POLICY BRIEF 17 (BRIDGE SERIES)

How can knowledge brokering be advanced in a country's health system?

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SEVENTH FRAMEWORK
PROGRAMME

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This policy brief is one of a new series to meet the needs of policy-makers and health system managers. The aim is to develop key messages to support evidence-informed policy-making and the editors will continue to strengthen the series by working with authors to improve the consideration given to policy options and implementation.

How can knowledge brokering be advanced
in a country's health system?

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Key messages

What's the problem?

- The overarching problem is that there is a lack of attention given to 'what to do next' to advance knowledge brokering in many European countries' health systems. This problem can be understood by considering four sets of interrelated issues within any given country's health system:

    – untapped potential for health systems information to inform policy-making;

    – missed opportunities to take stock of the current state of knowledge brokering and to prioritize enhancements to information-packaging mechanisms, enrichments to interactive knowledge-sharing mechanisms, and adaptations to organizational models that support knowledge brokering;

    – lack of alignment of support for knowledge brokering, including incentives and requirements for using promising knowledge-brokering mechanisms and models; and

    – limited reach of existing efforts to advance knowledge brokering.

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

- Option 1: Establish a portal for knowledge-brokering mechanisms

    – This option involves taking stock of the current state of knowledge-brokering mechanisms and resources and establishing a country-specific portal through which available knowledge-brokering mechanisms and resources can be identified, accessed and used.

    – A portal for knowledge-brokering mechanisms, if optimally designed, should increase the chance that policy-makers can find the best available health systems information in the time that they have available, which is one of three factors shown to improve the use of health systems information. We found a systematic review about the benefits and potential harms of establishing financial incentives, which is one type of potential reward for contributing to such a portal.

- Option 2: Convene a dialogue to coordinate advancements in knowledge brokering

    – This option involves taking stock of the current state of knowledge brokering and convening one or more national policy dialogues to: prioritize advancements in knowledge brokering, allocate responsibilities for these advancements among existing and new

knowledge-brokering organizations, and establish a coordination process and rewards for these organizations.

– In addition to the review about financial incentives, we found one systematic review about key considerations related to convening policy dialogues and seven reviews about key considerations related to undertaking a priority-setting process. We also found several systematic reviews about key considerations related to supporting the adoption of innovations.

• Option 3: Centralize knowledge-brokering mechanisms in a well-designed organization

– This option involves taking stock of the current state of knowledge brokering, convening national policy dialogues to prioritize advancements in knowledge brokering and begin to identify whether an existing or new organization can best take responsibility for knowledge brokering, and then designing, building consensus on, launching and monitoring and evaluating a single, well-designed knowledge-brokering organization to support the country's health system.

– The reviews about convening policy dialogues, undertaking a priority-setting process and supporting the adoption of innovations are equally relevant to this option. Deliberations about this option would also need to consider explicitly that there are advantages to both having a single organization within a given country (e.g., reduced duplication and confusion) and to having a diversity of organizations in the country (e.g., potential complementarities and dynamism).

What implementation considerations need to be kept in mind?

• Potential barriers to implementing these options include:

– researchers and research organizations resist efforts to give attention to knowledge brokering;

– knowledge brokers and knowledge-brokering organizations resist efforts to share insights and undertake advancements in knowledge brokering that might erode their comparative advantage or lead to an end in their role or organization; and

– policy-makers do not engage in efforts to design advancements in knowledge brokering to meet their needs.

However, these and other potential barriers (and strategies to address them) warrant further study in their own right.

Executive summary

The problem

There is a general lack of attention given to 'what to do next' to advance knowledge brokering in many European countries' health systems. Four sets of interrelated issues can contribute to this problem within any given country's health system.

1. Untapped potential for health systems information to inform policy-making

While there is a considerable body of health systems information being generated within most European countries, it is often not being used as a key input in the policy-making process. The BRIDGE systematic review highlights several examples of health systems information: not being used at all, being only partially used, being used to address one feature of an issue, being used to justify already taken – political – decisions, or being used instrumentally rather than to change how people think about and approach problems, options and implementation.

Health systems information may not be used as frequently or optimally as it might because it is just one of many factors that can influence policy-making processes or because policy-makers and stakeholders may not value health systems information or deem it relevant to the issues they face.

2. Missed opportunities to take stock and prioritize advancements in knowledge brokering

Knowledge brokering, when done successfully, makes effective use of information-packing mechanisms and interactive knowledge-sharing mechanisms, and is undertaken by an organization that has an organizational model geared towards knowledge brokering.

Information-packaging mechanisms need to gather all relevant health systems information into one place, contextualize that information for a given jurisdiction, and make it easier to understand and use. But most types used in European countries employ traditional formats and are not prepared in an engaging way for policy-makers and stakeholders. Moreover, only a small number of organizations in European countries are using promising mechanisms as assessed against the BRIDGE criteria.

While health system policy-makers, stakeholders and knowledge brokers (including researchers) can learn a great deal from one another by working together, most knowledge-sharing mechanisms rely on traditional one-way communication with minimal dialogue between expert and audience.

Genuinely interactive knowledge sharing is required to make health systems information easier to understand and use, contextualize the information for a given jurisdiction, and incorporate the tacit knowledge, views and experiences of those who will be involved in or affected by decisions. Only a small number of organizations in European countries are using promising interactive knowledge-sharing mechanisms.

Most existing **organizational models for knowledge brokering** fail to optimize the match between the knowledge-brokering mechanisms used and the policy-making context. Knowledge brokers need to organize themselves to: 1) inform policy-making using the best available health systems information; 2) inform the production, packaging and sharing of health systems information based on current and emerging policy-making priorities; and 3) employ and continuously improve mechanisms that are based on a solid understanding of the policy-making context. A number of promising examples of organizational models were identified through the BRIDGE study, and elements can be adopted or adapted by others.

3. Lack of alignment of support for knowledge brokering

There are a number of possible explanations for the challenges outlined above:

• Funding agencies within a country may not be promoting the use of organizational models that support knowledge-brokering, and may be emphasizing the production and dissemination of information products rather than encouraging interaction between their producers and users.

• Researchers within a country may lack knowledge about and capacity to support promising knowledge-brokering mechanisms and organizational models.

• Knowledge brokers may have to serve many roles in conveying their organization's information to policy-makers, and may not have time to learn about or execute promising mechanisms or models.

• Policy-makers and stakeholders within a country may lack knowledge about and capacity to use promising mechanisms and models. Additionally, the organizational culture in which they work may not support engaging in external discussions about potentially sensitive policy or organizational issues.

More generally, there is a lack of monitoring and evaluation of knowledge brokering.

4. Limited reach of existing efforts to advance knowledge brokering

It was beyond the scope of the BRIDGE study to identify whether there exist significant policies (or agreed courses of action more generally) at the country

level that would enhance support for knowledge brokering but that had not yet been implemented. Significant investments in research are already made in most European countries that could profitably be reviewed to identify which incentives and requirements support promising knowledge-brokering mechanisms and models, and which undermine them.

Three options for addressing the problem

Of the many potential options to inform future initiatives for advancing knowledge brokering within a country's health system, three exemplars are profiled.

Option 1: Establish a portal for knowledge-brokering mechanisms

Elements of this option might include: 1) taking stock of the current state of knowledge-brokering mechanisms in the country (which includes assessing them against the appropriate set of BRIDGE criteria); 2) taking stock of the current state of knowledge-brokering mechanisms in Europe and globally; 3) taking stock of existing resources, particularly at European and global levels, that contain synthesized health systems information that complements local health systems information; 4) prioritizing existing knowledge-brokering mechanisms and resources that could support policy-making within the country's health system; 5) designing and maintaining a web site that profiles prioritized knowledge-brokering mechanisms and resources and that is easy for policy-makers and stakeholders in the country to understand and to use efficiently; and 6) ensuring that existing incentives and requirements for knowledge brokering in the country reward (and don't disadvantage) organizations that contribute to the portal.

We did not identify any systematic reviews addressing the taking stock of the current state of knowledge-brokering mechanisms and resources. We also did not identify any systematic reviews addressing one-stop shops for policy-makers and stakeholders; however, the systematic review that we completed as part of the BRIDGE study identified timing/timeliness as one of the factors that influenced the use of health systems information in policy-making. A portal for knowledge-brokering mechanisms, if optimally designed, should increase the chance that policy-makers can find the best available health systems information in the time that they have available. We found a systematic review about the benefits and potential harms of establishing financial incentives, which is one type of potential reward. Deliberations about this option could draw on the insights from this one review as well as the tacit knowledge, views and experiences of policy-makers and stakeholders. If time allowed, a focused systematic review could be conducted for this option as well.

Option 2: Convene a dialogue to coordinate advancements in knowledge brokering

Elements of this option might include: 1) taking stock of the current state of knowledge brokering in the country (which includes assessing them against the appropriate set of BRIDGE criteria and in light of the BRIDGE attributes of the national policy-making context that can influence knowledge brokering); 2) taking stock of the current state of knowledge brokering in Europe; 3) convening one or more national policy dialogues that bring together policy-makers, stakeholders and knowledge brokers (including researchers) and engaging them in: a) prioritizing advancements in knowledge brokering, ideally inspired by the innovative examples of knowledge-brokering mechanisms and promising examples of organizational models described in BRIDGE summaries 1–3, b) identifying which knowledge-brokering organizations in the country can take responsibility for which advancements in knowledge brokering, c) identifying whether additional knowledge-brokering organizations are needed and, if so, which advancements in knowledge brokering they can take responsibility for, d) establishing a coordination process among these organizations, and e) ensuring that existing incentives and requirements for knowledge brokering in the country reward (and don't disadvantage) organizations that contribute to advancements in knowledge brokering.

We found one systematic review about the benefits and potential harms of financial incentives, which are one type of potential reward. We found one systematic review about key considerations related to convening policy dialogues and seven reviews about key considerations related to undertaking a priority-setting process. Unfortunately the reviews about priority setting were all of low quality; however, several of them identify frameworks for setting objectives for, organizing and evaluating priority-setting processes, including how to be more systematic and explicit in the work and how to engage the public. We also found several systematic reviews about key considerations related to supporting the adoption of innovations (and knowledge-brokering mechanisms and models can be considered examples of innovations). We also found a systematic review about the effects of organizational partnerships, which could be one form of coordination process; however, the review did not yield a clear message. We did not find systematic reviews addressing other option elements. The reviews that we did find, however, provide a good starting point for deliberations about this option.

Option 3: Centralize knowledge-brokering mechanisms in a well-designed organization

Elements of this option might include four of the same elements as option 2 (namely 1, 2, 3 and 3a), as well as: 1) using the national policy dialogues to

begin to identify whether an existing knowledge-brokering organization or a new organization can take responsibility for knowledge brokering in the country; 2) drafting a prospectus for the organization that outlines its potential mission, goals, knowledge-brokering mechanisms and models, performance criteria and key strategic considerations; 3) consulting key policy-makers, stakeholders and knowledge brokers (including researchers) to seek feedback on the prospectus; 4) finalizing the prospectus; 5) launching the organization while ensuring a seamless transition in the transfer of existing knowledge-brokering mechanisms to the organization; and 6) monitoring and evaluating the organization, and making needed modifications to the organization.

