering this question allowed us to examine the nature of decision-making in health care management and policy-making (i.e. to address part of question 1) and the attributes of research evidence and its presentation that influence whether it is used to inform health care management and policy-making (i.e. to address parts of questions 3, 4 and 5). We built our systematic review on the only completed systematic review of studies that examined decision-making by both managers and policy-makers in the health sector.¹² While we preserved the rigour of this review in its identification and appraisal of studies, we refined the selection criteria and the approach to extracting the data needed to interpret the findings of the studies included in the review.

In our systematic review, 17 studies reported in 20 articles met the inclusion criteria. The 17 studies included seven focused on health care managers (three employed case studies,¹³⁻¹⁶ two employed surveys,^{17,18} and two employed interviews^{19,20}) and 10 focused on health care policy-makers (four employed case studies,²¹⁻²⁴ and six employed interviews²⁵⁻³²). Data were extracted from the studies by two individuals working independently and then independently checked by a third reviewer (the lead author). Some of the types of data to be extracted were chosen to explore particular hypotheses about how systematic reviews can best be produced and adapted. These hypotheses were explored separately for health care managers and policy-makers. We used the study design, study quality and consistency of findings to move beyond a simple vote-counting approach to interpret the findings.

Interviews with health care managers and policy-makers

We conducted semistructured interviews with a purposive sample of health care managers (or the senior staff of associations that seek to inform managers) in Ontario and England and health care policy-makers in the Canadian federal and Ontario provincial governments and the United Kingdom and Scottish governments to explore their experiences with acquiring information to inform their decisions and their perspectives on how researchers can better produce and adapt systematic reviews to inform health care management and policy-making. Our sample frame

was defined by both jurisdiction and role, and we identified potential study participants through key informants and government websites. We interviewed 10 health care managers (six in Canada and four in the United Kingdom) and 19 health care policy-makers (11 in Canada and eight in the United Kingdom). Many individuals had experience with and spoke about more than one role. Study participants were almost always drawn from the top ranks of their respective organizations (in the case of health care managers), department (in the case of civil servants), or office (in the case of political advisors).

The principal investigator conducted semistructured interviews in person when possible ($N=16$) and by telephone otherwise ($N=13$). The interview instrument covered five main domains: the types of documents and other sources of information used or prepared to inform decisions (to address part of question 1); experiences with commissioning or using a systematic review of the research evidence and, if applicable, the types of questions addressed and the timelines involved (to address part of question 2); the types of questions asked about research evidence (to address part of question 3); perspectives on whether particular innovations enhanced or reduced the effectiveness of a systematic review (to address part of questions 3, 4, and 5); and perspectives on whether and how responses to the questions would likely differ from others in important ways. The interviews were audiotaped and transcribed. The lead investigator used both the transcribed interviews and extensive notes taken during and immediately following the interviews to conduct the analysis.

The approach to the interviews and to the analysis of the interviews developed iteratively. Preliminary analyses of transcripts and notes from earlier interviews were used to modify the prompts used in later interviews. Instead of just asking a general question, the interviewer would ask the question as well as ask the study participant to react to the range of responses that had been received to date. The goal of this process was to encourage a dialogue across multiple perspectives. The analyses began by type of question and then proceeded to the identification of themes both within the responses to particular questions and across the entire interview. The analyses also began with a focus on descriptions of experiences and perspectives and then proceeded to the identification of possible explanations for particular patterns of response (e.g. managers versus policy-makers).

Websites that include managers and policy-makers among their target audiences

We reviewed the websites of a purposive sample of research funders, producers/purveyors of research, and journals in Canada and the United Kingdom and of research funders and journals in the United States that (implicitly or explicitly) include health care

managers and policy-makers among their target audiences to explore their approaches to reporting systematic reviews and whether and how their approaches matched with what we were learning from our systematic review and interviews. For each of the 14 research funders' websites, 14 producers/purveyors' websites, and 17 journals' websites, we identified and printed documents about (or that illustrated) how the research funder, producer/purveyor, or journal requires systematic reviews (or original research) to be presented and the five most recently published systematic reviews and/or original studies with explicitly stated implications for health care managers and policy-makers from which their approaches could be deduced (and, if relevant, compared to their written guidelines). We strove for a mixture of types of documents while ensuring that we included at least two systematic reviews when they could be found on a website. Only documents produced since January 2000 were included. For each selected document, data were extracted by a research assistant and quality checks were conducted by the lead author.

Additional steps taken to review our interpretations from multiple perspectives

We participated in and organized several meetings at which our interim results could be discussed and challenged. The lead author participated in the mid-project workshop at which a diverse array of researchers, health care managers, and health care policy-makers provided feedback on the interim report. Various combinations of members of the study team, which is itself diverse from a disciplinary and methodological perspective, met in person several times over the life of the study to review the original proposal, preliminary analyses, the draft of the interim report, and the feedback from the mid-project workshop. The study team included individuals with an advanced working knowledge of the organizational studies and political science literatures, a track record of research into decision-making by health care managers and policy-makers and the context within which they work, and a track record of conducting, adapting and disseminating systematic reviews.

