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Evidence Check

Increasing the use of research in policymaking

An **Evidence Check** rapid review brokered by the Sax Institute for NSW Ministry of Health

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Increasing the use of research in policymaking

Contents

Executive summary

The Sax Institute completed a rapid review for the NSW Ministry of Health in 2009 about strategies that foster the use of research evidence in population health policy and programs. The 2009 review was intended to support the development of the strategy document *Promoting the generation and effective use of population health research in NSW: A Strategy for NSW Health 2011-2015*. To inform a review of this strategy document, the Ministry of Health required an update of the literature. This supplementary report, *Increasing the use of research in policymaking*, provides evidence of the effectiveness of strategies to increase research evidence use that could be implemented by government human service agencies.

A broad search across health and other relevant databases identified 304 papers published between 2009 and 2015 that are relevant to population health and that described strategies aiming to increase research use in policies and programs, and factors associated with these strategies that are likely to influence the use of research. Of these, 187 papers described primary research, including 14 papers focussing on studies that tested strategies. The findings from these 14 studies are the main focus of this report.

It is important to note that, where the 2009 report includes the findings of tested strategies as well as surveys, interviews, document reviews and professional opinion, the findings of this review pertain primarily to the 14 studies that tested a strategy. These studies are generally characterised by an absence of control groups, small sample sizes, and self-report data, and consequently the level of evidence is weak. The review can therefore offer only tentative conclusions.

Summary of the findings

The 187 primary research papers were assigned to one of five thematic groups according to the main focus of the study. The groups included three themes from the 2009 review (relevant, useful, accessible research; interaction, partnerships and research co-production; and organisational capacity to use research) and two additional themes identified following review (funding research infrastructure and research projects; and research priority setting). Main findings are summarised under each theme below.

Theme 1: Relevant, useful, accessible research. Studies confirmed the need for targeted, tailored approaches to increasing access to research, and point to new formats for communicating research findings such as policy briefs. A system for commissioning rapid reviews was found to increase access to relevant research and confirmed the value of using knowledge brokers to support the commissioning process. Evidence on the value of a tool for improving communication of research findings to policy audiences was mixed. There is continued interest in the role of knowledge brokers, champions and intermediaries, and in the use of rapid reviews; and there is an emerging interest in the use of local and linked data.

New strategies tested

- Policy briefs to communicate evidence from research[1]
- Commissioning rapid reviews of research[2]
- A writing tool to improve communication of evidence from research.[3]

Theme 2: Interaction, partnerships and research co-production. Studies confirmed the need for support to build and sustain successful research partnerships, with a new focus on the contributions of policymakers participating in research teams. Ongoing communication and a clear articulation of expectations of participants in partnership research are needed. New formats for interaction between researchers and policymakers have been reported, including seminars with or without facilitated discussion, and national and international networks. The value of sustained engagement, particularly through research processes, was also confirmed.

- Seconding policymakers into research teams[4, 5]
- Structured seminar series to promote interaction between policymakers and researchers[6]
- Conference technology to support knowledge sharing[7]
- Networks to support knowledge production and exchange.[8, 9]

Theme 3: Increasing organisational capacity to use research. Studies reported on individual and organisational level initiatives to build capacity to use research, with both types of initiatives demonstrating increased knowledge and/or skills. The roles of intermediaries were perceived as critical to the success of organisation-wide initiatives, and management support was essential for both organisational and individual-level interventions.

New strategies tested

- Organisation-wide capacity development initiatives.[10]

Theme 4: Funding research infrastructure and research projects. A grant-funded partnership involving health policy agencies, public health services and a university supported collaboration on projects, generated new research, and led to some changes in policy and practice. However, the partnership did not result in long term collaboration and required significant organisational support.

New strategies tested

- Grant-funded collaboration involving policymakers, practitioners and university department.[11]

Theme 5: Research priority setting. A new area identified in this review was research priority setting in relation to generating new research. No studies tested this strategy.

1 Introduction

The Sax Institute completed a rapid review for the NSW Ministry of Health in 2009, to support the development of the strategy document 'Promoting the generation and effective use of population health research in NSW: A Strategy for NSW Health 2011-2015'. The Ministry of Health is reviewing the strategy document and requires an update of the literature on strategies that foster the use of research evidence in population health policy and program delivery. The objective is to provide the Centre for Epidemiology and Evidence with an understanding about current thinking nationally and internationally; identify strategies that could be implemented by government human service agencies; and provide evidence regarding their effectiveness.

This review includes literature published from 2009 to 2015 inclusive. It focuses on strategies and factors likely to influence the use of research, that are in addition to those identified in the 2009 report or for which there is new evidence or understandings about how they may be used.

Review approach

Using the 2009 report as a starting point, the review aims to:

1. Describe **new strategies** that have been implemented and evaluated, that increase the use of existing research or the generation of new relevant research to inform the work of policy or program agencies.
2. Describe **new evidence about strategies identified in the 2009 report** to increase the use of existing research or the generation of new research to inform the work of policy or program agencies.
3. Identify and describe **new factors that may potentially increase the use of evidence** in population health policy or program delivery by an organisation like NSW Health.
4. Flag **new conceptual frameworks** about increasing the use of research in population health policy or program agencies that have been identified in reviews of the literature or that are commonly cited in the literature.

2 Method

Rapid review search strategy

We developed and ran a search strategy for papers published in English between October 2009 and July 2015. Our focus for the review was primary research describing strategies that would be relevant to population health policy and program delivery by agencies like NSW Health. We searched Medline, CINAHL, and Informit Online (to capture Australian publications). We observed that these databases did not cover all relevant journals so we searched PubMed to capture articles from an additional 11 journals. Finally, we searched Google Scholar to ensure we had not missed any relevant papers. For the Google Scholar search we reviewed up to 300 titles per search term, stopping when no new relevant papers were retrieved.

Our search terms included combinations of the following: health, policy, public policy, information dissemination, diffusion of innovation, research utilisation, knowledge mobilisation, knowledge translation, knowledge exchange, models, organisational, rapid review, rapid synthesis, rapid approach, commissioned review, government, academies and Institutes, research, research institute, research centre, research funding, funded research, research support, administration, systems, commissioned research, information management, research utilisation, knowledge management, evidence based policy, information, knowledge use, knowledge brokering, brokerage, broker, organisational readiness, research capacity building, collaboration, collaborative, partnership, coproduction, funded research, research funder, government. The detailed searches are provided in Appendix 1.