As was the case for the previous option as well, we found one systematic review about key considerations related to convening policy dialogues, seven reviews about key considerations related to undertaking a priority-setting process (all of low quality), and three reviews about supporting the adoption of innovations. We did not find any systematic reviews addressing the taking stock of the current state of knowledge brokering or centralizing functions in a single organization. Deliberations about this option would need to consider explicitly that there are advantages both to having a single organization within a given country (e.g., reduced duplication of effort and confusion among policy-makers and stakeholders) and to having a diversity of organizational models in the country (e.g., potential complementarities and dynamism). If time allowed, a focused systematic review could be conducted on this question.

Implementation considerations

For all three options, it is not likely that they will affect citizens directly unless they are explicitly identified as part of the target audience. Professionals' fears about their own priorities and strengths garnering less attention, as well as about the potential to lose their comparative advantage and perhaps even their role, could mean that they may resist some or all of the options. At the level of organizations there may again be fears about a potential loss of attention, or about a loss of comparative advantage and perhaps even an end to their organizations. Funding agencies may also be highly protective of the status quo. In terms of systemic barriers, policy-makers may not have the interest, time or resources to engage in efforts to improve the support available to them and they may worry that what works well now will be disrupted during any transition to a new approach.

Many implementation strategies could be considered for any given option. However, given that several options could be pursued simultaneously and that option elements could be combined in different and creative ways, identifying implementation strategies that cut across options could be an important first step. One possible such strategy could be the development, pilot testing

and iterative redevelopment of a package of communication materials that highlight the ways in which knowledge brokering can support policy-making and innovative examples of knowledge-brokering mechanisms and models that others can adopt or adapt. The BRIDGE summaries are a step in this direction.

Policy brief

Consider the following three motivations for advancing knowledge brokering in a country's health system:

- Policy-makers in the country are faced daily with making decisions and need access to good-quality health systems information. Stakeholders in the country are seeking to influence health policy as well as make decisions in their own spheres of responsibility. Both groups want information products that are clearly based on systematically conducted and transparently reported research, and that they can easily understand and use. And researchers in the country want to know how to communicate their findings effectively so that health systems policy-making can make use of the best available health systems information.

- Policy-makers, stakeholders and knowledge brokers (including researchers) in the country can all learn a great deal from one another (Lomas, 2007). Policy-makers and stakeholders need insights drawn from good-quality health systems information that they can apply to a local issue. Knowledge brokers need insights about policy priorities and the policy context in order to produce, package and share health systems information that will be genuinely useful to decision-makers.

- Knowledge-brokering organizations in the country need to match form to function and context when designing organizational models to support knowledge brokering. The functions can include a range of ways to package information and share knowledge, as well as activities that are not knowledge brokering per se (such as the collection and analysis of health systems information). Context can mean a range of elements in the national, regional (e.g., European) or sub-national policy-making environment, including policy-making institutions and processes, stakeholder capacities and opportunities for engagement, and research institutions and their activities and outputs.

The purpose of this policy brief (Box 1 provides a background to the brief's development) is to support deliberations at the country level about (and innovations in) the ways in which:

- information can be prepared and packaged as a means of brokering health systems information for policy-makers and stakeholders;

- policy-makers, stakeholders and knowledge brokers can, by working together, engage with health systems information so as to increase the likelihood that it will be understood and used; and

- knowledge-brokering organizations can organize themselves in order to increase the likelihood that health systems information will be understood and used by policy-makers and stakeholders.

Box 1: Background to the policy brief

This policy brief mobilizes both global and European research evidence about the lack of attention given to 'what to do next' to advance knowledge brokering in many European countries' health systems (the problem), three options for addressing the problem, and key implementation considerations. Whenever possible, the policy brief summarizes research evidence drawn from systematic reviews of the research literature and occasionally from single research studies (particularly the systematic review and empirical studies conducted as part of the BRIDGE study, which is described on page 3 in this policy brief). 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 policy brief does **not** contain recommendations.

The three options for addressing the problem were not designed to be mutually exclusive. They could be pursued simultaneously or elements could be drawn from each option to create a new (fourth) option.

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

The preparation of the policy brief involved four steps:

1. developing and refining the terms of reference for the policy brief, particularly the framing of the problem and three viable options for addressing it, in consultation with a number of key informants, and with the aid of several conceptual frameworks that organize thinking about ways to approach the issue;

2. identifying, selecting, appraising and synthesizing relevant research evidence about the problem, options and implementation considerations;

3. drafting the policy brief in such a way as to present concisely and in accessible language the global and local research evidence; and

4. finalizing the policy brief based on the input of several merit reviewers.

The policy brief reviews available data and research evidence about: 1) features of the problem of the general lack of attention given to 'what to do next' to

advance knowledge brokering in many European countries' health systems; 2) three options for addressing the problem and hence contributing to more effective knowledge brokering within any given country's health system; and 3) key implementation considerations for moving any of the options forward. Current thinking about knowledge brokering is largely driven by anecdotal information; this document presents real-world insights from research on knowledge brokering, primarily from Europe but drawing on global experience as well.

The policy brief strives to take a perspective rooted in the common realities across European countries' health systems, but (where possible) it also examines whether and how existing health systems information gives particular attention to:

• lower-income countries, particularly in terms of resources available to support the production, packaging and sharing of health systems information (e.g., some central and eastern European countries); and

• non-English speaking countries, given that most health systems information is currently available primarily in English.

Countries defined using other criteria also warrant serious consideration and a similar approach could be adopted for any of them.

This policy brief is intended not only for knowledge brokers whose work is dedicated to this role, but also for funders (such as the national research funding agencies in any given European country), researchers, policy-makers and stakeholders, all of whom can help to steer knowledge brokering by helping to set expectations for this work. While we strive to avoid jargon, a shared understanding of key terminology is important, so we define a number of key terms and concepts in Box 2.

About the BRIDGE study

BRIDGE (which stands for Scoping Study of Approaches to **B**rokering Knowledge and **R**esearch **I**nformation to Support the **D**evelopment and **G**overnance of Health Systems in **E**urope) was a two-year study that studied knowledge brokering for health policy-making during 2009–2011. Led by the European Observatory on Health Systems and Policies, the purpose of the study was to map current knowledge-brokering practices in Europe (across the 27 European Union (EU) member states and 4 European Free Trade Association (EFTA) countries), describe them in the context of what we know and what we don't know about knowledge brokering, and disseminate the findings to different audiences through various events and publications. The inclusion criteria for knowledge-brokering organizations included in the BRIDGE study are provided in Appendix 1.

Box 2: Key concepts and definitions used in this BRIDGE policy brief

Health policy – A formal statement or procedure within institutions (notably government) that defines priorities and the parameters for action in response to health needs, available resources and other political pressures. (European Observatory on Health Systems and Policies)

Policy-makers – The government officials who will be directly involved in decision-making as part of a policy-making process, either as decision-makers themselves (notably politicians) or as advisers working in close proximity to these decision-makers (notably political staffers and civil servants). (BRIDGE)

Stakeholders – The individuals and groups who will be involved in or affected by (i.e., who have an interest in) a policy-making process, but not those government officials who will be directly involved in decision-making. The individuals and groups can be drawn from industry, professional associations and patient groups, among others. (Adapted from European Observatory on Health Systems and Policies)

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Health systems information – Data (on performance and outcomes, among other topics) and research evidence (about policy and programme options to improve performance or achieve better outcomes, among other topics). (BRIDGE)

Data – Facts and statistics collected together for reference or analysis. (Oxford Dictionaries)

Research evidence – The results of a systematic study of materials and sources in order to establish facts and reach new conclusions. The results could take the form of conceptual frameworks, primary research studies and systematic reviews, among others. (Adapted from Oxford Dictionaries; BRIDGE)

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Knowledge brokering – Use of information-packaging mechanisms and/or interactive knowledge-sharing mechanisms to bridge policy-makers' and researchers' contexts. Knowledge brokering addresses the four possible explanations for the disjuncture between information and action (which are described in Box 4). (BRIDGE)

Knowledge broker – An individual or organization that engages in knowledge brokering. We distinguish between dedicated knowledge brokers (whose work is focused on intermediating between health systems information producers and users) and researchers (who produce health systems information but also have a role in disseminating and supporting its use among various groups). (Adapted from Canadian Foundation for Healthcare Improvement; BRIDGE)

Information-packaging mechanisms – Information products in a variety of media that are focused at least in part on health systems information and that are intended to support policy-making. The outputs can take the form of policy briefs, issue notes, research summaries, policy dialogue reports, research reports, presentations, audio podcasts, video podcasts, videos, blogs, impact summaries, newsletters, annual reports, and cartoons and other visual media, among others. (BRIDGE)

Interactive knowledge-sharing mechanisms – Mediating interactions that are focused at least in part on health systems information and that are intended to support policy-making. The interactions can take the form of policy dialogues, personalized briefings, training workshops, online briefings or webinars, online discussion forums, formalized networks, informal discussions and presentations. (BRIDGE)

Organizational models for knowledge brokering – Features of organizations that are focused at least in part on health systems information and that are intended to support policy-making. These features can relate to the role of policy-makers and stakeholders in governance; rules that ensure independence and address conflicts of interest; authority to ensure accountability to a knowledge-brokering mandate; size, mix and capacity of staff with knowledge-brokering responsibilities; size of budget and mix of funding sources for knowledge brokering; approach to prioritizing activities and accepting commissions/requests; location within another organization or network; collaboration with other organizations; and functional linkages with policy-making and stakeholder organizations. (BRIDGE)

A full glossary of key concepts and definitions used in the BRIDGE study is available in the full BRIDGE volume (Lavis & Catallo, 2013) and the BRIDGE web pages of the European Observatory on Health Systems and Policies web site.

To learn more about the BRIDGE study, our methods and findings, and other BRIDGE products, please see the full BRIDGE volume (Lavis & Catallo, 2013) and the BRIDGE web pages of the European Observatory on Health Systems and Policies web site. Three BRIDGE summaries warrant particular mention:

• Policy Summary 7 (BRIDGE series): Communicating Clearly, a summary focused on enhancing information-packaging mechanisms to support knowledge brokering in European health systems (Lavis, Catallo, Permanand et al., 2013);

• Policy Summary 8 (BRIDGE series): Learning From One Another, a second summary focused on enriching interactive knowledge-sharing mechanisms to support knowledge brokering (Lavis, Catallo, Jessani et al., 2013); and

• Policy Summary 9 (BRIDGE series): Matching Form to Function, a third summary focused on designing organizational models to support knowledge brokering (Lavis, Jessani et al., 2013).

A BRIDGE policy brief, which follows a very similar structure to this one, also warrants mention:

• How can knowledge brokering be better supported across European health systems? (Lavis, Permanand et al., 2013).

Whereas this brief focuses on how knowledge brokering can be advanced within a country's health system, the companion policy brief examines how knowledge brokering can be better supported across European health systems.