We also solicited feedback on the draft report from the 19 health care managers and policy-makers who were interviewed as part of the study and who indicated that they would like to review the draft final report before it was made public. Five of the study participants indicated that they had read the report and four of the five offered suggestions about how to improve it. Suggestions for improvement included addressing a minor factual error, making the language more accessible, improving the presentation format, and adding several caveats; none of the suggestions pertained to the interpretation of the interviews or the implications of the project.

Results

Studies of decision-making by managers and policy-makers

Our systematic review of studies of decision-making by health care managers and policy-makers has led us to a number of observations about the state of research evidence for each of the two groups. Compared to studies of health care policy-makers,²¹⁻³² the studies of managers are:¹³⁻²⁰

- fewer in number (seven studies compared to 10);
- less likely to use more than one method of data collection to examine research use (one study – a case study that drew on interviews supplemented by document analysis – compared to three);
- roughly equally likely to not describe adequately the sampling and measurement methods that were used (two studies of health care managers met all three of the methodological criteria and five did not meet them, whereas one study of health care policy-makers met all three of the methodological criteria, three partially met them, and six did not meet them); and
- less likely to yield findings consistent across a number of contexts (only two factors emerged in more than one study of managers and no factors emerged in more than two studies, whereas six factors emerged in two studies of policy-makers, two factors emerged in three studies, one factor emerged in four studies, and one factor emerged in six studies).

Turning now to question 1 about the nature of decision-making in health care management and policy-making, many factors other than the attributes of research evidence and its presentation influenced the use of research evidence. For managers, however, the only two factors that emerged in more than one study were the (lack of) support of the management or frontline staff who had influence in the area where change was required,^{15,16,19} which tended to decrease the prospects for research use, and relationships with or involvement of these staff in the research process, which tended to increase the prospects for research use.^{15,16,19} For health care policy-makers, interactions with researchers emerged in six studies as a factor that increased the prospects for research use.^{23,24,27,28,30-32} Individuals' attributes emerged as an important factor in decreasing the prospects for research use: individuals' lack of skills and expertise emerged in three studies^{23,29,32} and individuals' negative attitudes towards research evidence emerged in three studies.^{23,30-32} Policy networks that brought policy-makers together with researchers through formally structured mechanisms emerged in two studies as a factor that increased the prospects for research use.^{23,24} Conflicts and rivalries involving elected officials and, possibly, civil servants emerged in two studies as another factor that increased the prospects for research use.^{21,22}

We now turn to parts of questions 3, 4, and 5 and specifically to the attributes of research evidence and its presentation that influenced the use of research evidence. Systematic reviews were never cited as the source of research evidence when research evidence was used. For health care managers, no factors related to the attributes of research evidence and its presentation emerged in more than one study and only two studies identified any such factors. The quality of the research *per se* and trust in the researcher emerged as factors that increased the prospects for research use in one study each and late or poor timing in the delivery of a report emerged as a factor that decreased the prospects for research use in one of the same two studies.^{15,16,18} For policy-makers, one factor related to the attributes of research evidence and its presentation emerged in four studies and four factors emerged in two studies. Timing and timeliness increased the prospects for research use in two studies and poor timing or the lack of timeliness decreased the prospects for research use in two studies.^{27-29,32} Trust in the researcher emerged as a factor that increased the prospects for research use in two studies.^{23,28} Lack of perceived relevance, use of jargon, and only publishing for a scholarly audience in academic journals were factors that were found to decrease the prospects for research use in two studies each.^{23,27,29,32}

In conclusion, our systematic review demonstrates that the research evidence about decision-making by health care managers and policy-makers is not that plentiful, rigorous (in the sense of using more than one method of data collection and adequately describing the sampling and measurement methods) or consistent (in the sense of similar factors emerging in a number of contexts). Systematic reviews were never cited as the source when research evidence was used by either health care managers or policy-makers. Taking study design, study quality and consistency of findings into consideration, we can rank the factors that influence the use of research by managers and policy-makers from the most to the least rigorously demonstrated and consistent:

- interactions between researchers and health care policy-makers increased the prospects for research use by policy-makers;
- timing and timeliness increased (and poor timing or lack of timeliness decreased) the prospects for research use by policy-makers;
- policy-makers' negative attitudes towards research evidence decreased the prospects for research use by policy-makers;
- policy-makers' lack of skills and expertise decreased the prospects for research use by policy-makers;
- policy networks, conflicts and rivalries and trust in the researcher increased the prospects for research use by policy-makers, while lack of perceived relevance, use of jargon, and only publishing for a scholarly audience decreased the prospects for research use by policy-makers; and

- relationships with or involvement of health care staff in the research process increase the prospects for research use by managers, whereas the (lack of) support of the management and front-line staff who had influence in the area where change was required decreased the prospects for research use by managers.