We ran our initial Medline, CINAHL and Informit Online searches and as had occurred for the previous review, found few articles relating to strategies to generate new research. We expanded our search terms to include research collaboration, partnership research and commissioned research (research funders), giving a total yield of 3,813 papers. We then searched PubMed and retrieved an additional 1,475 papers, bringing our yield to 5,288. Our Google Scholar search identified an additional 646 new papers, bringing our total yield to 5,934. After excluding duplicates (n=1,545), 4,389 papers remained (see Figure 1).

Inclusion and exclusion criteria

For the purposes of this review, population health policy and program delivery includes the development, implementation and evaluation of policies and programs at national or regional level, and excludes implementation of initiatives at community and local health district (LHD) level.

Inclusion criteria

We included peer reviewed articles about strategies aiming to increase research use that have been implemented and evaluated, factors associated with these strategies that may influence the use of research, and conceptual frameworks relevant to increasing the use of research in health policies and programs. We included strategies implemented by research funding agencies and organisations implementing or supporting knowledge translation strategies. We included articles describing strategies used by researchers, academics or universities if they included a focus on or targeted policymakers and program managers. We included articles concerning the use of evidence from evaluation including economic evaluation, but excluded articles about evaluation design.

Exclusion criteria

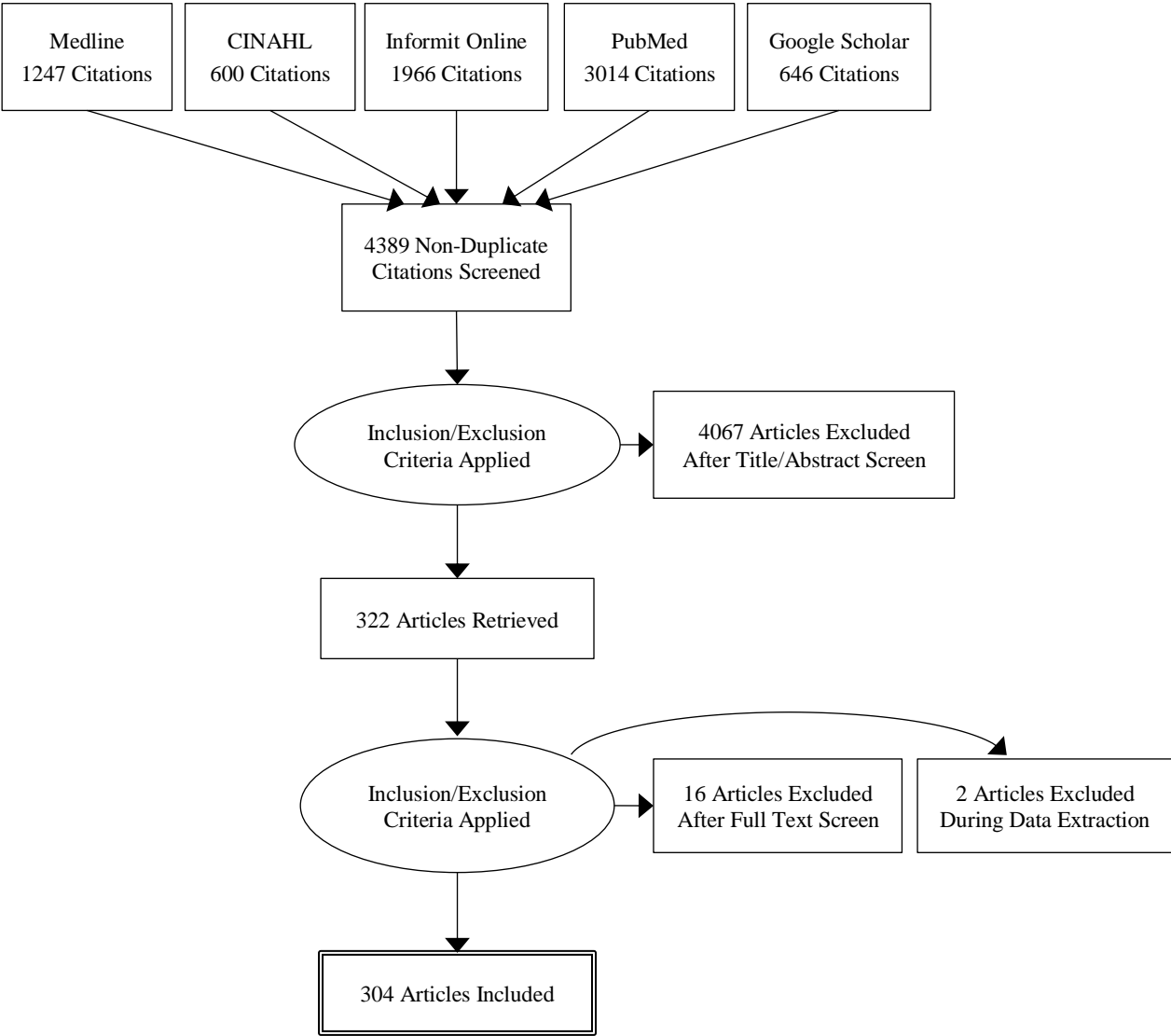We excluded conference abstracts, editorials, book chapters, grey literature and publications focusing on developing countries. We excluded articles focusing on health technology assessment, basic science, biomedical articles, genomics, and pandemics unless they focused on health protection. We excluded articles relating to sectors other than health (such as education, housing, transport) unless they described

multi-sectoral initiatives. We excluded community level interventions and those pertaining to local governments and those that are primarily the responsibility of other entities such as universities.

We excluded articles about health service delivery, clinical guidelines, clinical practice or clinical conditions (such as mental health), unless they focused on policy or population level strategies, or screening and prevention. We excluded community-academic partnerships that did not include policymakers or program managers. We excluded articles on organisational systems and processes, capacity building, training and professional development for health professionals, policymakers and program managers unless they included a focus on strategies to support the use of research.

The two lead authors (GM, DC) separately screened all (n=4,389) papers by title and abstract, and excluded 4,067 papers. We reviewed the full text of all remaining papers (n=322), and excluded another 18, leaving us with a total of 304 included papers (see Figure 1). Note that the 304 papers include some that were available online within the search date range (October 2009 to July 2015) but published in print after July 2015.