Given their closely linked subjects, the summaries and companion policy brief inevitably overlap with each other and with this policy brief, and you will notice some common content. Our findings reflect the information available during 2009–2010, when we were collecting data for the study.

The problem

The overarching problem addressed in this policy brief is that there is a general lack of support for knowledge brokering of health systems information in Europe.

This problem can be understood by considering four sets of interrelated issues: 1) untapped potential for health systems information to inform policy-making; 2) missed opportunities to take stock and prioritize advancements in knowledge brokering; 3) lack of alignment of support for knowledge brokering; and 4) limited reach of existing efforts to advance knowledge brokering. We describe the process we followed to better understand the problem in Box 3.

Box 3: Mobilizing research evidence about the problem

As part of the BRIDGE study, we:

- systematically reviewed the research literature about the factors that influence the use of health systems information in policy-making

- conducted a scoping review of knowledge-brokering mechanisms and models

- worked with 31 country correspondents to identify 398 potential knowledge-brokering organizations operating within and across each of the 27 European Union member states and four European Free Trade Association member states, assessed their eligibility using the criteria described below, reviewed the web sites for the 163 organizations deemed eligible (4 of which were global organizations and 17 European-focused), and extracted information about their knowledge-brokering mechanisms and models

- identified 30 particularly interesting knowledge-brokering organizations, conducted site visits with 28 of them, and thematically analysed the information collected through these site visits in terms of how the organizations matched their organizational form to their functions and context

- conducted case studies in four countries to examine how knowledge-brokering mechanisms and models intersect with and support policy-making processes

Our inclusion criteria for the web site review (and hence for the site visits and case studies) meant that we did not include knowledge-brokering organizations that focus primarily on taking political positions or solely on clinical or public health issues (e.g., health technology assessment agencies), or organizations that primarily collect and collate data or that target audiences other than policy-makers within Europe. We did not include organizations that do not put most of their products in the public domain. (Please see Appendix 1 for additional detail on our inclusion criteria.)

In assessing knowledge-brokering mechanisms and models, two raters independently applied the relevant set of BRIDGE criteria (see BRIDGE Summaries 1–3) and they resolved differences through discussion. A third team member was consulted when the two raters could not reach agreement.

Untapped potential for health systems information to inform policy-making

Policy-making within and about health systems occurs at national and sub-national levels and, for a number of countries, occasionally at European levels. Decisions are being made every day within European countries about a range of issues, all of which can be informed by health systems information (European Commission, 2008). For example, policy-makers and stakeholders within a country may be grappling with:

• which risk factor, disease or condition to focus on (e.g., cancer, cystic fibrosis);

• which programmes, services and drugs to offer/fund/cover (e.g., to address obesity);

• which governance arrangements (e.g., to establish accountabilities), financial arrangements (e.g., to fund long-term care), and delivery arrangements (e.g., to foster teamwork) can help to get the right mix of programmes, services and drugs to those who need them and more generally to organize prevention, care and support; and

• which implementation strategies will best support behaviour change at the level of citizens or patients (e.g., self-management supports), providers (e.g., performance measurement and feedback) and organizations (e.g., through individuals who can span organizational boundaries internally and externally).

Most if not all European countries have statistical agencies, research units and other organizations producing and disseminating health systems information. The health systems information being produced and disseminated by these organizations addresses many of the challenges being faced in health systems and appears, superficially at least in most countries, highly topical. Yet health systems information is often not being used to its full potential as one key input in the policy-making process. While no estimates exist of the frequency of missed opportunities, many examples have been documented in the BRIDGE systematic review (Lavis & Catallo, 2013). The review includes findings from a variety of different types of study, including:

• surveys of policy-makers and stakeholders;

• interviews with policy-makers and stakeholders;

• documentary analyses of policy-making processes; and

• case studies of policy-making processes, which may draw on one or more of surveys, interviews and documentary analyses.

When available health systems information is not being used to its full potential, it may be that it is:

• not used at all;

- used only partially to address one feature of an issue (e.g., the magnitude of the burden of obesity but not the benefits, harms and costs of approaches to address obesity);

- used to justify decisions already taken for other reasons (which is sometimes called a political or a strategic use of health systems information); or

- used in narrow, instrumental ways and not to change how people think about problems, options or implementation considerations (which is sometimes called a conceptual use of health systems information to distinguish it from more instrumental uses).

Why is health systems information not being used as frequently or optimally as it could be within countries' health systems?

One reason is that health systems information is just one of many factors that can influence policy-making processes (Lavis & Catallo, 2013). Institutions, interests, ideas and external forces also play a significant part in decision-making. For example, when we consider institutional factors that influence policy we might think of government structures (e.g., federal or decentralized versus unitary and central government), government policy legacies (e.g., health insurance legislation), and policy networks (e.g., executive council-appointed committees that involve key stakeholders). Interests can include interest groups per se (e.g., medical associations) as well as elected officials, civil servants (in some jurisdictions), and researchers (in some instances) who might also be advocating for particular decisions. Ideas can include knowledge or beliefs about 'what is' (e.g., health systems information) and views about 'what ought to be' (e.g., values). Finally, external forces can include the release of major reports (e.g., European Commission reports or national commission and enquiry reports, which may or may not contain health systems information themselves), political change (e.g., elections or cabinet shuffles), economic change (e.g., recession), technological change (e.g., new imaging technology), new diseases (e.g., severe acute respiratory syndrome), and media coverage (e.g., hospital waiting times). These are factors that knowledge brokers cannot control, although a skilled knowledge broker will see that these factors may offer strategic opportunities as to when and how to introduce information products and knowledge-sharing opportunities into national and sub-national policy-making processes.

But even when we consider health systems information as just one of many inputs to decision-making, we must also recognize that policy-makers and stakeholders may not value health systems information and may see it as not relevant to the policy issues they face in their country. Again, while these may not be factors that knowledge brokers can control, a skilled knowledge broker will see that these situations may offer strategic opportunities for knowledge sharing

between the disparate worlds of policy and research. Policy-makers could come to appreciate how the appropriate use of health systems information can help them to set agendas, take well-considered actions and communicate the rationale for actions effectively. Researchers could come to appreciate more fully the information needs of policy-makers.

In Box 4 we outline four broad challenges associated with brokering health systems information to support policy-making. Knowledge-brokering mechanisms, which can include both information-packaging mechanisms and interactive knowledge-sharing mechanisms, can address all four of these challenges, and thereby help to better tap the potential of health systems information. In the next two sections of this policy brief we review missed opportunities to take stock and prioritize advancements in knowledge brokering at the country level and how supports for promising mechanisms can be better aligned within a given country. In Box 5 we suggest what success might look like if knowledge-brokering mechanisms were significantly advanced within European countries.

Box 4: Challenges for knowledge brokering

Broadly speaking, knowledge brokering to support health systems policies faces four big challenges:

- Health systems information isn't communicated effectively (e.g., policy-makers and stakeholders hear 'noise' instead of 'music' coming from those producing health systems information) (i.e., wrong 'unit' of focus)

- Health systems information isn't available when policy-makers and stakeholders need it and in a form that they can use (i.e., wrong time and wrong packaging)

- Policy-makers and stakeholders lack the capacity to find and use health systems information efficiently and (in some countries) lack mechanisms to prompt them to use health systems information in policy-making

- Policy-makers and stakeholders lack opportunities to discuss system challenges with researchers

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Box 5: Success measures for knowledge brokering

Measures of success in addressing these challenges could include:

- greater use of mechanisms that hold promise (i.e., process measures)

- greater (instrumental or conceptual) use of health systems information in policy-making processes and, arguably, fewer political uses of health systems information (i.e., intermediate outcome measures)

- better decisions within and about health systems

- improved health (although attribution challenges make this very difficult to assess; it may be impossible to prove that a given information-packaging or knowledge-sharing mechanism had an explicit impact on a given policy decision)

Missed opportunities to take stock and prioritize advancements in knowledge brokering

While good health systems depend on well-informed decision-making, most types of information-packaging mechanism used by knowledge-brokering organizations in European countries to convey health systems information to decision-makers (e.g., scientific journal articles, research reports and books) employ traditional scientific formats and are not prepared in a way that makes it easy for policy-makers and stakeholders to understand and use them. Ideally, information-packaging mechanisms will (if not individually then at least collectively for a given jurisdiction) gather all relevant health systems information into one place, contextualize that information for a given jurisdiction, and make it easier to understand and use (Lavis, Catallo, Permanand et al., 2013).

The BRIDGE criteria can be used to assess an existing current information product.

- What it covers: Does it cover a topical/relevant issue and address the many features of the issue based on the best available health systems information?

- What it includes: Does it include knowledge from synthesized, assessed health systems information and from the tacit knowledge, views and experiences of policy-makers and stakeholders?

- For whom it's targeted: Does it explicitly target policy-makers and stakeholders and engage them in reviewing the product for relevance and clarity?

- How it's packaged: Is it organized to highlight decision-relevant information, written in understandable language, and prepared in a format that makes the information easy to absorb?

- How its use is supported: Is it supported through online commentaries or briefings that contextualize the information and through ongoing communication that brings new information to the attention of policy audiences? (Lavis, Catallo, Permanand et al., 2013)

Only a small number of organizations in Europe are using one or more of five promising mechanisms for packaging information that meet a number of the BRIDGE criteria:

- study summary: a summary of an article or report that describes findings from a single study;

- systematic review summary: a summary of an article or report that describes findings from a systematic review;

- compendium of summaries: a thematically focused grouping of summaries of articles or reports;

- policy brief: a report that begins with a priority policy issue and mobilizes the relevant synthesized research evidence about the underlying problem(s), policy or programme options for addressing the problem(s), and related implementation considerations; and

- policy dialogue report: a report that describes the insights derived from a policy dialogue where policy-makers, stakeholders and researchers deliberate about a policy issue (Lavis, Catallo, Permanand et al., 2013).

These mechanisms can be adopted or adapted by others and warrant rigorous evaluation. New mechanisms that meet some of the same or even different criteria can also be created and evaluated.

Health system policy-makers, stakeholders and knowledge brokers (including researchers) can learn a great deal from one another by working together. However, most existing **knowledge-sharing mechanisms** in European countries (e.g., presentations at a conference or workshops) rely on traditional one-way communication with minimal dialogue between expert and audience. To engage policy-makers, stakeholders and knowledge brokers in meaningful ways, genuinely interactive knowledge sharing will make health systems information easier to understand and use, contextualize the information for a given jurisdiction, and incorporate the tacit knowledge, views and experiences of those who will be involved in or affected by decisions (Lavis, Catallo, Jessani et al., 2013).

As with information-packaging mechanisms, the BRIDGE criteria can be used to assess an existing or planned knowledge-sharing mechanism.

- What it covers: Does it address a topical/relevant issue from the perspective of policy-makers and stakeholders? Does it cover the many features of the issue (underlying problems or objectives for action, policy and/or programme options, and key implementation considerations)?

- What it includes: Does it incorporate the tacit knowledge, views and experiences of policy-makers and stakeholders? Does it consider a body of health systems information on a defined topic?