Interviews with health care managers and policy-makers

Our interviews with health care managers and policy-makers have led us to a number of observations about their experiences with acquiring information to inform their decisions and their perspectives on how researchers can better produce and adapt systematic reviews to inform health care management and policy-making. Beginning with the part of question 1 that addresses the nature of decision-making in health care management and policy-making, one of the predictable but nevertheless important findings from our interviews is the difference in organizational context between health care managers and health care policy-makers. Senior managers are typically expert generalists working in relatively flat organizations with a relatively focused mandate. Policy-makers are often non-experts who rely on structure (e.g. a division of labour among the Prime Minister's Office, Cabinet Office, the Treasury/Finance department and line departments such as Health) and process (e.g. briefings by policy and political advisors who in turn draw on inputs from within their hierarchically organized divisions) to address a very broad mandate. In both cases, however, many factors other than research evidence influence decisions, such as financial sustainability, local competition, and strategic fit for health care managers and legal issues, pressure from stakeholders and public opinion for health care policy-makers.

Approach to research evidence

Turning now to the part of question 1 that addresses the approach to research evidence in health care management and policy-making, our interviews suggest that there is no consistent approach to research evidence. Managers often rely on data such as expenditures and utilization rates but they tend to rely less on research evidence *per se*. Policy-makers appear to rely on a wider array of information but they too tend to rely less on research evidence. While there is typically a formal structure to the documents that are used to inform policy-making, none of the document templates that we obtained or discussed during the interviews contained explicit requirements for research evidence. Moreover, the expectations set by central agencies (such as a Cabinet Office) or senior staff within a line department tended not to place explicitly a high value on research evidence (and certainly not on systematic reviews). Rather, there was an assumption held by most of those who we interviewed that policy

analysts within line departments had the expertise to provide informed advice in their respective domains.

Types of managers' questions

We now turn to question 2, which is about the types of questions asked by health care managers and policy-makers that could be informed by research evidence in general and systematic reviews in particular. The interviews were not designed to elicit systematically the types of questions asked by managers and policy-makers but rather the types of questions that had been asked in systematic reviews that they had commissioned or used. Moreover, the interviewer did not define 'systematic review' or explicitly ask interviewees to focus on a particular type of systematic review (e.g. a systematic review about 'what works'), so more often than not their responses pertained to traditional literature reviews rather than systematic reviews. A few of the managers and policy-makers who were interviewed have commissioned literature reviews internally, a few have commissioned them externally, and more (indeed more than half of health care policy-makers) have used literature reviews. The questions addressed in the reviews used by managers tended to be designed to inform a decision about continuing, starting/expanding, stopping/contracting or modifying a programme (e.g. how to reduce the prevalence of obesity), although there were examples of questions about how to fit programmes or services into a health care organization or region (i.e. about governance, financial and delivery arrangements), questions about how to bring about change, as well as these three questions combined and more general 'what do we know about...?' questions. The questions addressed in the reviews used by policy-makers tended to be more in the category of the three questions combined (e.g. how to deal with obstetrical care in a region) and questions such as what do we know about patient choice?

Types of questions about research evidence

We now turn to question 3, which is about the types of questions asked about research evidence. Many health care managers and policy-makers were prepared to assume that researchers had conducted and interpreted their research appropriately, particularly if they knew them personally or knew of them by reputation, if the funder was a 'disinterested' organization and/or the source was unbiased (e.g. a peer-reviewed journal). Most were more concerned with the local applicability of research evidence. However, only three dimensions of local applicability were mentioned by three or more interviewees: conducted in a similar environment (e.g. do-able given union agreements, acceptable given culture and values and acceptable given the views of stakeholders such as physicians), conducted in similar ethno-cultural and demographic groups, and conducted recently given the rapid pace of change. Several interviewees suggested that the value of grappling with

a systematic review and its local applicability was that it prompted a process of reflection. One argued that 'it's really about idea generation and avoiding pitfalls'.

We also expanded our conception of question 3 to examine perspectives on whether particular innovations in systematic reviews about 'what works' (i.e. one particular type of systematic review) enhanced or reduced their effectiveness. The first innovation – providing information about the benefits, harms (or risks), and costs – was supported by the five health care managers and the 15 health care policy-makers who spoke to the issue. One policy-maker commented that providing information about risk (not just benefits) would be helpful in government because most of their assessments of risk were notional and not based on research evidence. Another policy-maker commented that providing these three types of information was 'not just helpful but expected'. The second innovation – highlighting information about the uncertainty associated with estimates – was supported by the six managers and the 15 policy-makers who addressed the issue. One policy-maker said: 'A range of potential benefits begs the question 'why?' It's important to speak truth to power. Cabinet needs to have the full array of information, so if part of that is the uncertainty, they need to know'. The third innovation – providing information about variation in estimates by subgroup – was supported by the seven managers and the 15 policy-makers who spoke on the issue. One manager in particular supported this because of the pressure to do health equity audits and to target disadvantaged groups. A policy-maker emphasized that the distribution of benefits and costs 'is always a big public policy question that is always asked'. One policy-maker in the United Kingdom summed up a view about the three innovations that was held by many: 'These are the bread and butter of policy analysis. Those three areas are perfectly reasonable statements of fairly standard assessments that we ought to be doing'.