Figure 1: Flow chart of citations

Classification by levels of evidence

The two lead authors (GM and DC) independently assessed the 304 papers using the modified version of the NHMRC Hierarchy of Evidence used in the 2009 report (see Appendix 2), achieving a 93% inter-rater agreement.

Results for analysis

Based on the above search strategy and our assessment of the levels of evidence, we sorted the 304 papers into: studies that tested the impact of strategies to increase the use of research in policy and programs (n=14); surveys, interviews and document analysis (n=109); literature reviews, including systematic reviews (n=38); descriptive case studies of strategies, activities and programs (n=64); professional commentary (n=69); and protocols (n=10) (see Table 1).

Table 1: Comparison of study types included in 2009 review and 2015 update

Study type	1999-2009[*]		2009-2015	
	n	**%**	**n**	**%**
Studies testing strategies	6	6.1	14	4.6
Qualitative methods	30	30.3	147	48.4
Surveys / interviews			*109*	*35.9*
Literature reviews			*38*	*12.5*
Descriptive case studies	35	35.4	64	21.1
Commentaries / professional opinion	28	28.3	69	22.7
Protocols	--	--	10[**]	3.3
TOTAL	**99**	**100**	**304**	**100**

* Papers in the 2009 report included 16 models/frameworks relevant to increasing the impact of research on health policy or programs and 17 government/agency reports (none of which described studies to test the impact of strategies). As the update did not specifically search for conceptual frameworks and did not include grey literature, these 33 documents have been excluded from this table.

** Includes descriptions of study designs and protocols for trials and reviews

For the purposes of this supplementary report, our analysis focuses broadly on the 187 papers describing primary research (i.e. 'studies testing strategies', 'surveys / interviews' and 'descriptive case studies' from Table 1 above) and specifically on the 14 papers describing studies testing strategies. We grouped the 187 primary research papers according to three of the themes identified in the 2009 report: relevant, useful, accessible research; interaction, partnerships and research co-production; and organisational capacity to use research. Two additional themes were identified: funding research infrastructure and research projects; and research priority setting (see Table 2).

Papers within the five identified themes were variously relevant to both increasing the use of existing evidence and to generating new relevant research.

Table 2: Papers included in the analysis, by theme

Theme	All primary research		Studies testing strategies	
	n	%	n	%
Theme 1: Relevant, useful, accessible research	62	33.2	4	28.6
Theme 2: Interaction, partnerships and research co-production	49	26.2	6	42.9
Theme 3: Increasing organisational capacity to use research	45	24.1	3	21.4
Theme 4: Funding research infrastructure and research projects	28	15.0	1	7.1
Theme 5: Research priority setting	3	1.6	0	0.0
	187	**100**	**14**	**100**

For the 14 studies testing strategies, we extracted the following data from the papers: author, country, year, brief description of the study, study design, methodology, outcome measures, results, comments/limitations (see Appendix 3). Note that findings from the 14 studies that tested strategies should be considered tentative because, overall, the level of evidence is weak. None of the 14 studies used an experimental design incorporating a control group, and most drew on self-report data collected post-implementation (with or without baseline data) from small samples, some with low response rates.

A bibliography of the 187 primary research papers by theme is provided in Appendix 4.

Ninety of the 187 primary research papers (48%) explicitly mentioned a conceptual framework relevant to the influence of evidence on policy and practice; these are listed in Appendix 5.

3 Analysis of the evidence

Findings are presented below in relation to each of the five themes identified in Table 2. Within each theme, studies that tested strategies are described and then summarised with respect to what they add to the evidence base. Insights from qualitative research and case studies within each theme that are potentially relevant to NSW Health are also included.

Theme 1   Relevant, useful, accessible research

We found 62 studies that explored the need for research to be relevant, useful and accessible if it is to be used by policymakers and program managers. Of these, four studies had tested strategies to improve access to relevant research.

The strategies that were tested were: accessing and using systematic reviews and summaries of research in decision making[12]; the usability of policy briefs[1]; a system to support commissioning research reviews[2]; and a tool to support effective communication of research findings.[3]

In addition to the studies testing strategies that are described below, one protocol described an evaluation, using a multiple case study approach, of a knowledge brokering initiative aimed at facilitating the uptake of a decision support tool.[13] In this study the knowledge brokering team will facilitate and support ongoing relationships with users of the tool; provide tailored training in use of the tool; and adapt the tool to the needs of local sites.

Accessing summaries and syntheses of research

As part of an initiative to increase the use of systematic reviews by policy makers, Brennan and colleagues (2016)[12] tested strategies to increase policymakers' awareness of Cochrane systematic reviews, and used a tailored website to provide access to reviews, syntheses and summaries of research. The authors also described skill development workshops to increase the capacity of decision makers to use research, and a community of practice to provide opportunities for interaction between policymakers and researchers.

The study **confirmed** that the availability and accessibility of relevant reviews are considered key determinants to increase the use of research and that access to syntheses and summaries of research alone is insufficient to increase the use of research in decision making. Graded entry formats in reporting evidence from research were found to be useful. The study relied on self-report interview data with a low response rate.

Brennan and colleagues identified **new factors** likely to be influential in increasing the use of summaries and syntheses of reviews, such as: content that is a close fit with immediate policy priorities; indexing reviews by policy relevance; a greater focus on health services research and public health; and the need for ongoing promotion of systematic reviews and summaries. This study reported participants' preferences for a single portal to access multiple databases, and pointed to the need for a formal mechanism for ongoing contact to build trust and collaboration between policymakers and researchers.

Policy briefs

In Brownson and colleagues' (2011) study[1], state-level policymakers were randomly allocated one of four types of policy brief communicating evidence from research about screening with mammography, and with a recommendation in favour of screening. The briefs used one of two formats: 'story focused briefs' told cancer stories from the perspectives of an employer, a physician and an employee; and 'data focused briefs' provided percentages of mammography screening. Two of the four briefs reported state level data and two

reported local level data. All briefs were examined to see if they were understandable, credible, likely to be used, and likely to be shared. The study had a low response rate.

This study provides **new evidence** about policy briefs, and found them to be perceived as accessible, credible, relevant and accurate in communicating evidence from research. The briefs most preferred by policymakers used state level data rather than local level data, but story- and data-based briefs suited different audiences, **confirming** the need for targeted strategies. The study highlighted the need to differentiate between policy audiences, for example, by mandate, content expertise, level of education, and philosophical or political conviction. It **confirmed** professional opinion that policymakers find concise summaries of research useful. The study also noted that ongoing regular interaction between policy makers and researchers may be needed for effective knowledge transfer.