- How it's targeted: Does it explicitly describe policy-makers and stakeholders (not just researchers) as key participants? Is it timed to relate to a policy-making process or to requests from policy-makers?

- How it's organized: Are optimal participants proactively identified, invited and engaged in in-person or at least real-time online interactions? Are key information products pre-circulated? Does each participant have the

potential to contribute equally to the discussion and are there explicit rules about whether and how comments can be attributed?

- How its use is supported: Are insights captured through the creation of products based on the knowledge-sharing interactions? Are these insights publicly shared and brought to the attention of target audiences through e-mail alerts/listservs? (Lavis, Catallo, Jessani et al., 2013)

Only a small number of organizations in European countries are using one or more of five promising interactive knowledge-sharing mechanisms that meet a number of the BRIDGE criteria:

- online discussion forum: offers policy-makers and stakeholders an opportunity to interact (but not in real time) with researchers and knowledge brokers;

- online briefing or webinar: involves a web-based presentation by a researcher or knowledge broker where policy-makers and stakeholders can interact in real time about issues raised in the presentation;

- training workshop: aims to help policy-makers and stakeholders enhance their skills in finding and using health systems information;

- personalized briefing: provides policy-makers and stakeholders with a formal in-person presentation and discussion of health systems information on an issue that they have prioritized and framed; and

- policy dialogue: convenes policy-makers, stakeholders and researchers to deliberate about a policy issue, and is ideally informed by a pre-circulated brief and organized to allow for a full airing of participants' tacit knowledge and real-world views and experiences (Lavis, Catallo, Jessani et al., 2013).

As with the information-packaging mechanisms described above, these interactive knowledge-sharing mechanisms can be adopted or adapted by others and warrant rigorous evaluation. New mechanisms that meet some of the same or even different criteria can also be created and evaluated.

Most existing **organizational models for knowledge brokering** being used in European countries comprise a set of design features that reflect an evolving effort, typically on the part of researchers and research organizations, to balance a variety of competing objectives such as independence and relevance. These design features are rarely selected to optimize the match between the knowledge-brokering mechanisms used and the policy-making context (Lavis, Jessani et al., 2013). Credible, competent and catalytic knowledge brokers in European health systems will organize themselves so as to: 1) inform policy-making using the best available health systems information; 2) inform

the production, packaging and sharing of health systems information based on current and emerging policy-making priorities; and 3) employ (and continuously improve) information-packaging and interactive knowledge-sharing mechanisms that are based on a solid understanding of the policy-making context (Lavis, Jessani et al., 2013).

The BRIDGE criteria can be used to assess an existing or planned organizational model.

• How it's governed: Does it ensure that policy-makers, stakeholders and researchers have and exercise a governance role with transparency and with an objectivity that ensures that values and interests do not pre-determine outcomes? Does it have and enforce rules that ensure independence and address conflicts of interest?

• How it's managed and staffed: Does it grant to the director the authority needed to ensure accountability to its knowledge-brokering mandate? Does it ensure an appropriate size, mix and capacity of staff with knowledge-brokering responsibilities?

• How its resources are obtained and allocated: Does it ensure an appropriate size of budget and mix of funding sources for knowledge brokering? Does it have an explicit approach to prioritizing activities and accepting commissions/requests from policy-makers and stakeholders?

• How it collaborates: Is it located within another organization or network that supports its knowledge-brokering activities? Does it collaborate with other organizations in its activities? Does it establish functional linkages with policy-making and stakeholder organizations? (Lavis, Jessani et al., 2013)

It is much more difficult to provide an accurate sense of the proportion of organizations in European countries that meet a number of the BRIDGE criteria for assessing organizational models. Our web site review found that relatively few organizations described their organizational model in any detail on their web site (Lavis & Catallo, 2013). Our site visits, however, uncovered a number of innovative examples of organizational models that match form to function and context. Five examples include:

• Poliitikauuringute Keskus (PRAXIS): a provider of strategic counsel to health policy-makers and a promoter of public debate about health in Estonia;

• Observatorio de Salud en Europa: a facilitator of the integration of European health policies and programmes in the Spanish province of Andalusia;

- Nasjonalt Kunnskapssenter for Helsetjenesten: a supporter of evidence-based quality-improvement initiatives in the Norwegian health system;

- The King's Fund: a purveyor of health-care policy ideas and analysis in England; and

- European Observatory on Health Systems and Policies: a supporter and promoter of evidence-based policy-making in European health systems (Lavis, Jessani et al., 2013).

As with both types of knowledge-brokering mechanism described above, the organizational models used by these five knowledge-brokering organizations can be adopted or adapted by others and warrant rigorous evaluation. New models that meet some of the same or even different criteria can also be created and evaluated.

Our site visits indicated that even these particularly interesting knowledge-brokering organizations had typically not engaged in much planned reflection about their knowledge-brokering function and had not taken the same type of programmatic orientation towards knowledge brokering as they did to other functions important to the organization. These site visits, coupled with the seemingly limited use of promising knowledge-brokering mechanisms, suggest that there have been many missed opportunities to take stock of the current state of knowledge brokering at the country level and to prioritize enhancements to information-packaging mechanisms, enrichments to interactive knowledge-sharing mechanisms, and adaptations to organizational models that support knowledge brokering within a given country.

Lack of alignment of support for knowledge brokering

There are a number of possible explanations for the challenges outlined above:

- Funding agencies within a country (and at the European level) may be creating the wrong incentives or requirements for researchers to produce and share health systems information, and for knowledge-brokering organizations to design the model within which they'll work. For example, funding may encourage a focus on single studies (that the agency happened to fund) as the unit of dissemination rather than evidence syntheses that use a wide range of material (regardless of who funded it). Alternatively, funding may emphasize the production and dissemination of information products rather than encouraging interaction between the producers and users of the information. Or, funding may reward interactions only in the context of research projects and/or presentations by experts rather than in the context of issues identified by policy-makers and stakeholders and the real-world timelines in which they must respond to the issues. Finally, funding eligibility criteria may emphasize

the independence of the organization (e.g., university-based research centres versus those located within government) over the relevance of its information products, and budget eligibility criteria may emphasize research staff over knowledge-brokering staff.

- Researchers within a country may lack knowledge about promising mechanisms and organizational models for knowledge brokering. They may also lack the capacity and support to execute promising mechanisms or to develop and adapt promising models. Also, they may lack knowledge about the existence of other organizations involved in knowledge brokering from whom they can learn.

- Knowledge brokers may have to serve many roles (e.g., writer, graphic designer, web site programmer, listserv moderator, meeting planner, presenter, workshop facilitator, outreach worker and customer relations manager) and may not have time to learn about or execute promising mechanisms or models. They may also lack the organizational authority to introduce changes if the organization gives knowledge brokering a lower priority than research.

- Policy-makers and stakeholders within a country may lack knowledge about promising mechanisms and models and/or capacity to request that they be used. Additionally, the organizational culture in which they work may not support engaging in external discussions about potentially sensitive policy or organizational issues.

More generally, there is a lack of monitoring and evaluation of knowledge-brokering mechanisms and models in European countries and, as was alluded to previously, a lack of structured reflections about their strengths and opportunities for improvement. In some countries there may also be a lack of understanding about what constitutes knowledge brokering, with producing and disseminating research outputs seen as necessities and information-packaging and interactive knowledge sharing seen as luxuries. Or simply disseminating research products to policy-makers and key stakeholders may be seen to suffice as knowledge brokering.

In considering these challenges, it can be helpful to understand that policy-making and research are two domains with different goals and incentives, despite their common interest in improving health systems:

- Policy-makers (and health system managers) ideally use data generated by health systems to inform which problems they focus on, which options they choose to address key problems, and which implementation strategies they consider. The goals here may be related to processes (e.g., more patients seen) or outcomes (e.g., improved health status), and incentives are more often tied to the former than the latter.

- Researchers may use the data generated by health systems or they may collect it themselves, and they do so in the context of research projects that generate the outputs that can be a source of information for health systems. The goals here may be process related (e.g., more research reports written or more research grants received) or outcome related (e.g., improved decision-making about health systems), and incentives are again more often tied to the former than the latter.

In thinking about how to improve knowledge-brokering mechanisms and models to support health systems policy within a country, a useful first step may be to consider whether existing goals and incentives in these two domains are aligned with the goals and objectives of promising mechanisms and models.

Limited reach of existing efforts to support knowledge brokering

It was beyond the scope of the BRIDGE study to identify whether there exist significant policies (or agreed courses of action more generally) at the country level that would enhance support for knowledge brokering but that had not yet been implemented. Significant investments in research are already made in most European countries that could profitably be reviewed to identify which incentives and requirements support promising knowledge-brokering mechanisms and models and which undermine them.

Three options for addressing the problem

Many options could be selected as a starting point for deliberations designed to inform future initiatives for advancing knowledge brokering within a country's health system. To promote discussion about the pros and cons of potentially viable options, three have been selected as exemplars for more in-depth review. They are: 1) establish a portal for knowledge-brokering mechanisms; 2) convene a dialogue to coordinate advancements in knowledge brokering; and 3) centralize knowledge-brokering mechanisms in a well-designed organization.

It is important to note, however, that a likely pre-condition for pursuing any option would be an agreement among policy-makers, stakeholders and researchers about:

- values that should govern any efforts;

- aims for any efforts (see Box 5 regarding potential measures of success);

- key areas of focus for any efforts (e.g., specific types of health systems information or all types of health information); and

- commitment to collaborate on specific actions to address the issues identified above.

The focus in this section is on what is known about these three options (see Box 6 for details about where this information was obtained). In the next

section the focus turns to the barriers to adopting and implementing these options and to possible implementation strategies to address the barriers.

> **Box 6: Mobilizing research evidence about options for addressing the problem**
>
> The available research evidence about options for addressing the problem was sought primarily from a continuously updated database containing more than (at the time) 1,200 systematic reviews of delivery, financial and governance arrangements within health systems: Health Systems Evidence. The reviews were identified by searching the database for reviews addressing features of the options. In order to identify evidence about costs and/or cost-effectiveness, the NHS Economic Evaluation Database (available through the Cochrane Library) was also searched using a similar approach.
>
> The authors' conclusions were extracted from the reviews whenever possible. Some reviews contained no studies despite an exhaustive search (i.e., they were 'empty' reviews), while others concluded that there was substantial uncertainty about the option based on the identified studies. Where relevant, caveats were introduced about these authors' conclusions based on assessments of the reviews' quality, the local applicability of the reviews' findings, equity considerations and relevancy to the issue. (See Appendices for a complete description of these assessments.)
>
> Being aware of what is not known can be as important as being aware of what is known. When faced with an empty review, substantial uncertainty, or concerns about quality and local applicability or lack of attention to equity considerations, primary research could be commissioned, or an option could be pursued, and a monitoring and evaluation plan designed as part of its implementation. When faced with a review that was published many years ago, an updating of the review could be commissioned if time allows.
>
> No additional research evidence was sought beyond what was included in the systematic review. Those interested in pursuing a particular option may want to search for a more detailed description of the option or for additional research evidence about the option.