Value of research

We now turn to question 4, which is about the value placed on researchers providing recommendations about a preferred course of action for health care managers and policy-makers and on using language that is locally applicable. Managers and policy-makers disagreed about whether researchers should move beyond a strict interpretation of their results to describe the likely local effects of alternative courses of action and/or to provide recommendations about a preferred course of action for managers and policy-makers. There was no clear pattern in their responses by jurisdiction or role. Managers' preferences ranged from researchers sticking with a strict interpretation of their results (and possibly then participating in a debate with others about what should be done), moving beyond this only if they engage managers in developing the messages, and providing recommendations only if personal perspectives (i.e. biases) are stated

explicitly. Policy-makers' preferences were equally broad ranging but appeared to be more strongly held. For example, one policy-maker said: 'There's nothing, if I can be brutal about it, more pathetic than academics trying to pretend to have political positions when actually they have no battalions. What they've got is their research. Some will say "I really think you should do this". And you say "OK, what is the basis of that?" And you look at their research and actually there is sometimes a very large gap because it's their politics that's entered into it. Sometimes I think they're treating us as a bit foolish as if we don't notice that'. Policy-makers were more likely than managers to highlight the importance of using language that is locally applicable, although the emphasis was more on removing jargon than on using the precise words that were in common use locally.

Presentation of research evidence

Turning now to question 5, which is about the optimal way to present research evidence for use in management and policy-making, using something like a 1:3:25 format (i.e. one page of take-home messages, a three-page executive summary that summarizes the full report, and a 25-page report, as well as a longer technical report if necessary) was supported by all eight managers and by 18 of the 20 policy-makers who addressed the issue. Of the two policy-makers who did not support such an approach, one said it was 'OK but not critical' (arguing they will find the research evidence and make use of what they need no matter how it is presented) and the other said it was not important (arguing they are more focused on quality than presentation). Health care managers and policy-makers offered four advantages to something like a 1:3:25 format:

- the shorter formats address the concern that most research reports are longer than can or will be read unless the reports speak directly to an issue currently at the top of a priority list ('the constant balance we face is between what you want to tell the world and what the world needs to hear');
- the multiple formats address the concern that different audiences have different needs that are not always met by a one-size-fits all approach and the same audience might have different needs at different times ('you need to have flexibility in the product to make sure each of the key audiences has appropriate materials to support their decision');
- the up-front placement of take-home messages reflects how many health care managers and policy-makers actually read research reports (i.e. by reading the abstract and conclusions first); and
- the structure helps researchers learn clarity and brevity.

Many interviewees emphasized that there is nothing magical about a 1:3:25 format, but that the general idea

is a good one. One manager emphasized that all three formats must be of high quality and hang together.

Both managers and policy-makers argued that these innovations left unresolved the retrieval challenge that they face. A senior staff of an association that seeks to inform managers argued that the 'problem is when managers need it, how do they get it because people cannot recall the detail afterwards and given how grounded managers are and how research is rarely grounded in their job.' A policy-maker made a similar point: 'The crucial thing though that is difficult here is that the timetable and the meaning of producing that 1:3:25 is only by happenstance linked to the timetable of my need for it. Usually what happens is we get really interested in something and people start researching it. And by the time they've completed their research, we've done a load of stuff.... It's generally outdated by the speed at which we move'.

Many managers and policy-makers felt that their responses to the questions, particularly their orientation towards research evidence, would likely differ from others in important ways. The explanations that they offered for these differences included their position within an organization, background, attitudes, cohort and the overall context. However, only a few explanations were cited two or more times. Two managers cited past exposure to research (i.e. background) and three cited an analytical or policy orientation (i.e. attitudes) as explanations for why some managers were more oriented towards research evidence. The analytical or policy orientation was defined as needing a lot of information to make decisions and contrasted with an action orientation, which was defined in its extreme form as a 'ready, shoot, aim' style. When prompted about a possible cohort effect, two managers argued that younger cohorts were no more oriented towards research evidence than older cohorts. Two policy-makers cited location within the policy (or longer term strategy) part of a department (rather than a programme or performance unit) (i.e. position within the organization) and past exposure to research (i.e. background) as explanations for why some policy-makers were more oriented towards research evidence.

Summary

In conclusion, our interviews with health care managers and policy-makers suggest that:

- senior managers and the broad array of policy and political advisors in both line departments like health and central agencies like Cabinet Office represent potential target audiences for systematic reviews;
- the structure of the documents used to inform decisions and the expectations set by senior managers and policy-makers do not explicitly place

a high value on research evidence in general or systematic reviews in particular;

- the questions addressed in the reviews that have been used by health care managers and policy-makers include 'what works' (to inform programming decisions), how to fit programmes or services into a health care organization or system, and how to bring about change, as well as these three questions combined and more general 'what do we know about...?' questions;
- the quality of research evidence is often taken for granted but local applicability is not, even though managers and policy-makers have no consistent approach to its assessment;
- three innovations in systematic reviews about 'what works' were universally supported by managers and policy-makers as ways to enhance the effectiveness of reviews: providing information about the benefits, harms (or risks), and costs; highlighting information about the uncertainty associated with estimates; and providing information about variation in estimates by subgroup;
- health care managers and policy-makers disagree about whether researchers should make recommendations and there was no clear pattern in their responses by jurisdiction or role;
- presenting systematic reviews using something like a 1:3:25 format is preferred over current approaches;
- some managers and policy-makers argued that these innovations left untouched the retrieval challenge that they face; and
- no factors emerged repeatedly as possible explanations for differences in responses to the questions or more specifically in orientations towards research evidence.