A system to support commissioning rapid reviews

Campbell and colleagues (2011)[2] reported on an evaluation of the Evidence Check rapid review program, which facilitates the commissioning of research reviews for use in policy decision making. Participants in the study were policymakers and researchers who had each commissioned or conducted rapid reviews; independent peer reviewers assessed the quality of six rapid reviews.

The study provided **new evidence** about the relevance, rigor and comprehensiveness of rapid reviews, and satisfaction with knowledge brokering. The study also provided new evidence that the rapid reviews accurately reflected the state of the evidence, i.e. the rigour and comprehensiveness of reviews was not compromised by the rapid timeframes. Policymakers were satisfied with knowledge brokering in helping define research questions; and researchers were happy with the review questions and scope determined by the brokers, although some researchers felt the questions were broad. Knowledge brokers were found to be helpful in shaping review parameters such as scope, timeframes and budget and useful in linking policy teams that had few academic contacts to researchers with the appropriate expertise.

The study **confirmed** professional opinion regarding the value of using knowledge brokers and research experts in increasing policymakers' access to relevant research and to researcher expertise. **Factors** thought to enhance the system for commissioning reviews included the qualities and skills of the knowledge brokers, the flexibility of the process, and the linkage to expert researchers.

A tool to support effective communication of research

van der Heide and colleagues (2016)[3] reported on the use of a tool to improve communication about the effectiveness of interventions in public health settings, using a range of products such as press releases, web based messages, brochures, reports and scientific publications. The end users included policymakers, health care providers, and citizens. Products targeting health care providers and citizens used a more accessible style in presenting information than those directed at policymakers or scientists. Sixty-eight authors ('knowledge workers') writing on the effectiveness of interventions participated in the study.

The study provided **new evidence** of the usefulness of the tool for some products and audiences; but the findings were inconclusive for policy makers. **Factors** influencing the use of the tool included its perceived advantage, acceptance of the tool by colleagues, having time and support to use the tool, and providing examples of content for different groups of users, to assist knowledge workers.

A second study, by Househ and colleagues (2011)[14], examined the effectiveness of using technology in supporting communication, and is discussed under Theme 2 of this report.

Increasing the relevance of research

This review identified several strategies thought to increase the relevance of research for policymakers and program managers. These are discussed in more detail elsewhere in this report, and included: seconding policy makers to academic research teams[4]; and using a planned program of seminars.[6]

The two studies found **new evidence** of the relevance and effectiveness of a seminar series; and the effectiveness of secondments. **Factors** found to be important included seconded fellows' familiarity with policy priorities and context, targeted content, engaging users in the selection of topics, and infrastructure to support networks and forums.

Other research of relevance

- Several qualitative papers within this theme reported on perceptions of and efforts to improve **research reviews** for decision making[8, 15-18], including descriptions of experiences with **rapid reviews**.[19] Notarianni and colleagues (2016)[20] described two 'evidence-on-demand' services provided by the Ontario Centre of Excellence for Child and Youth Mental Health (a government-funded intermediary organisation): a rapid review service for agencies, and policy papers where the development process includes exchange meetings. One study that aimed to describe the processes and methods used to produce rapid reviews found wide variation in the definition of and approach to conducting rapid reviews, review turnaround times, and types of reports produced.[21]
- The literature indicated continued interest in the use of **knowledge brokers** to facilitate research use. The importance of the interpersonal dimension of knowledge brokering (e.g. direct and frequent contacts between brokers and research users) was emphasised.[22] Effective broker attributes identified include a good understanding of current policy priorities and needs, expertise in research methodology, and less tangible traits such as approachability and patience.[23] The range of people described as having knowledge brokering roles had expanded to include policymakers or program managers in substantive positions who were well placed to facilitate linkage across and within organisations, in addition to those in dedicated knowledge brokering roles.[5, 24]
- There was also continued interest in the potential value for decision making of providing access to evidence **repositories**, such as databases and registries of reviews or tools.[25, 26]
- There appeared to be growing interest in the use of **local data** (epidemiological, evaluation, etc.) and **linked data** to inform decision making[27-31] and the potential usefulness of **modelling** of policy options).[32-34]

Summary Theme 1: Relevant, useful, accessible research

What did we already know from the 2009 review?

Strategies tested: While repositories of evidence were found not to be effective when used as stand-alone strategies, access to a web repository with reviews and summaries of research, combined with weekly tailored, targeted emails, was effective in increasing the use of research.[35] Disseminating systematic reviews in policy priority areas led to their use by 63% of participants.[36] Knowledge brokers and other intermediaries were of interest to policymakers, and the use of a knowledge broker to work one-on-one with decision makers in a public health department was not associated with an increase in evidence-supported policies and programs overall, but was associated with an increase in evidence-supported policies and programs in agencies with low research receptivity.[35]

Strategies proposed: Websites, databases, or online registries of research; syntheses or summaries of research; research using local data, including routinely collected health data and local evaluations.

Factors proposed: Engaging users in defining questions and methods for evidence reviews; ease of access to research; promotion of evidence registries and repositories; format for receiving research (e.g. websites, email notifications, conferences and workshops, journals); policy relevance of the format of reviews and summaries (e.g. 1:3:25); inclusion of commentary on review findings (e.g. recommendations, policy implications, contextual information); support to use research (e.g. knowledge broker); research receptivity of organisation; capacity to use routinely collected data.

> **What's new?**
>
> *Strategies tested:* A web based repository of syntheses and summaries of research was not found to be effective as a stand-alone strategy[12], confirming Dobbins and colleagues' earlier study.[35] Policy briefs to communicate findings from research were perceived as understandable, credible, likely to be used and likely to be shared.[1] A system for commissioning rapid reviews supported by knowledge brokers was perceived as useful for decision making and the quality of commissioned reviews was not compromised by shortened timeframes.[2] Communication tools may increase the accessibility of research for policy audiences.[3]
>
> *Factors identified:* Alignment of syntheses with immediate policy priorities; structure of evidence repositories (e.g. by policy topic); promotion of evidence repositories and reviews; tailoring content and focus of policy briefs and other products for target audiences; use of knowledge brokers to increase the relevance of commissioned research reviews.

Theme 2   Interaction, partnerships and research co-production

This rapid review identified 49 studies with a focus on interaction between policy makers and researchers, including personal relationships and partnership research. Of these, five studies (described in six papers) tested strategies using interaction to increase the use of research.