Option 1: Establish a portal for knowledge-brokering mechanisms

This option involves taking stock of the current state of knowledge-brokering mechanisms and resources and establishing a country-specific portal through which available knowledge-brokering mechanisms and resources can be identified, accessed and used. Elements of this option might include:

- taking stock of the current state of knowledge-brokering mechanisms in the country, which could include identifying existing information-packaging mechanisms and interactive knowledge-sharing mechanisms and assessing them against the appropriate set of BRIDGE criteria (Lavis, Catallo, Permanand et al., 2013; Lavis, Catallo, Jessani et al., 2013);

- taking stock of the current state of knowledge-brokering mechanisms in select European countries with whom close working relationships already exist and in Europe more generally, including whether the translation of key series of information products into a local language would increase their likelihood of use;

- taking stock of existing resources, particularly at European and global levels, that contain synthesized health systems information that complements local health systems information;

- prioritizing existing knowledge-brokering mechanisms and resources that could support policy-making within the country's health system;

- designing and maintaining a one-stop shop, meaning a web site that profiles prioritized knowledge-brokering mechanisms and resources and that is easy for policy-makers and stakeholders in the country to understand and to use efficiently; and

- ensuring that existing incentives and requirements for knowledge brokering in the country reward (and don't disadvantage) organizations that contribute to the portal.

Four existing resources at the global level warrant mention as likely complements to country-specific knowledge-brokering mechanisms:

- PubMed, a database featuring validated search strategies that assist with locating the types of primary research study that may assist with placing a problem in comparative perspective or with framing a problem in different ways;

- Cochrane Library, a collection of databases that contain systematic reviews addressing questions about the effectiveness of clinical programmes and services and of drugs, as well as economic evaluations addressing questions about cost-effectiveness;

- Health-evidence.ca, a database of systematic reviews addressing questions about the effectiveness of public/population health programmes and services; and

- Health Systems Evidence, a database of systematic reviews addressing a broad range of questions about governance, financial and delivery arrangements within health systems, and about implementation strategies that can support change in health systems, as well as a repository of many other types of health systems information.

We did not identify any systematic reviews addressing the taking stock of the current state of knowledge-brokering mechanisms and resources. We also did not identify any systematic reviews addressing one-stop shops for policy-makers and stakeholders; however, the systematic review that we completed as part of the BRIDGE study identified timing/timeliness as one of the factors that influenced the use of health systems information in policy-making (Lavis & Catallo, 2013). A portal for knowledge-brokering mechanisms, if optimally designed, should increase the chance that policy-makers can find the best

available health systems information in the time that they have available, whether that be 30 minutes, 15 days, 7 weeks or a year.

We found a systematic review about the benefits and potential harms of establishing financial incentives, which is one type of potential reward. Deliberations about this option could draw on the insights from this one review as well as the tacit knowledge, views and experiences of policy-makers and stakeholders. If time allowed, a focused systematic review could be conducted for this option as well.

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

Option 2: Convene a dialogue to coordinate advancements in knowledge brokering

This option involves taking stock of the current state of knowledge brokering and convening one or more national policy dialogues to: prioritize advancements in knowledge brokering, allocate responsibilities for these advancements among existing and new knowledge-brokering organizations, and establish a coordination process and rewards for these organizations. Elements of this option might include:

- taking stock of the current state of knowledge brokering in the country, which could include identifying existing information-packaging mechanisms, interactive knowledge-sharing mechanisms and organizational models for knowledge brokering and then assessing them against the appropriate set of BRIDGE criteria and in light of the BRIDGE attributes of the national policy-making context that can influence knowledge brokering (Lavis, Catallo, Permanand et al., 2013; Lavis, Catallo, Jessani et al., 2013; Lavis, Jessani et al., 2013);

- taking stock of the current state of knowledge brokering in select European countries with whom close working relationships already exist and in Europe more generally, including whether the translation of information products into a local language would increase their likelihood of use;

- convening one or more national policy dialogues that bring together policy-makers, stakeholders and knowledge brokers (including researchers) and engaging them in:

  - prioritizing enhancements to information-packaging mechanisms, enrichments to interactive knowledge-sharing mechanisms, and adaptations to organizational models that support knowledge brokering,

ideally inspired by the innovative examples of knowledge-brokering mechanisms and promising examples of organizational models described in BRIDGE Summaries 1–3 (Lavis, Catallo, Permanand et al., 2013; Lavis, Catallo, Jessani et al., 2013; Lavis, Jessani et al., 2013);

– identifying which knowledge-brokering organizations in the country can take responsibility for which advancements in knowledge brokering;

– identifying whether additional knowledge-brokering organizations are needed and, if so, which advancements in knowledge brokering they can take responsibility for;

– establishing a coordination process among these organizations to ensure that the resulting knowledge-brokering resources are easy for policy-makers and stakeholders in the country to understand and to use efficiently; and

– ensuring that existing incentives and requirements for knowledge brokering in the country reward (and don't disadvantage) organizations that contribute to advancements in knowledge brokering.

As just one example of the incentives and requirements that would need to be altered in order to reward knowledge-brokering organizations, consider these potential changes to calls for research-grant applications, which we also described in the companion policy brief to this one (Lavis, Permanand et al., 2013):

• moving beyond vague or one-size-fits-all dissemination requirements, which typically include academic articles, a web site and a newsletter;

• setting out good practice models for 'embedded' knowledge brokering where it would be appropriate (e.g., policy-maker and stakeholder engagement in all stages of the research process, not just at the end, in order to ensure relevance and usability of the results);

• setting out good practice models for 'end-of-grant' knowledge brokering, including how to identify when knowledge brokering is warranted, how to package health systems information (e.g., policy briefs), and how to share knowledge interactively; and

• ensuring that existing incentives and requirements don't disadvantage organizations that have design features that can support their knowledge-brokering activities (e.g., funding criteria that make university-based centres eligible but not centres located within government, or funding criteria may allow support for research staff but not knowledge-brokering staff).

Table 1: Summary of key findings from systematic reviews relevant to Option 1: Establish a portal for knowledge-brokering mechanisms

Category of finding	Summary of key findings

Benefits	• Establishing incentives
	  – Conditional cash transfers and other types of economic incentive targeting health-care recipients can increase the use of preventive services (Oxman & Fretheim, 2008).
	  – Financial incentives can also influence professional practice, such as increasing the delivery of immunizations or screening (Oxman & Fretheim, 2008).
	  – Financial incentives are more likely to influence discrete individual behaviours in the short run and less likely to influence sustained changes (Oxman & Fretheim, 2008).

• Potential harms	• Establishing incentives – Results-based financing can have unintended effects, including motivating unintended behaviours, distortions, gaming, corruption, cherry-picking, widening the resource gap between rich and poor, dependency on financial incentives, demoralization and bureaucratization (Oxman & Fretheim, 2008).
Costs and/or cost-effectiveness in relation to the status quo	• Not addressed by the identified systematic review

Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	• Uncertainty because no systematic reviews were identified
	  – Taking stock of the current state of knowledge brokering
	  – Creating a one-stop shop for policy-makers and stakeholders
	• Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review
	  – Not applicable (i.e., no empty reviews were identified)
	• No clear message from studies included in a systematic review
	  – Establishing financial incentives
	    ○ There are few rigorous studies of results-based financing and overall the evidence of its effects are weak (Oxman & Fretheim, 2008).

Key elements of the policy option if tried elsewhere	• Not addressed by the identified systematic review
Stakeholders' views and experience	• Not addressed by the identified systematic review

We found one systematic review about the benefits and potential harms of incentives, which are one type of potential reward. We found one systematic review about key considerations related to convening policy dialogues and seven reviews about key considerations related to undertaking a priority-setting process. Unfortunately the reviews about priority setting were all of low quality; however, several of them identify frameworks for setting objectives for, organizing and evaluating priority-setting processes, including how to be more systematic and explicit in the work and how to engage the public. We also found several systematic reviews about key considerations related to supporting the adoption of innovations.

Knowledge-brokering mechanisms and organizational models for knowledge brokering can be considered examples of innovations. We found one systematic review about the effects of interventions to support changes in organizational culture. Many advancements in knowledge brokering could require a change in organizational culture. However, no studies met the inclusion criteria for this review. We also found a systematic review about the effects of organizational partnerships, which could be one form of coordination process; however, the review did not yield a clear message. We did not find systematic reviews addressing: 1) taking stock of the current state of knowledge brokering;
2) coordination processes other than partnerships; or 3) rewards other than financial incentives. The reviews that we did find, however, provide a good starting point for deliberations about this option.

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

Option 3: Centralize knowledge-brokering mechanisms in a well-designed organization

This option involves taking stock of the current state of knowledge brokering, convening national policy dialogues to prioritize advancements in knowledge brokering and begin to identify whether an existing or new organization can best take responsibility for knowledge brokering, and then designing, building consensus on, launching and monitoring and evaluating a single, well-designed knowledge-brokering organization to support the country's health system. Elements of this option might include four of the same elements as option 2:

• taking stock of the current state of knowledge brokering in the country, which could include identifying existing information-packaging mechanisms, interactive knowledge-sharing mechanisms and organizational models for knowledge brokering and then assessing them against the appropriate set of BRIDGE criteria and in light of the

BRIDGE attributes of the national policy-making context that can influence knowledge brokering (Lavis, Catallo, Permanand et al., 2013; Lavis, Catallo, Jessani et al., 2013; Lavis, Jessani et al., 2013);

• taking stock of the current state of knowledge brokering in select European countries with whom close working relationships already exist and in Europe more generally, including whether the translation of information products into a local language would increase their likelihood of use; and

• convening one or more national policy dialogues that bring together policy-makers, stakeholders and knowledge brokers (including researchers) and engaging them in:

– prioritizing enhancements to information-packaging mechanisms, enrichments to interactive knowledge-sharing mechanisms, and adaptations to organizational models that support knowledge brokering, ideally inspired by the innovative examples of knowledge-brokering mechanisms and promising examples of organizational models described in BRIDGE summaries 1–3 (Lavis, Catallo, Permanand et al., 2013; Lavis, Catallo, Jessani et al., 2013; Lavis, Jessani et al., 2013).

However, this option would also require:

• using the national policy dialogues to begin to identify whether an existing knowledge-brokering organization or a new organization can take responsibility for knowledge brokering in the country;

• drafting a prospectus for the organization that outlines its potential mission, goals, knowledge-brokering mechanisms and models, performance criteria and key strategic considerations;

• consulting key policy-makers, stakeholders and knowledge brokers (including researchers) to seek feedback on the prospectus;

• finalizing the prospectus;

• launching the organization while ensuring a seamless transition in the transfer of existing knowledge-brokering mechanisms to the organization; and

• monitoring and evaluating the organization, learning from the results and making any needed modifications to the organization.