Websites that include managers and policy-makers among their target audiences

Our analysis of the websites of 14 research funders, 14 producers/purveyors of research, and 17 journals have led us to a number of observations about their approaches to reporting systematic reviews and whether and how their approaches matched with the provisional guidance arising from our systematic review and interviews. The first two of the observations do not pertain directly to a research question but rather to the overall context for the research study. First, more than half (60%) of the websites had documents about (or that illustrate) how systematic reviews (or original research) are to be presented. While the websites of journals consistently included such documents, it was research funders and, less frequently, research organizations whose guidelines appear to have been motivated in part by a desire to enhance the usefulness of systematic reviews (or original research) for managers and policy-makers. Second, most (84%) websites

contained at least one literature review published since 2000 that had potential applicability for managers and policy-makers, and half (50%) of these websites (but a much lower percentage of the websites of producers/purveyors specifically) had at least one literature review that met the definition of a systematic review that we provide in this report. A variety of terms were used for different types of literature reviews.

Turning to question 3, about the types of questions asked about research evidence, the authors of the reports of systematic reviews or original research used several approaches to make it easier for health care managers and policy-makers to assess the quality and local applicability of the research evidence. Researchers' affiliations and the project funding source were almost always provided in at least one of the reports on a website (91% and 96%, respectively), which could facilitate indirect assessments of the credibility of the research. Such information may be useful for lowering confidence, for example, in industry-sponsored research, where there is an obvious conflict of interest. However, it may be misleading if it is assumed that it can reliably raise confidence, for example, by assuming that affiliation with a prestigious university is a good indicator of research quality. Research funders were less likely than producers/purveyors of research and journals to include researchers' affiliations in a report. Mentions of researchers having engaged managers and policy-makers in discussions to ensure the messages arising from the systematic review or original research were true to both the research and the context in which the systematic review or original research was conducted (or more generally to guide the systematic review or research process) were rare; only 9% of websites had at least one report that referred to such linkage and exchange processes and three of the four websites belonged to research funders. It was only in very rare instances that authors highlighted the attributes of the context in which the research included in a systematic review was conducted in order to inform assessments of the applicability of the review in other contexts.

Question 4 was about the value placed on researchers providing recommendations and using language that is locally applicable. At least one of the reports from almost all (91%) websites highlighted implications, recommendations, and/or actionable messages directed at health care managers and policy-makers, but less than half (42%) of websites had one or more reports that provided examples of possible action. Most (80%) websites had at least one report that used language appropriate to managers and policy-makers (i.e. avoided clinical or research jargon) and just over half (56%) had at least one report that was visually appealing. Journals were less likely to avoid jargon or have visually appealing reports than either research funders or producers/purveyors of research. At least one of the reports on most (71%) websites provided contact information for individuals who could answer questions about the report but it was much rarer for at

least one of the reports on a website to provide contact information for individuals who could answer questions more generally about a topic covered in a report (13% of websites). Five of the six websites that provided more general support belonged to research funders.

Turning finally to question 5, which is about the optimal way to present research evidence for use in health care management and policy-making, presenting research evidence following a graded-entry (e.g. a 1:3:25 format) for one or more of the reports was rare (7% of websites). Pull-out boxes were used more often (33% of websites had one or more reports with pull-out boxes) and bullets used yet more often (75% of websites had one or more reports with bullets). Less than half (44%) of the websites had one or more reports with summaries that used a structured format, whereas a lower proportion (33%) of websites had one or more reports with executive summaries that had headings corresponding to those in the full report and a much higher proportion (73%) of websites had one or more reports with unstructured summaries. Canadian organizations were more likely to rely on unstructured summaries than organizations in the United Kingdom or the United States. As these proportions suggest, some documents had more than one type of summary.

In conclusion, our analysis of websites that include health care managers and policy-makers among their target audiences suggests that:

- at least one systematic review was found on half of the websites;
- information that could facilitate one type of indirect assessment of the credibility of the research, such as researchers' affiliations and the project funding source, were provided relatively frequently but mentions of linkage and exchange processes that involved health care managers and policy-makers were rare;
- attributes of the context in which the research included in a systematic review was conducted were rarely provided to inform assessments of the applicability of the review in other contexts;
- recommendations were often provided, clinical and research jargon was sometimes avoided, but direct contact with content experts was rarely facilitated by providing contact information; and
- reports using a 1:3:25 format were rare.