The three strategies tested were: secondments of policymakers into academic research teams[4, 5]; the use of forums, workshops and meetings[6, 14] and the use of public health networks to facilitate partnerships for knowledge translation and exchange.[8, 9]

Seconding policymakers to academic research teams
Bullock and colleagues (2012)[4] tested seconding policymakers (NHS managerial fellows) into academic research teams for a period equivalent to 12 months, spread over the life of a research project, to improve the quality and relevance of research, data collection, analysis and interpretation; and the quality and format of the findings and their dissemination.

The study **confirmed** previous professional opinion that the fit between the research topic and policy area was an important factor in the effectiveness of secondments; and confirmed the need to clearly specify expectations from the secondment and the roles of participants. It confirmed professional opinion concerning costs and benefits to both fellows and academic teams. It also confirmed the needs for mechanisms or infrastructure to support interaction between policymakers and researchers.

The study found **new evidence** about the effectiveness of secondments. Fellows influenced access to sites, participants and data, research relevance, and the quality and format of findings and dissemination strategies; and facilitated linkage and exchange between research and practice communities. Secondments were found to increase the research capacity of fellows.

The study pointed to **new factors** influencing the success of secondments, such as fellows' knowledge of the health system, the timing and flexibility of the secondments, and the attributes of participants. Managerial fellows' attributes that contributed to success included having relevant connections, seniority, credibility, and backing by colleagues. Fellows needed networks that were of value to the researchers, credibility with colleagues, ability to form linkages in new organisations, and readiness to engage. Chief Investigators needed a high level of interest and readiness to engage. The study pointed to the need to provide training for seconded fellows.

There was no independent assessment of impact on research quality and relevance.

Morris and colleagues' study (2013)[5] of the same secondment program provided **new evidence** regarding its effectiveness in facilitating linkage and exchange across policy and research domains. Researchers benefitted particularly from access to knowledge and contacts; however, fellows' line managers reported disappointment at the level of exchange. The secondments did not achieve the expected exchange benefits for non-academics due to a number of **factors:** the roles of managerial fellows, their line managers, and chief investigators were not well understood; the structures for linkage and exchange were too limited; fellows were not always well-placed to build linkages; line managers did not provide the expected support; fellows needed training to be effective intermediaries; and line managers' potential for linkage and exchange was not utilised. It **confirmed** professional opinion that structures are needed to support ongoing interaction and exchange.

The study focused on processes, self-report and the triangulation of responses, rather than using a before and after analysis.

Forums, workshops and meetings

Dwan and colleagues (2015)[6] tested a structured seminar series to promote interaction between policymakers and researchers. The seminars used either a one-way communication format (45-minute presentation with 15 minutes for questions) or a two-way format (30-minute presentation with one hour facilitated discussion). For all seminars a knowledge broker was involved in identifying topics and researchers and nominating participants. Seminars were examined for their effectiveness ('broadened knowledge', 'stimulated thinking') and relevance ('directly applicable', 'will be used'). Participants' prior and intended use of research was also documented ('have used research', 'would use research'). The two-way format was no more effective than the one-way format in communicating the findings; but the two-way format was more policy-relevant and attracted more highly research receptive decision makers.

This study provided **new evidence** about the effectiveness of interaction through a planned formal program. It **confirmed** professional opinion that regular interaction between producers and users of research increases the likelihood that research will be used. It confirmed the importance of the applicability, accessibility and relevance of research. It confirmed the need to engage users in defining information needs.

The authors attribute the success of the strategy to **factors** such as the format enabling joint exploration of policy options (deliberation); participation by research receptive people; researchers' credibility; the applicability and accessibility of the research; the shared commitment to research; and cost sharing. Other factors included the degree to which knowledge brokers were informed about current and future policy priorities; the interactive style of the broker; the funding requirement for researchers to engage in knowledge translation activities, and a facilitated opportunity for them to do so.

Househ and colleagues (2011)[14] tested different methods of using conference technology to support knowledge exchange, including communication and sharing of information and knowledge. The methods tested were audio conferencing, web conferencing, and face to face meetings. The methods were tested by three groups of people working in the field of drug policy, each focusing on a different type of task. The education group produced research reviews; research groups evaluated physician education materials; and the decision makers disseminated information on research trends.

This study provided **new evidence** about the use of technology to support knowledge exchange. It found that information and communication technology (ICT) supported group communication and that group size, budget, and geography helped determine the choice of technology by the groups. The technology that best suited a group or group task became the norm for that group's communication and exchange and users adjusted to the constraints of each method.

Audio conferencing was found to be easy and convenient and was preferred by the group whose task required least collaboration. Web conferencing was optimal but selected by the groups which required a higher degree of collaboration. Web conferencing had constraints (only one participant can speak at a time),

and required competent facilitation. However, users adjusted to the limitation, used the whiteboard as a central focus, and found other ways to support communication (e.g. emoticons, on screen text messaging). Face to face contact was preferred to web conferencing where participation was not limited by budget or distance.

Factors influencing the effectiveness of the technology included time needed to learn the technology, time to check functionality, prior agreement on the technology of choice, willingness to work within the technology's constraints, group size, task, attitude to new technology and preferred degree of social presence.

The use of networks and partnerships

In a four-year study, Wathen and colleagues (2011)[9] tested strategies to communicate evidence from research to policymakers, health and community services providers, and women's advocates in two transnational network partnerships focusing on screening women for exposure to intimate partner violence. The strategies included a series of workshops and an exchange forum, collaborative development of key messages, and the use of an online community. Participation in the network was flexible with organisations opting in or out of activities at any given time. Participants self-selected to participate in the evaluation. Follow up was at three, six and 12 months and was too early to demonstrate impact.

The study provided **new evidence** about a collaborative, flexible model of face-to-face interaction in a network based partnership. The workshops and exchange forum were highly valued and were found to be effective in improving knowledge and in sharing knowledge and, although participants found it difficult to integrate evidence into their decision making, participation in the program was perceived as a major and positive influence on later use of the findings. Communicating key messages to participants using a generic approach (without differentiating between participant types) was not effective. The online community was not used. The process overall was complex and resource intensive and the short follow up time was insufficient to demonstrate use.

The study **confirmed** the value of face-to-face interaction especially for relationship building, trust, and knowledge sharing. It increased understanding of the research process and confirmed the need for approaches that are targeted to particular audiences. It confirmed professional opinion that individual beliefs and current practice may be potential factors limiting the use of research.