As was the case for the previous option as well, we found one systematic review about key considerations related to convening policy dialogues and seven reviews about key considerations related to undertaking a priority-setting process. As we described in the previous sub-section, unfortunately the reviews about priority setting were all of low quality; however, several of them identify frameworks for setting objectives for, organizing and evaluating priority-setting

Table 2: Summary of key findings from systematic reviews relevant to Option 2: Convene a dialogue to coordinate advancements in knowledge brokering

Category of finding	Summary of key findings
Benefits	• Establishing financial incentives – Conditional cash transfers and other types of economic incentive targeting health-care recipients can increase the use of preventive services (Oxman & Fretheim, 2008) – Financial incentives can also influence professional practice, such as increasing the delivery of immunizations or screening (Oxman & Fretheim, 2008) – Financial incentives are more likely to influence discrete individual behaviours in the short run and less likely to influence sustained changes (Oxman & Fretheim, 2008)
Potential harms	• Establishing financial incentives – Results-based financing can have unintended effects, including motivating unintended behaviours, distortions, gaming, corruption, cherry-picking, widening the resource gap between rich and poor, dependency on financial incentives, demoralization, and bureaucratization (Oxman & Fretheim, 2008)
Costs and/or cost-effectiveness in relation to the status quo	• Not applicable (i.e., no relevant reviews were identified)

Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	• Uncertainty because no systematic reviews were identified
	 – Taking stock of the current state of knowledge brokering
	 – Establishing coordination processes other than partnerships
	 – Designing rewards other than financial incentives
	• Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review
	 – Supporting changes in organizational culture (Parmelli et al., 2011)
	• No clear message from studies included in a systematic review
	 – Establishing financial incentives
	  ○ There are few rigorous studies of results-based financing and overall the evidence of its effects are weak (Oxman & Fretheim, 2008).
	 – Supporting the adoption of innovations
	  ○ Lack of empirical evidence about commonly cited 'adopter traits', innovations that arise peripherally and spread informally, and how to sustain complex service innovations (Greenhalgh et al., 2004)
	 – Establishing organizational partnerships
	  ○ Lack of evidence of the effects of organizational partnerships on health outcomes in England between 1997 and 2008; however, the qualitative studies included in the review suggested that some partnerships increased the profile of health inequalities on local policy agendas (Smith et al., 2009)

| Key elements of the policy option if it was tried elsewhere | • Convening policy dialogues
  – The key features of deliberative dialogues as a knowledge-brokering strategy are: 1) an appropriate meeting environment; 2) an appropriate mix of participants; and 3) an appropriate use of research evidence (Boyko et al., 2012)
  – These features combine to create three types of intended effect: 1) short-term individual-level; 2) medium-term community/ organizational-level; and 3) long-term system-level (Boyko, 2012)
  – The concept of capacity building helps to explain the relationship between features and effects (Boyko, 2012)

• Undertaking a priority-setting process
  – All of the reviews were of low quality and the last year the literature was searched in these reviews ranged from 2005 to 2008 (with one review not reporting the year of the search)
  – Two reviews addressed priority setting in general:
    ○ One found that: 1) at national levels, most of the work related to priority setting has involved trying to articulate publicly acceptable guiding principles; and 2) at the regional and community levels, the focus has been narrower, and aimed at establishing systematic approaches to setting priorities explicitly for services and programmes (i.e., selecting services as opposed to identifying principles upon which the selection would be based. The authors argue that: 1) priority-setting processes must be values-based, and accommodate the views of all relevant stakeholders (i.e., citizens within a specific nation); 2) technical information is necessary, but not sufficient; 3) priority-setting processes must be flexible to reflect differences across settings, and work to obtain public input as to which factors are important; 4) more efforts need to be made to engage the public in these processes; and 5) key factors in priority-setting processes include: population needs, equity, costs, effectiveness of interventions or technologies, health status, severity and nature of the disease, potential for health gain, socioeconomic status (e.g., income and social class), age, and cause of disease or condition (e.g., self-infliction due to lifestyle choices) (Menon and Stafinsky, 2005)
    ○ A second, with a particular focus on low- and middle-income countries, found that methods for priority setting are increasingly being made more explicit, and are verifiable and replicable. These methods can be seen as solutions to the *ad hoc* processes that usually characterize the priority-setting exercises in many developing countries. However, most of the current body of knowledge is based on small pilot studies, and there are very few evaluations that report on the impacts or outcomes of various priority-setting approaches (Youngkong, Kapiriri & Baltussen, 2009)

  – One review focused on public engagement in priority setting and resource allocation, finding that: 1) governments recognize the benefits in consulting multiple publics using a range of methods, though more traditional approaches to engagement continue to predominate; 2) there appears to be growing interest in deliberative approaches to public engagement, which are more commonly ongoing rather than one-off and more apt to involve face-to-face engagement; 3) face-to-face engagement appears to be a more successful strategy, overall, when compared to other formats of public engagement; 4) formal evaluation of public engagement efforts is rare; and also absent is any real effort to demonstrate how public views might be integrated with other decision inputs when allocating social resources (Mitton et al., 2009)

  – Another review focused on managing multiple healthcare research projects, finding that seven priority-setting best practices can assist project managers in setting prioroities within and across multiple projects given resource constraints and project characteristics (Hopkins et al., 2007)

(continued) |

Table 2: Summary of key findings from systematic reviews relevant to Option 2: Convene a dialogue to coordinate advancements in knowledge brokering *(continued)*

– Three reviews focused on priority setting related to technologies:

  o One focused on decision-making about drug reimbursement lists and drug formularies in high-income countries, and found that the most important groups in decision-making were experts and administrators, clinical evidence on the benefit and the costs of interventions were the main criteria used to inform decisions, decision-making criteria used varied across studies/contexts, and also between decisions, and decisions seemed almost always partly value-based in their nature, as the scientific or other exact evidence did not give a firm foundation on which the decisions could be solely based (Vuorenkoski, Toiviainen & Hemminki, 2008)

  o A second focused on health technology assessment (HTA) priority setting, and found differences across HTA agencies regarding procedures for categorizing, scoring and weighing of policy criteria, as well as in the methods for priority setting, and found that quantitative rating methods and consideration of cost benefit for priority setting were seldom used (Noorani et al., 2007)

  o A third focused on priority-setting processes for technology assessment and selection/adoption at a hospital level, and found that: 1) two main assessment perspectives related to priority-setting processes for health technology assessment and adoption, namely value generation at a hospital level and level of sustainability in the implementation stage; 2) four types of investment in technology at a hospital level combine the perspectives; and 3) these perspectives and types of investment can be used to aid priority setting (Lettieri and Masella, 2009)

• Supporting the adoption of innovations

  – Innovation attributes that predict (but do not guarantee) successful adoption include: 1) social influence and the networks through which it operates; 2) complex and contingent nature of the adoption process; 3) characteristics (both 'hard' and 'soft') of organizations that encourage and inhibit innovation; and 4) messy and stop-start process of assimilation and routinization (Greenhalgh et al., 2004)

  – Determinants of innovation identified in the literature include: 1) factors relating to the innovation itself, such as relative advantage, complexity, compatibility, trialability and maturity; 2) characteristics of the adopting (or non-adopting) individual, such as cognitive capacities, attitudes, perceptions and behaviour patterns; 3) characteristics of adopting organizations, such as size and structure, organizational climate, extent of resources and infrastructure, absorptive capacity and 'connectedness'; and 4) features of the wider environment, such as external regulatory or market environment, national priorities and targets, external networks, and the demands of patient and advocacy groups (Williams, de Silva & Ham, 2009). Potentially useful tools for spreading innovation include formal published evidence, decision and dissemination support tools (such as guidelines), organizational and inter-organizational networks, leadership development, and evaluation and review (Williams, de Silva & Ham, 2009)

  – Principles to guide the adoption, implementation and assimilation of technological innovations include (Robert et al., 2009):

  o An organization's decision-making processes and systems with regard to the adoption of technological innovations can be improved by (among other steps): 1) establishing/strengthening an overall management structure for the decision-making process; 2) considering in decision-making a variety of technological, organizational and social concerns together, including

implications for specific groups of staff who need to collaborate in technology implementation and assimilation; and 3) obtaining regular feedback on improvements (or not) in both patient and staff experiences, and systematically following up how innovations are assimilated into routine work practices

o An organization's absorptive capacity for new knowledge about technological innovations can be improved by (among other steps): 1) equipping staff with the skills and capacity to 'scan the horizon' periodically to capture new ideas; 2) encouraging and supporting staff to attend specialist workshops and conferences and visit other sites; and 3) encouraging improvisational behaviour through small-scale innovation experiments and developing and testing various prototype solutions

o The receptiveness of the organizational context for technological innovations can be improved by (among other steps): 1) navigating the politics of innovation and securing stakeholder engagement; and 2) identifying money, staff and other resources that will be available to support new technological innovations including developing training for nurturing adoption champions and leaders

o Organizational readiness for a specific technological innovation can be improved by (among other steps): 1) considering the relative distribution of expertise when implementing a new technology; 2) involving end users at an early stage and taking account of their needs and existing practices; and 3) being aware of the potential need to create new or extended roles that cross traditional boundaries

| Stakeholders' views and experience | • Not applicable (i.e., no relevant reviews were identified) |

processes, including how to be more systematic and explicit in the work and how to engage the public. As was also the case for the previous option, if an existing organization is chosen to take responsibility for knowledge brokering, the systematic reviews about supporting the adoption of innovations, which were described in relation to option 2, may be helpful here as well. We did not find any systematic reviews addressing the taking stock of the current state of knowledge brokering or centralizing functions in a single organization.

In addition to considering these systematic reviews, deliberations about this option would need to draw on the tacit knowledge, views and experiences of policy-makers and stakeholders. These deliberations would need to consider explicitly that there are advantages both to having a single organization within a given country (e.g., reduced duplication of effort and confusion among policy-makers and stakeholders) and to having a diversity of organizational models in the country (e.g., potential complementarities and dynamism). If time allowed, a focused systematic review could be conducted on this question.

A summary of the domains where systematic reviews were found is provided in Table 3 and in Appendix 4. For those who want to know more about the systematic reviews contained in Table 3, a fuller description is provided in Appendix 4.

Table 3: Summary of key findings from systematic reviews relevant to Option 3: Centralize knowledge-brokering mechanisms in a well-designed organization

Category of finding	Summary of key findings
Benefits	• Not applicable (i.e., no relevant reviews were identified)
Potential harms	• Not applicable (i.e., no relevant reviews were identified)
Costs and/or cost-effectiveness in relation to the status quo	• Not applicable (i.e., no relevant reviews were identified)

Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	• Uncertainty because no systematic reviews were identified
	  – Taking stock of the current state of knowledge brokering
	  – Centralizing functions in a single organization
	• Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review
	  – Not applicable (i.e., no empty reviews were identified)
	• No clear message from studies included in a systematic review
	  – Not applicable (i.e., no relevant reviews were identified)

Key elements of the policy option if tried elsewhere	• Convening policy dialogues: See Table 2 • Undertaking a priority-setting process: See Table 2 • Supporting the adoption of innovations: See Table 2
Stakeholders' views and experience	• Not applicable (i.e., no relevant reviews were identified)

Implementation considerations

In considering what challenges may be faced in trying to pursue any one or more of the options, it can be helpful to consider these difficulties in relation to several groups: citizens, professionals (primarily researchers and knowledge brokers), organizations (primarily research organizations, knowledge-brokering organizations and funding agencies) and systems.