Discussion

The exploratory nature of our research and the general lack of research evidence against which we can compare our findings mean that the answers to our questions are provisional. The value of our systematic review was limited by the small number of studies available and by how the studies often used only one method of data collection and inadequately described the sampling and measurement methods that were used. The value of our interviews was limited by having

sought out only senior health care managers and policy-makers and by having developed specific questions about innovations in reviews about 'what works' but not about innovations in reviews that address other types of questions. We might have obtained different perspectives had we sought out policy analysts, for example, and had we asked questions about reviews that addressed issues like patients' experiences with and perspectives on something like continuity of care or patient choice. The value of our analysis of websites was limited by having to finalize decisions about the data to be collected before we had completed the systematic review or the analysis of all the interviews. We might have obtained more detailed data about the number of reports that included recommendations, for example, had we distinguished among implications, recommendations, and actionable messages.

In an effort to make transparent our movement from questions to provisional answers to potential implications, we provide in Table 1 some potential implications and the basis on which we put them forward for consideration. Of these implications, perhaps the one requiring more elaboration is the implication that researchers should highlight the likely effects of alternative courses of action but not provide recommendations for health care managers and policy-makers in a written report about a systematic review. As we have described above, managers and policy-makers disagree about whether researchers should make recommendations. Research evidence is helpful but never sufficient grounds for making recommendations and decisions. Values, as well as other types of information, are also needed. Why run the risk of assuming that researchers have a good sense of the values of those who will be affected by the decision?

Moreover, weighing the benefits, harms (or risks), and costs of alternative courses of action is typically seen as the purview of the *particular* health care managers and policy-makers who will have to live with the consequences. Why run the risk of alienating one segment of a target audience in the researchers' own jurisdiction (where the researchers presumably have some knowledge of the local context) and perhaps most segments of a target audience in other jurisdictions (where researchers presumably have little to no knowledge of the local context)? A more straightforward response to the observation that some health care managers and policy-makers want to learn from researchers' recommendations would be for these select managers and policy-makers to organize meetings or telephone calls in which they can both hear the recommendations *and* question the researchers about where the research and their practical experiences end and where personal opinions based on their own values begin.

The domain of improving the usefulness of systematic reviews for health care managers and policy-makers is sufficiently under-developed that our overarching message might best be stated as follows: researchers

Table 1 Potential implications for improving the usefulness of systematic reviews for health care managers and policy-makers

Original research questions	Potential implications of our provisional answers	Support for the potential implications
1. What is the nature of decision-making and approach to research evidence in health care management and policy-making?	<p>Think broadly about health care managers and policy-makers as target audiences</p> <p>Demonstrate to them the value of systematic reviews</p> <p>Engage them in the production and adaptation of systematic reviews</p> <p>Build their capacity to identify quality-appraised sources of systematic reviews and to appraise their local applicability</p>	<ul style="list-style-type: none"> ● Interviews suggest that senior health care managers and the broad array of policy and political advisors in both line departments like health and central agencies like Cabinet Office represent potential target audiences for systematic reviews ● Systematic review identified that policy-makers' negative attitudes towards research evidence decreased the prospects for research use by policy-makers ● Interviews suggest that the structure of the documents used to inform decisions and the expectations set by senior health care policy-makers do not explicitly place a high value on research evidence in general or systematic reviews in particular ● Systematic review identified that interactions between researchers and health care policy-makers increased the prospects for research use by health care policy-makers ● Analysis of websites suggests that such linkage and exchange processes are rare ● Others have argued that we need to enhance the public accountability of researchers when they derive take-home messages from research³⁹ ● Systematic review identified that health care policy makers' lack of skills and expertise decreased the prospects for research use by policy-makers and systematic reviews were never cited as the source of research evidence when research evidence was used by either health care managers or health care policy-makers
2. What types of questions are asked in health care management and policy-making that could be informed by research evidence in general and systematic reviews in particular?	Produce systematic reviews that address a broad array of questions	<ul style="list-style-type: none"> ● Interviews suggest that the questions addressed in the reviews that have been used by health care managers and policy-makers include questions about 'what works,' how to fit programs or services into a health care organization or system, and how to bring about change, as well as these three questions combined and more general 'what do we know about...?' questions
3. How is research evidence assessed before it is used to inform health care management and policy-making?	<p>Make available an online source of all types of quality-appraised systematic reviews</p> <p>Identify the benefits, harms (or risks) and costs of interventions (not just benefits), highlight the uncertainty associated with estimates, and describe any differential effects by subgroup (e.g. ethno-cultural group)</p> <p>Identify attributes of the context in which the research included in a systematic review was conducted to inform assessments of the applicability of the review in other contexts</p>	<ul style="list-style-type: none"> ● Systematic review identified that timing and timeliness increased, and poor timing or lack of timeliness decreased, the prospects for research use by health care policy-makers ● Interviews suggest that the quality of research evidence is often taken for granted by health care managers and policy-makers and they face a retrieval challenge when they identify a need for research evidence ● Generally accepted criteria are available to inform these assessments for questions about 'what works'⁴⁰ ● Interviews suggest that these three innovations are universally supported by health care managers and policy-makers as ways to enhance the usefulness of reviews ● Others have argued that subgroup analyses need to be interpreted with caution⁴⁰ ● Interviews suggest that, unlike the quality of research evidence, its local applicability is not taken for granted, even though health care managers and policy-makers have no consistent approach to its assessment ● Analysis of websites suggests that attributes of the context in which the research included in a systematic review was conducted are rarely provided to inform assessments of local applicability
4. How much value is placed on researchers providing recommendations and on researchers using language that is locally applicable?	Highlight the likely effects of alternative courses of action but do not provide recommendations in systematic reviews	<ul style="list-style-type: none"> ● Criteria have been proposed to inform the identification of these attributes¹⁰ ● Interviews suggest that health care managers and policy-makers disagree about whether researchers should make recommendations ● Analysis of websites suggests that recommendations are often provided in reports