Factors that influenced the sharing and use of research included mutual respect, negotiated processes to develop trust, the nature of the knowledge gap, local contexts limiting knowledge sharing, face to face interaction, the type of decision being made and the timing of the decision process.

The purpose of Kothari and colleagues' study (2014)[8] was to determine the extent to which an international public health network built effective partnerships for joint research production and use among its members, with a focus on the knowledge user perspective. The study examined the partnership's impact on communication, collaborative research, research dissemination, information needs, rapport and commitment of partners in a violence prevention network, including researchers and policy partners (justice, child welfare, information science). Of the 36 network members that participated in the study, 33% of the partners were policy makers (8% of all participants). Participation levels varied throughout the project.

The study provided **new evidence** of the value of policy and research participation throughout a research process and the use of formal and informal approaches. Interaction was found to increase linkage and exchange between partners and researchers, and increased new and policy relevant knowledge and access to knowledge. Partners in the study reported that they would use research to develop policies and influence systems. The contribution of different kinds of knowledge from policymakers and researchers was acknowledged. The study confirmed the need for relevant, timely and accessible research. The study was evaluated as use of research was just emerging.

Factors supporting the partnership included: funding to support attendance by all members at team meetings, and to support 'seed grants'; a funding requirement to include partners in research and related activities, including research generation and priority setting; sustained contact including through face-to-face meetings; a common goal and a common language increasing the sense of shared commitment; clearly defined roles and expectations; and communication targeted to different segments of participants. The authors point to some differences in perspectives on early sharing of research findings.

Other research of relevance

- Several qualitative papers within this theme report on perceptions of and efforts to facilitate **research partnerships** involving policy makers and practitioners.[37-42] Based on interviews with participants in eight research partnerships, Kothari and colleagues (2011)[43] have developed a set of indicators that may be useful in managing the co-production process or assessing the performance of a research partnership.

- Fewer papers described **facilitated exchanges** between researchers and decision makers.[44] Boyko and colleagues (2014)[45] describe their experiences with deliberative dialogue as a system-level knowledge exchange strategy, with a particular focus on design elements (e.g. fair representation among policy makers, managers, stakeholders and researchers; facilitator to assist with the deliberations; allowed frank, off-the-record deliberations) that depend on the nature of the issue being deliberated and the policy context.

Summary Theme 2: Interaction, partnerships and research co-production

What did we already know from the 2009 review?

Strategies tested: One study compared use of a research report by public health teams that had interacted with the researchers who produced the report (e.g. by commenting on drafts of the research report and attending a meeting to hear the report's findings) and public health teams that had no interaction with the researchers.[46] Interaction with the researchers was associated with improved understanding of the report but not increased use.

Strategies proposed: Interaction between researchers, policymakers and practitioners; partnerships and collaborative research; use of intermediaries (e.g. knowledge brokers).

Factors proposed: Format and depth of interaction (e.g. consultation, personal relationships, collaborative research partnerships); web-based and electronic tools to support interaction (e.g. to conduct forums and consultations); practical considerations such as time to participate in collaborative activities and opportunities to use research skills; roles of intermediaries (e.g. relationship building, capability development).

What's new?

Strategies tested: Seconding policy makers to academic research teams improved the quality and relevance of research, increased research capacity, and facilitated linkage and exchange, although not to the expected degree.[4, 5] Using interactive seminars was effective in communicating evidence from research that was relevant to policy makers' priorities[6]; and conferencing technology was found to support communication and knowledge exchange.[14] Participating in networks increased new knowledge, access to knowledge and sharing knowledge, and was perceived as a major positive influence on later use of the findings.[8, 9] Communicating key messages that were not targeted to particular audiences was not found to be effective.

Factors identified: Factors supporting the impact of secondments included infrastructure; the degree

of management support for and attributes of those seconded; the fit between policy priority and research interest; a clear articulation of expectations; and cost sharing. Factors supporting networks included flexibility in participation; the skills of knowledge brokers; a requirement to engage in knowledge exchange activities; and targeted dissemination.

Theme 3   Increasing organisational capacity to use research

This rapid review identified 45 studies about the capacity of organisations to use research, or research receptivity. Of these, three studies tested strategies. They are: implementing knowledge translation strategies in health promotion teams in an urban health unit[10]; a research capacity building program[47]; and a one-off workshop on evidence-informed decision making with opportunities for ongoing training.[48]

In addition to the studies testing strategies that are described below, one protocol described a stepped wedge cluster randomised trial of a multifaceted program to build organisational capacity for research use involving six Australian health policy agencies[49] included audit, feedback and goal setting; a leadership program; staff training; and exchange with researchers.

Organisation-level knowledge translation capacity building

Dilworth and colleagues (2013)[10] report on a year-long organisational initiative to increase the use of evidence from evaluation, and increase collaboration and exchange, in five health promotion priority areas. The agency harnessed an opportunity for organisational development (as a Best Practice Spotlight Organisation (BPSO) candidate) to focus on increasing knowledge translation and exchange across the organisation, with a focus on screening, prevention and best practice (clinical) guidelines.

The study provided **new evidence** of an organisation-wide capacity building initiative with a specified timeframe and clear goals. The strategy lead to an increased use of evidence in practice, increased collaboration, and increased knowledge transfer. Champions (existing staff recruited from across program areas and disciplines) were perceived as critical to success. They had a variety of roles including conducting literature reviews and evaluation activities and acting as advocates or opinion leaders.

Factors supporting the implementation of the development strategy were: a clear definition of the champions' roles; clear organisational leadership and support; an expectation that evidence would be used; critical mass including staff buy-in and ownership; and a culture supporting evaluation.

The study **confirmed** previous findings highlighting the value of knowledge brokers in providing one to one support[50], though the use of champions in this study was more extensive and organisation-wide.

Individual-level capacity building

Jansen and colleagues (2013)[47] report on a research capacity building program for public health professionals ('Masterclass') which consisted of six one-week-long sessions delivered over 18 months. The program focused on policy or practice based problems, and trained public health professionals to design and conduct scientific research based studies, with a view to integrating the findings into policy and practice settings. The program had a strong focus on interaction between policy participants, managers and university staff and linkages made had the potential to support integrating the program into a Masters' degree or other professional development programs.