For all three options, it is not likely that they will affect citizens directly unless they are explicitly identified as part of the target audience. Professionals' fears about their own priorities and strengths garnering less attention, as well as about the potential to lose their comparative advantage and perhaps even their role, could mean that they may resist some or all of the options. At the level of organizations there may again be fears about a potential loss of attention, or about a loss of comparative advantage and perhaps even an end to their organizations. Funding agencies may also be highly protective of the status quo. In terms of systemic barriers, policy-makers may not have the interest, time or resources to engage in efforts to improve the support available to them and they may worry that what works well now will be disrupted during any transition to a new approach.

A summary of the potential barriers to implementing the options, organized by level within health and research systems, is provided in Table 4.

Many implementation strategies could be considered for any given option. However, given that several options could be pursued simultaneously and that option elements could be combined in different and creative ways, identifying implementation strategies that cut across options could be an important first step. As we also pointed out in the companion policy brief (Lavis, Permanand et al., 2013), one possible such strategy could be the development, pilot testing and iterative redevelopment of a package of communication materials that highlight the ways in which knowledge brokering can support policy-making and innovative examples of knowledge-brokering mechanisms and models that others can adopt or adapt. The BRIDGE summaries are a step in this direction (Lavis, Catallo, Permanand et al., 2013; Lavis, Catallo, Jessani et al, 2013; Lavis, Jessani et al., 2013).

Table 4:   Potential barriers to implementing the options

Levels	Option 1: Establish a portal for knowledge-brokering mechanisms	Option 2: Convene a dialogue to coordinate advancements in knowledge brokering	Option 3: Centralize knowledge-brokering mechanisms in a well-designed organization
Citizen	Not applicable – Unlikely to be visible to citizens unless the target audience is wider than policy-makers and other stakeholders	Not applicable – Unlikely to be visible to citizens unless the target audience is wider than policy-makers and other stakeholders	Not applicable – Unlikely to be visible to citizens unless the target audience is wider than policy-makers and other stakeholders
Professional	Researchers resist efforts to give attention to knowledge brokering Select knowledge brokers resist efforts to share insights and establish a portal that might erode their comparative advantage	Researchers resist efforts to give attention to knowledge brokering Select knowledge brokers resist efforts to share insights and to prioritize and coordinate advancements that might erode their comparative advantage or dilute their expertise	Researchers resist efforts to give attention to knowledge brokering Select knowledge brokers resist efforts to share insights and to prioritize and centralize mechanisms, which could lead to the end of their role
Organization	Research organizations resist efforts to give attention to knowledge brokering Select knowledge-brokering organizations resist efforts to share insights and establish a portal that might erode their comparative advantage Funding agencies resist efforts to ensure that existing incentives and requirements for knowledge brokering in the country reward (and don't disadvantage) organizations that contribute to the portal	Research organizations resist efforts to give attention to knowledge brokering Select knowledge-brokering organizations resist efforts to share insights and to prioritize and coordinate advancements that might erode their comparative advantage or dilute their expertise Funding agencies resist efforts to ensure that existing incentives and requirements for knowledge brokering in the country reward (and don't disadvantage) organizations that contribute to advancements in knowledge brokering	Research organizations resist efforts to give attention to knowledge brokering Select knowledge-brokering organizations resist efforts to share insights and to prioritize and centralize mechanisms, which could lead to the end of their organization Funding agencies resist efforts to centralize knowledge-brokering mechanisms
System	Policy-makers do not engage in efforts to design the portal to meet their needs	Policy-makers do not engage in efforts to design advancements in knowledge brokering to meet their needs	Policy-makers do not engage in efforts to design an organization to meet their needs Policy-makers resist efforts to centralize knowledge brokering because of concerns that what works well now will be disrupted

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Appendices

Appendix 1: Inclusion criteria for knowledge-brokering organizations in the BRIDGE study

This is a copy-edited version of this study instrument, but no substantive changes have been made.

Knowledge-brokering organizations included in the BRIDGE study should have the following characteristics:

- fund, conduct or disseminate research;
  - Exclude lobby groups and think tanks that support political activities but do not employ systematic methods and do not report their methods and findings transparently.

- focus at least in part on governance, financial and delivery arrangements within health systems;
  - Exclude units that focus solely on *clinical* programmes, services or drugs (and other technologies) or on *public health* programmes and services, and not on how clinical or public health programmes and services are governed, financed/funded and delivered.
  - Note that this means guideline-producing organizations and health technology assessment agencies, which are routinely studied, are not covered.

- identify policy-makers as being among the target audiences for their research;
  - Exclude units that focus solely on supporting the use of decision aids by patients, increasing the consumption of particular prescription drugs by patients, supporting the uptake of practice guidelines by clinicians, and improving the prescribing of particular drugs by clinicians.

- function as a semi-autonomous or autonomous organization;
  - Exclude university departments that do not have some independence, but include, for example, an institute with an external advisory council.

- put all (or almost all) of their products in the public domain (whether or not there is a small charge) in order to advance the public interest;
  - Exclude consulting firms that produce reports for clients in order to advance the clients' commercial interests but do not make the report publicly available.
  - Also exclude government strategy units that advance the public interest but do not make their reports publicly available.

- add value beyond the simple collection and collation of data; and
  - Exclude statistical agencies that do not have a semi-autonomous unit that produces analytical reports based on the data collected or collated by the agency.

- target member states of the European Union or European Free Trade Association, groupings of these states, or constituent units of these states above the level of municipality (e.g., provinces, counties).
  - Exclude units serving only the needs of city councils (with the exception of Finland, where health care is a municipal responsibility).

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Appendix 2: Systematic reviews relevant to Option 1: Establish a portal for knowledge-brokering mechanisms

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Europe	Proportion of studies that deal explicitly with knowledge brokering	Proportion of studies that focused on either lower-income or non-English speaking countries
Taking stock of the current state of knowledge brokering	No reviews were found	N/A	N/A	N/A	N/A	N/A	N/A
Creating a one-stop shop for policy-makers and stakeholders	No reviews were found	N/A	N/A	N/A	N/A	N/A	N/A
Establishing financial incentives	Effects of results-based financing (RBF)/pay-for-performance, which was defined as the "transfer of money or material goods conditional on taking a measurable action or achieving a predetermined performance target" (Oxman & Fretheim, 2008) (This review is also used for option 2)	• There are few rigorous studies of RBF and overall the evidence of its effects is weak. • Conditional cash transfers and other types of economic incentive targeting health-care recipients can increase the use of preventive services. • Financial incentives can also influence professional practice, such as increasing the delivery of immunizations or screening. • Financial incentives are more likely to influence discrete individual behaviours in the short run and less likely to influence sustained changes. • RBF can have unintended effects, including motivating unintended behaviours, distortions, gaming, corruption, cherry-picking, widening the resource gap between rich and poor, dependency on financial incentives, demoralization and bureaucratization.	2007	No rating tool available for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)

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Appendix 3: Systematic reviews relevant to Option 2: Convene a dialogue to coordinate advancements in knowledge brokering

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Europe	Proportion of studies that deal explicitly with knowledge brokering	Proportion of studies that focused on either lower-income or non-English speaking countries
Taking stock of the current state of knowledge brokering	No reviews were found	N/A	N/A	N/A	N/A	N/A	N/A

Convening policy dialogues	Development of a model that describes the key features and intended effects of deliberative dialogues used as a knowledge-brokering strategy and an understanding of how deliberative dialogues can support evidence-informed policy-making (Boyko, 2012)	• The key features of deliberative dialogues as a knowledge-brokering strategy are:
		  – an appropriate meeting environment;
		  – an appropriate mix of participants; and
		  – an appropriate use of research evidence.
		• These features combine to create three types of intended effect:
		  – short-term individual-level;
		  – medium-term community/organizational-level; and
		  – long-term system-level.
		• The concept of capacity building helps to explain the relationship between features and effects.
			2010	No rating tool available for this type of synthesis	4/17	0/17	1/17

Undertaking a priority-setting process	Empirical studies of priority-setting in developing countries (Youngkong, Kapiriri & Baltussen, 2009	• There has been an increase in studies undertaken in low-and middle-income countries focused on priority setting. • Methods for priority setting are increasingly being made more explicit, and are verifiable and replicable. • These methods can be seen as solutions to the ad hoc processes that usually characterize the priority-setting exercises in many developing countries. • However, most of the current body of knowledge is based on small pilot studies, and there are very few evaluations that report on the impacts or outcomes of various priority-setting approaches.	2008	2/10 (AMSTAR rating from the McMaster Health Forum)	1/18	0/18	18/18
Undertaking a priority-setting process	Empirical analyses of macro- and meso-level decision-making process for including drugs in and/or excluding drugs from reimbursement lists and drug formularies in industrialized countries (Vuorenkoski, Toiviainen & Hemminki, 2008)	• The most important groups in decision-making were experts and administrative persons. • Clinical evidence on the benefit and the costs of interventions were the main criteria used to inform decisions. • Pharmacoeconomic analyses were given a rather small role. • Decision-making criteria used varied across studies/contexts, and also between decisions. • Decisions seemed almost always partly value-based in their nature, as the scientific or other exact evidence did not give a firm foundation on which the decisions could be solely based.	2007	1/9 (AMSTAR rating from the McMaster Health Forum)	3/6	0/6	2/6

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Appendix 3: Systematic reviews relevant to Option 2: Convene a dialogue to coordinate advancements in knowledge brokering (*continued*)

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Europe	Proportion of studies that deal explicitly with knowledge brokering	Proportion of studies that focused on either lower-income or non-English speaking countries
Undertaking a priority-setting process	Use of published best practice recommendations for priority setting during management of multiple healthcare research projects, in a resource-constrained environment (Hopkins et al., 2007)	Seven priority-setting best practices are available for managing multiple projects under resource constraints. Best practice literature can assist project managers in priority setting by recommending the most appropriate priority given resource constraints and project characteristics.	2007	1/10 (AMSTAR rating from the McMaster Health Forum)	List of included studies not provided	List of included studies not provided	List of included studies not provided
Undertaking a priority-setting process	Examination of public engagement in priority setting and resource allocation (Mitton et al., 2009)	• Governments recognize the benefits in consulting multiple publics using a range of methods, though more traditional approaches to engagement continue to predominate. • There appears to be growing interest in deliberative approaches to public engagement, which are more commonly ongoing rather than one-off and more apt to involve face-to-face engagement. • Face-to-face engagement appears to be a more successful strategy, overall, when compared to other formats of public engagement. • Formal evaluation of public engagement efforts is rare. • Also absent is any real effort to demonstrate how public views might be integrated with other decision inputs when allocating social resources.	2006	3/9 (AMSTAR rating from the McMaster Health Forum)	60/175*	List of included studies not provided	List of included studies not provided
Undertaking a priority-setting process	Identification and comparison of various practical and current approaches to health technology assessment (HTA) priority setting (Noorani et al., 2007)	• Differences across HTA agencies were found regarding procedures for categorizing, scoring and weighing of policy criteria. • Variability exists in the methods for priority setting of health technology assessment across HTA agencies. Quantitative rating methods and consideration of cost benefit for priority setting were seldom used.	2006	3/10 (AMSTAR rating from the McMaster Health Forum)	6/12	0/12	6/12

* Although the authors did not provide a table of included studies, they mention the proportions of studies conducted in the United Kingdom (26%) and in the rest of Europe (8%). The total proportion (34%) yields 59.5 studies conducted in Europe, which was rounded up in this instance.