Table 1 (Continued.)

Original research questions	Potential implications of our provisional answers	Support for the potential implications
5. What is the optimal way to present research evidence for use in health care management and health care policy-making?	<p>Avoid the use of jargon in reports about systematic reviews</p> <p>Develop more user-friendly formats for potentially relevant systematic reviews (e.g. one page of take-home messages and a three-page executive summary) to facilitate rapid assessments of the relevance of a review and, when the review is deemed highly relevant, more graded entry into the full details of the review</p>	<ul style="list-style-type: none"> ● Systematic review identified that use of jargon is a factor that may decrease the prospects for research use by health care policy-makers ● Interviews suggest that some health care policy-makers place an emphasis on removing jargon from reports ● Analysis of websites suggests that clinical and research jargon can be avoided ● Interviews suggest that presenting systematic reviews using something like a 1:3:25 format is preferred over current approaches ● Analysis of websites suggests that reports using a 1:3:25 format are rare

and research funders should take risks and innovate in the production and adaptation of systematic reviews on a sufficiently large scale and using a sufficiently rigorous design to evaluate prospectively the innovation's effectiveness so that our provisional answers and potential implications can be revised or changed if necessary. One priority area for innovation and evaluation would be in the production of systematic reviews that address the full range of questions being asked by health care managers and policy-makers. Such innovations are beginning to appear and warrant further study.²⁻⁵

But there are also innovations in what we call 'systematic reviews plus' and these, too, require further study. The Canadian Health Services Research Foundation, for example, has defined what it calls a 'policy synthesis' as drawing together 'published literature, 'grey' literature, decision makers' experience, and researchers' knowledge and experience in order to make best practice recommendations for a specified area of policy development under active consideration by identified and interested decision maker(s).'³³ Expanding the types of data included in a systematic review beyond research evidence (i.e. beyond the published and 'grey' literature) to include researchers', health care managers', and health care policy-makers' experiences takes us to the limits of our knowledge about systematic review methodologies. Such innovations should be studied but not yet promulgated widely. Funding researchers to conduct both a systematic review that can be added to the global stock of systematic reviews *and* a study of their and others' experiences, on the other hand, may have advantages. However, as we have found in conducting this study, combining a systematic review and a study of managers' and policy-makers' experiences can be a formidable logistical and reporting challenge. And when researchers include their own experiences as well, they run the risk of giving them disproportionate weight.

A second priority area for innovation and evaluation would be in the adaptation of systematic reviews. Researchers could begin to identify more explicitly the attributes of the context in which the research included in the review was conducted to inform assessments of the applicability of the research in their local context as well as other contexts. A general structure for how to approach assessments of local applicability has been developed, but this needs further elaboration and testing.¹⁰ Researchers and others could begin to develop more user-friendly front ends for potentially relevant systematic reviews (e.g. one page of take-home messages and a three-page executive summary). A general structure for how to approach such documents has been developed,³⁴ but this needs significant revision. Presumably, either the one- or three-page summary should follow a structured format. Structured abstracts are an innovation developed by those producing research germane to clinical practice.^{35,36} Alternative structures could be tested relatively rapidly if measures of usability, rather than

measures of use, were used as outcomes. Given how focused health care managers and policy-makers can be on the issues currently confronting them, such testing would require users to assume that the issue was currently on their agenda or the agenda of someone to whom they were providing advice.

Efforts to increase the flow of locally adapted systematic reviews need not come at the expense of the global stock of systematic reviews. Funding researchers to produce both a systematic review that can be added to the global stock of systematic reviews and a locally adapted version constitutes a win-win-win situation. The researchers who produced the review get credit for contributing to the global pool of knowledge and this contribution is captured through online databases such as The Cochrane Library. Health care managers and policy-makers in other jurisdictions can access the review rapidly (and confidentially) when they need them. Managers and policy-makers in the same jurisdiction as the researcher can access a locally adapted version of the review while knowing that the review meets international quality standards. Because the same health care issues are often faced by many jurisdictions and these issues are often cyclical in nature, systematic reviews that are developed with the input of health care managers and policy-makers and regularly updated are as likely, if not more likely, to transcend time and place as investigator-driven reviews.