The study found **new evidence** about the feasibility and value of providing training in practice-based research. The program was successful in increasing health professionals' research competencies, with 94% of participants reporting having gained sufficient knowledge on research methodology. Although change in practice based on the findings of participants' research met with some resistance, a six-month follow-up

demonstrated ongoing involvement in a range of research activities including writing journal articles and presenting at conferences.

Management support was a critical **factor** in enabling participation in the program, the implementation of research projects, and continued involvement in research activities. Other supportive factors included commitment by senior managers to improving organisational performance; organisational support for the Masterclass time commitment; alignment between the research topic and participants' work; supervision by senior academic researchers; and the development of linkages between Masterclass participants and university researchers. The strategy was also seen as a way to increase opportunities for participation by health professionals in higher education, as a factor in increasing use of research.

Yost and colleagues (2014)[48] describe a five-day intensive workshop for participants from nursing, public health, and library services, in knowledge, skills, and behaviours for evidence informed decision making. Of the 40 workshop attendees who consented to participate in the evaluation, 37% were policy analysts or program managers. The program used both small and large group processes. Small groups focused on searching for, accessing and appraising evidence to implement in local decision making processes. Large groups used didactic strategies to cover broad content areas.

The study found **new evidence** about the effectiveness of capacity building programs demonstrating significant increases in knowledge from baseline to post-program and at six-month follow-up. There was a significant decrease in knowledge and skills between the end of the program and six months later with a 44% knowledge and skill retention rate at six months. There was a non-significant increase in evidence-informed decision making behaviours from baseline to six month follow-up. Ninety-seven per cent of participants expressed an interest in continuing education through periodic on site or online workshops.

Factors influencing knowledge and skill development included tailoring of content to each professional group and interactive learning formats. The study used a small convenience sample with no control group.

The study **confirmed** Taylor and colleagues' (2004) findings[51] of a small improvement in knowledge and critical appraisal skills at six months post-training.

Other research of relevance
- Most of the qualitative research within this theme focused on describing and/or better understanding the use of evidence in decision making in health organisations.[52-57]
- There is continued interest in **organisation-level capacity** to use research evidence. For example, Humphries and colleagues (2013)[58] describe a collaboration between two Canadian health organisations to build organisational capacity for evidence use in program planning, implementation and evaluation, while Huckel Schneider and colleagues (2014)[59] and Peirson and colleagues (2012)[60] both identify factors that are important for facilitating evidence informed decision making capacity at an organisational level. Based on findings from a qualitative study in Canada, Ellen and colleagues (2013)[61] identify several emerging **supports for evidence-informed decision-making** (e.g. programs, instruments, tools) in health organisations including: easy access to journals and scientific literature; infrastructure or positions where accountability for encouraging knowledge use lies; and a knowledge intelligence service that scans the literature and distributes research evidence.
- In relation to **individual capacity building**, Straus and colleagues (2011)[62] describe a Canadian national training initiative developed to enhance capacity in the science and practice of knowledge translation (KT). Training is provided across three streams, including a dedicated stream for decision makers that includes an opportunity for participants to work on a project in their own setting.

Summary Theme 3: Increasing organisational capacity to use research

What did we already know from the 2009 review?

Strategies tested: Using knowledge brokers to build capacity in agencies was not associated with an increase in evidence-supported policies and programs overall, except in organisations with low research receptivity.[35] A half-day training session in critical appraisal skills elicited small improvements in knowledge and ability among health practitioners and managers but no significant increase in evidence-seeking behaviour[51]; and a structured two-year individual capacity building program was associated with increases in self-reported research literacy and skills among senior health service executives.[63]

Strategies proposed: Training in research appraisal and use; increasing organisational capacity to use research; using knowledge brokers to build individual and organisational capacity.

Factors proposed: A supportive organisational culture characterised by attributes such as supportive leadership; a learning culture that values knowledge and research; organisational investment in skills development and capacity building; intensity of training.

What's new?

Strategies tested: An organisation-wide initiative to increase capacity for using research increased the use of evidence, collaboration and knowledge transfer.[10] Participating in a training program and an intensive workshop increased individuals' knowledge and skills in using research, but not the implementation of research findings or evidence based practice.[47, 48]

Factors identified: Factors supporting organisation-wide initiatives included a clear definition of the roles of champions and ongoing opportunities for their professional development, organisational leadership and an expectation of evidence utilisation. Factors supporting individual-level capacity development included managerial support, alignment of content with participants' work, involvement of senior academics, and interactive learning formats.

Theme 4   Funding research infrastructure and research projects

This review identified 28 studies that examined the role of funding research infrastructure or research projects in generating and increasing the use of research. Of these, one study tested the implementation of the strategy.

In addition to the study described below, one protocol described an evaluation of the Canadian Institutes of Health Research (CIHR) knowledge translation funding programs[64], which include funding for syntheses to inform decision making, research partnerships, dissemination activities and events, and projects to examine the determinants of research use. The evaluation aimed to assess their efficiency and effectiveness, immediate impacts, and broader health and health research outcomes. Findings from the evaluation do not appear to have been published in the academic literature and so are not within the scope of this review. However, a report of key findings and recommendations available on the CIHR website (http://www.cihr-irsc.gc.ca/e/47332.html) indicates that while the CIHR'S knowledge translation funding opportunities supported meaningful partnerships between researchers and knowledge users and led to real-world applications of research, building these relationships was often difficult, costly and time-consuming.

Collaborative research centres

Hoeijmakers and colleagues' study (2013)[11] examines the Limburg Academic Collaboration Centre (ACC) for Public Health, a grant-funded long-term partnership aimed at improving interaction between policymakers, researchers and practitioners, to increase the relevance of research, and its use in policy and practice. The Limburg ACC is made up of 19 municipal departments, the regional public health service, and Maastricht University Medical Centre. Participants included the ACC program leader, science practitioners (public health professionals enrolled in part time PhDs), students in the ACC masterclass for public health professionals, municipal officers, regional public health service managers, and researchers. The science practitioners were expected to facilitate collaboration and exchange and promote the use of research findings.

This investment was expected to result in relevant, accessible evidence based knowledge, for use in policy and practice, and in long term collaborations through the establishment of the network structures. The networks supported collaboration on research projects in the short term, but did not evolve into long term tactical and operational collaborations addressing public health priorities. The number of participants increased over time but policymakers remained less involved than researchers and practitioners. The role of the ACC program leader was central in facilitating collaboration. The study authors suggest that incorporating deliberative processes, through which participants could consider research findings and explore how best to integrate them into policy and practice, would potentially be useful for supporting policy and practice change around complex issues.