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Appendix 3: Systematic reviews relevant to Option 2: Convene a dialogue to coordinate advancements in knowledge brokering (*continued*)

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Europe	Proportion of studies that deal explicitly with knowledge brokering	Proportion of studies that focused on either lower-income or non-English speaking countries
Undertaking a priority-setting process	Descriptions of priority-setting processes that either exist or have been tried in different jurisdictions around the world (Menon and Stafinsky, 2005)	• At national levels, most of the work related to priority setting has involved trying to articulate publicly acceptable guiding principles • At the regional and community levels, the focus has been narrower, and aimed at establishing systematic approaches to setting priorities explicitly for services and programmes (i.e., selecting services as opposed to identifying principles upon which the selection would be based) • Priority-setting processes must be values-based and accommodate the views of all relevant stakeholders (i.e., citizens within a specific nation) • Technical information is necessary, but not sufficient • Priority-setting processes must be flexible to reflect differences across settings, and work to obtain public input as to which factors are important. Additionally, more efforts need to be made to engage the public in these processes • Key important factors in priority-setting processes include: population needs, equity, costs, effectiveness of interventions or technologies, health status, severity and nature of the disease, potential for health gain, socioeconomic status (e.g., income and social class), age, and cause of disease or condition (e.g., self-infliction due to lifestyle choices)	2005	4/9 (AMSTAR rating from the McMaster Health Forum)	7/30	0/30	8/30
Undertaking a priority-setting process	Identification of the relevant issues related to priority-setting processes for technology assessment and selection/adoption at a hospital level to inform the development of a reference framework (Lettieri and Masella, 2009)	• Two main assessment perspectives related to priority-setting processes for health technology assessment and adoption were identified: value generation at a hospital level and level of sustainability in the implementation stage • Four types of investment in technology at a hospital level have been identified combining the perspectives • These perspectives and types of investment can be used to aid priority setting for technology assessment and adoption at a hospital level, and will contribute to increasing the rationality and accountability of such processes	Not reported	1/10 (AMSTAR rating from the McMaster Health Forum)	4/20**	0/20	5/20***

** Although the authors did not provide a table of included studies, they mention that 20 studies were included. The results section indicates that at least four of the included studies were conducted in Europe.

*** Although the authors did not provide a table of included studies, they mention that 20 studies were included. The results section indicates that at least five of the included studies focused on non-English speaking countries.

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**Appendix 3: Systematic reviews relevant to Option 2: Convene a dialogue
to coordinate advancements in knowledge brokering (*continued*)**

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Europe	Proportion of studies that deal explicitly with knowledge brokering	Proportion of studies that focused on either lower-income or non-English speaking countries
Supporting the adoption of innovations	Knowledge about how innovations in health service delivery and organization can be spread and sustained (Greenhalgh et al., 2004)	• Innovation attributes that predict (but do not guarantee) successful adoption include: – social influence and the networks through which it operates; – complex and contingent nature of the adoption process; – characteristics (both 'hard' and 'soft') of organizations that encourage and inhibit innovation; and – messy and stop-start process of assimilation and routinization. • Limitations of the literature include: – lack of empirical evidence for commonly cited 'adopter traits'; – focus on innovations that arise centrally and are disseminated through official channels at the expense of those that arise peripherally and spread informally; – limited generalizability of the empirical work on product-based innovation in companies to process innovation in service organizations; and – near absence of studies focusing primarily on the sustainability of complex service innovations.	2003	No rating tool available for this type of synthesis	14/112****	0/112	3/112****
Supporting the adoption of innovations	What has worked well and what has been challenging elsewhere in adopting and disseminating innovation in healthcare (Williams, de Silva & Ham, 2009)	• Determinants of innovation identified in the literature include: – factors relating to the innovation itself, such as relative advantage, complexity, compatibility, trialability and maturity; – characteristics of the adopting (or non-adopting) individual, such as cognitive capacities, attitudes, perceptions and behaviour patterns; – characteristics of adopting organizations, such as size and structure, organizational climate, extent of resources and infrastructure, absorptive capacity and 'connectedness'; and – features of the wider environment, such as external regulatory or market environment, national priorities and targets, external networks, and the demands of patient and advocacy groups. • Potentially useful tools for spreading innovation include formal published evidence, decision and dissemination support tools (such as guidelines), organizational and inter-organizational networks, leadership development, and evaluation and review.	2009	No rating tool available for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)

**** In the Appendix of the full report, the table of included studies provided by the authors only included 112 sources. This proportion is based on data extracted from this table. However, the authors also stated in both versions of this review that 495 sources were identified and used to inform the review. Thus it may be that this proportion is not fully representative of all studies used to inform the review.

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**Appendix 3: Systematic reviews relevant to Option 2: Convene a dialogue
to coordinate advancements in knowledge brokering (*continued*)**

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Europe	Proportion of studies that deal explicitly with knowledge brokering	Proportion of studies that focused on either lower-income or non-English speaking countries

Supporting the adoption of innovations	Organizational factors influencing technology adoption and assimilation, and principles to guide the adoption, implementation and assimilation of technological innovations in the National Health Service (Robert et al. 2009)	• An organization's decision-making processes and systems with regard to the adoption of technological innovations can be improved by (among other steps):
		  – establishing/strengthening an overall management structure for the decision-making process;
		  – considering in decision-making a variety of technological, organizational and social concerns together, including implications for specific groups of staff who need to collaborate in technology implementation and assimilation; and
		  – obtaining regular feedback on improvements (or not) in both patient and staff experiences, and systematically following up how innovations are assimilated into routine work practices.
		• An organization's absorptive capacity for new knowledge about technological innovations can be improved by (among other steps):
		  – equipping staff with the skills and capacity to 'scan the horizon' periodically to capture new ideas;
		  – encouraging and supporting staff to attend specialist workshops and conferences and visit other sites; and
		  – encouraging improvisational behaviour through small-scale innovation experiments and developing and testing various prototype solutions.
		• The receptiveness of the organizational context for technological innovations can be improved by (among other steps):
		  – navigating the politics of innovation and securing stakeholder engagement; and
		  – identifying money, staff and other resources that will be available to support new technological innovations including developing training for nurturing adoption champions and leaders.
		• Organizational readiness for a specific technological innovation can be improved by (among other steps):
		  – considering the relative distribution of expertise when implementing a new technology;
		  – involving end users at an early stage and taking account of their needs and existing practices; and
		  – being aware of the potential need to create new or extended roles that cross traditional boundaries.
			2008	Not available for this type of synthesis (overview of reviews and narrative synthesis of primary literature)	Not described for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)

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Appendix 3: Systematic reviews relevant to Option 2: Convene a dialogue to coordinate advancements in knowledge brokering (*continued*)

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Europe	Proportion of studies that deal explicitly with knowledge brokering	Proportion of studies that focused on either lower-income or non-English speaking countries
Supporting changes in organizational culture	Effectiveness of strategies to change organizational culture to improve performance (Parmelli et al., 2011)	No studies met the criteria for the review	2009	7/7 (AMSTAR rating from the McMaster Health Forum)	0/0 (empty review)	0/0 (empty review)	0/0 (empty review)
Establishing organizational partnerships	Impact of organizational partnerships on public health outcomes (health improvement and/or a reduction in health inequalities) in England between 1997 and 2008 (Smith et al., 2009)	Findings suggest that there is not yet any clear evidence of the effects of public health partnerships on health outcomes. However, qualitative studies suggested that some partnerships increased the profile of health inequalities on local policy agendas. The design both of partnership interventions and of the studies evaluating them meant it was difficult to assess the extent to which identifiable successes and failures were attributable to partnership working.	2008	7/10 (AMSTAR rating from the McMaster Health Forum)	15/15	0/15	0/15
Establishing coordination processes other than partnerships	No reviews were found	N/A	N/A	N/A	N/A	N/A	N/A
Establishing financial incentives	Effects of results-based financing (RBF)/pay-for-performance, which was defined as the 'transfer of money or material goods conditional on taking a measurable action or achieving a predetermined performance target' (Oxman & Fretheim, 2008) (This review is also used for option 2)	• There are few rigorous studies of RBF and overall the evidence of its effects is weak. • Conditional cash transfers and other types of economic incentive targeting health-care recipients can increase the use of preventive services. • Financial incentives can also influence professional practice, such as increasing the delivery of immunizations or screening. • Financial incentives are more likely to influence discrete individual behaviours in the short run and less likely to influence sustained changes. • RBF can have unintended effects, including motivating unintended behaviours, distortions, gaming, corruption, cherry-picking, widening the resource gap between rich and poor, dependency on financial incentives, demoralization and bureaucratization.	2007	No rating tool available for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)	Not described for this type of synthesis (overview of systematic reviews)
Designing rewards other than financial incentives	No reviews were found	N/A	N/A	N/A	N/A	N/A	N/A

Appendix 4: Systematic reviews relevant to Option 3: Centralize knowledge-brokering mechanisms in a well-designed organization

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Europe	Proportion of studies that deal explicitly with knowledge brokering	Proportion of studies that focused on either lower-income or non-English speaking countries
Taking stock of the current state of knowledge brokering	No reviews were found	N/A	N/A	N/A	N/A	N/A	N/A
Convening policy dialogues	See the review in Appendix 3	See the review in Appendix 3	See the review in Appendix 3	See the review in Appendix 3	See the review in Appendix 3	See the review in Appendix 3	See the review in Appendix 3
Undertaking a priority-setting process	See the seven reviews in Appendix 3	See the seven reviews in Appendix 3	See the seven reviews in Appendix 3	See the seven reviews in Appendix 3	See the seven reviews in Appendix 3	See the seven reviews in Appendix 3	See the seven reviews in Appendix 3

BRIDGE (Scoping Study of Approaches to Brokering Knowledge and Research Information to Support the Development and Governance of Health Systems in Europe) was a two-year project that studied knowledge brokering for health policy-making during 2009–2011. Led by the European Observatory on Health Systems and Policies, the purpose of the study was to map current knowledge-brokering practices in Europe (across the 27 European Union member states and 4 European Free Trade Association countries), describe them in the context of what we know and what we don't know about knowledge brokering, and disseminate the findings to different audiences through various events and publications.

The European Observatory on Health Systems and Policies is a partnership that supports and promotes evidence-based health policy-making through comprehensive and rigorous analysis of health systems in the European Region. It brings together a wide range of policy-makers, academics and practitioners to analyse trends in health reform, drawing on experience from across Europe to illuminate policy issues. The Observatory's products are available on its web site. (http://www.healthobservatory.eu).