Conclusion

Researchers could better inform health care management and policy-making by making several changes to how they produce and update systematic reviews and by adapting existing reviews that are relevant to local health care issues. In terms of the *production* process for the future flow of systematic reviews, researchers could:

- augment the stock of investigator-driven systematic reviews with reviews that involve health care managers and policy-makers in posing questions, reviewing the proposed approach, and interpreting the results;
- for systematic reviews about ‘what works’, identify the benefits and harms (or risks) of interventions (not just benefits), highlight the uncertainty associated with estimates, and describe any differential effects by subgroup (e.g. ethno-cultural group) albeit with due caution given the challenges associated with subgroup analyses;³⁷
- identify attributes of the context in which the research included in a systematic review was conducted to inform assessments of the applicability of the review in other contexts;
- avoid providing specific recommendations for action based on a systematic review; and
- ensure that systematic reviews are included in The Cochrane Library or another source that provides one-stop shopping for quality-appraised systematic reviews.

In terms of the local *adaptation* process for the global stock of systematic reviews, researchers, in partnership with health care managers and policy-makers and with financial support from research funders in their jurisdiction, could:

- identify completed systematic reviews that address questions that are now or soon could be relevant locally;
- develop a more user-friendly ‘front end’ for potentially relevant systematic reviews (e.g. one page of take-home messages and a three-page executive summary) to facilitate rapid assessments of the relevance of a review by health care managers and policy-makers and, when the review is deemed highly relevant, more graded entry into the full details of the review;
- add additional local value to systematic reviews about ‘what works’ by describing the benefits, harms (or risks), *and* costs that can be reasonably expected locally and regularly update the estimates of costs not just the assessments of benefits and harms (or risks);³⁸
- add additional local value to any type of systematic review by using language that is locally applicable and by engaging in discussions about the implications of reviews with the health care managers and policy-makers who could potentially act on the reviews’ take-home messages; and
- make the user-friendly ‘front end’ of systematic reviews available through an online database that could be searched using keywords that make sense to health care managers and policy-makers and that is linked to the full reviews when they are available through other sources, such as The Cochrane Library.

Research funders could provide leadership and financial support for both production and local adaptation processes and for a source that provides one-stop shopping for quality-appraised systematic reviews that do not address questions about ‘what works’. Research funders could:

- fund the production and regular updating of systematic reviews through targeted calls that provide researchers with additional resources to interact with health care managers and policy-makers and with guidance and training about how to improve the usefulness of systematic reviews for these target audiences;
- fund local adaptation processes for systematic reviews, both as part of the funding for the future flow of systematic reviews (i.e. funding both the production of a systematic review that could be used in any jurisdiction and the local adaptation of a systematic review for the funder’s jurisdiction) and as separate processes for systematic reviews that have been identified as potentially relevant from among the global stock of reviews;

- fund the development and maintenance of an online database that provides one-stop shopping for quality-appraised systematic reviews that do not address questions about 'what works' (i.e. fill the gap left by The Cochrane Library);
- reallocate funding away from knowledge-transfer strategies for single studies (unless the study will be positioned in the context of a systematic review of all available studies or the study represents a unique and meaningful contribution in its own right) and towards both a rapid-response unit for short-term requests for systematic reviews (e.g. for questions with a timeline of hours to days, a response might be to search for high-quality and locally applicable systematic reviews) and more proactive knowledge-transfer strategies for high-quality systematic reviews when they are locally applicable and the timing is right or there is a reasonable probability that the timing will be right sometime soon (e.g. when an issue begins to appear regularly in the media); and
- champion systematic reviews among senior health care managers and policy-makers by encouraging them to set clear expectations for their staff that high-quality and locally applicable systematic reviews should be valued more highly than other types of research evidence and support these staff by providing training workshops on how to acquire quality-appraised systematic reviews through electronic databases, assess their local applicability, adapt their format and language to enhance their local applicability, and commission syntheses when none exists.

By innovating in the production and adaptation of systematic reviews and in processes to facilitate the retrieval and encourage the use of systematic reviews, and by prospectively evaluating these innovations, researchers and research funders could take us a long way towards systematic reviews that inform health care management and policy-making.

Acknowledgements

This project was funded by the Canadian Health Services Research Foundation and the NHS Service Delivery and Organization R&D Programme. The views expressed herein are those of the authors and do not necessarily represent the views of the project funders. John Lavis receives salary support as the Canada Research Chair in Knowledge Transfer and Uptake. Andy Oxman is an active contributor to The Cochrane Collaboration. Jean-Louis Denis receives salary support as the CIHR/CHSRF Chair in the Governance and Transformation of Health Care Organizations. The authors thank the following people: the health care managers and policy-makers who participated in the interviews; Shoshannah Levitt, Kiran Jakate, and Amanda Hammill for research assistance; Mike Wilson and Hugh Boyd for support in writing the original proposal; members of the review panel for their comments on the original proposal; participants in the mid-project workshop for their comments on the interim report; and participants in Polinomics for their comments on the penultimate draft of the paper.

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