The program provided **new evidence** of changes in policy and practice following the implementation of findings from practice-based research. However, these were not immediate: the focus on achieving research competencies delayed implementation, and there was some resistance. While funding for a long-term collaborative partnership provided a platform for interaction, there was no increase in co-production of research. There were fewer gains than anticipated at the university level and the research culture remained dominant (e.g. policymakers were involved in the early stages of research, but not across the whole research process).

Supporting **factors** included: degree of integration of policy, research and practice networks; active management of collaborative organisational structures (e.g. regular steering and executive committee meetings, monitoring of activities); policy relevance of the research projects; and managers' prioritisation of and commitment of time to partnership activities.

Other research of relevance

- There is a growing body of literature describing the design, roles and functions of **research centres funded by government**. Bristow and colleagues (2015)[65] described a network of UK 'What Works Centres' funded by a combination of government and non-government sources to synthesise and mobilise knowledge. Other initiatives of interest include the Dutch Academic Collaborative Centres for Public Health[66, 67], long-term partnerships between public health services and universities that have been established with funding from the Ministry of Health, and the Manitoba Centre for Health Policy, a university research centre with a long-standing contractual arrangement with government to analyse local administrative data in addressing policy-related research questions.[68, 69]

- **Government-funded research projects** and the role of funding agencies in supporting uptake of research findings were examined in two studies. Ruppertsberg and colleagues (2014)[70] developed audit criteria to assess knowledge exchange plans in health research proposals, and Milat and colleagues (2013)[71] identified factors influencing uptake of evidence from intervention projects funded through the New South Wales Health Promotion Demonstration Research Grants Scheme during the period 2000 to 2006, and explored the factors mediating impacts.

Summary Theme 4: Funding research infrastructure and research projects

What did we already know from the 2009 review?

Strategies tested: Nil

Strategies proposed: Nil

Factors proposed: Nil

What's new?

Strategies tested: Funded long-term partnerships involving policymakers, researchers and practitioners supported linkage and exchange and generated new relevant research. While long term collaboration was not sustained, there were small changes in practice within organisations.

Factors identified: Degree of integration of networks; active management of structures to support linkage and exchange; policy relevance of research; managerial commitment.

Theme 5   Research priority setting

This review identified three studies that examined collaborative research priority setting processes involving health researchers, practitioners and policymakers that aimed ultimately to mobilise policy-relevant research. Of these, none tested the implementation of the strategy.

Other research of relevance

- The three case studies relevant to this theme described the **process and outputs of research priority setting exercises** for health systems research. Kothari and colleagues (2014)[72] describe a two-day "think tank" that used a consensus-building approach to develop a public health systems research agenda for Ontario, with the aim of focusing collaborative research relevant to the 23 research questions identified. A brief survey of participants (n=16, 44% response rate) several months after the event found that 42% had participated in research proposals related to the agreed research agenda and 75% had advocated for or encouraged attention to identified priority areas in their professional practice. The Consortium from Altarum Institute and others (2012)[73] describe how health services and systems information needs previously identified by public health stakeholders across the United States were transformed into a set of research questions through an expert review process. A third paper outlines the process used by a Canadian provincial research coalition to identify priority topics for health systems research on ageing, and assemble researchers, policymakers and care providers to develop a collaborative priority-driven research proposal (Sivananthan and Chambers 2013).[74] It was noted that policy makers participated across the priority-setting process and would continue to be involved in the preparation and submission of the research proposal to a funding agency.

4 Key findings

Overall, we found there was an increased focus on strategies to support interaction between policymakers and researchers, partnership research, and organisational capacity to use research, compared to the first report in 2009. There was an emerging interest in government-funded research infrastructure and research priority setting. There were fewer new strategies to increase access to relevant research, however the review confirmed the need for strategies that target particular audiences and the value of summaries and syntheses of research evidence.

Theme 1: Relevant, useful, accessible research. Studies confirmed the need for targeted, tailored approaches to increasing access to research, and point to new formats for communicating research such as policy briefs. A system for commissioning rapid review was found to increase access to relevant research and confirmed the value of using knowledge brokers to support the commissioning process. Evidence on the value of a tool for improving communication of research findings to policy audiences was mixed. There is continued interest in the role of knowledge brokers, champions and intermediaries, and in the use of rapid reviews; and there is an emerging interest in the use of local and linked data.

Theme 2: Interaction, partnerships and research co-production. Studies confirmed the need for support to build and sustain successful research partnerships, with a new focus on the contributions of policymakers participating in research teams. Ongoing communication and a clear articulation of expectations of participants in partnership research are needed. New formats for interaction between researchers and policymakers have been reported, including seminars with or without facilitated discussion, and national and international networks. The value of sustained engagement, including through research processes was also confirmed.

Theme 3: Increasing organisational capacity to use research. Studies reported on individual and organisational level initiatives to build capacity to use research, with both types of initiatives demonstrating increased knowledge and/or skills. The roles of intermediaries were perceived as critical to the success of organisation-wide initiatives, and management support was essential for both organisational and individual-level interventions.

Theme 4: Funding research infrastructure and research projects. A grant-funded partnership between health policy and practice agencies and a university supported collaboration on projects, generated new research, and led to changes in policy and practice; but did not result in long term collaboration and required significant organisational support.

Theme 5: Research priority setting. A new area identified in this review was research priority setting in relation to generating new research. No studies tested this strategy.

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Appendix 1: Searches

MEDLINE

	Searches (Run 9/7/15)	Results
1	(policy mp. or Public Policy).af	35731
2	limit 1 to (abstracts and english language and humans and yr="2009-Current")	4304
3	(information dissemination or knowledge or diffusion of innovation or research utilisation or knowledge mobilisation).af.	465402
4	limit 3 to (abstracts and english language and humans and yr="2009-Current")	138382
5	(knowledge translation or knowledge exchange).af.	1266
6	limit 5 to (abstracts and english language and humans and yr="2009-Current")	853
7	(models mp or Models, organisational or Models, structural).af.	16239
8	limit 7 to (abstracts and english language and humans and yr="2009-Current")	111
9	(rapid review or rapid synthesis or rapid approach or commissioned review).af.	1218
10	limit to (abstracts and english language and humans and yr="2009-Current")	180
11	2 and 4	531
12	2 and 6	23
13	2 and 8	0
14	2 and 10	8
15	government.mp. or Government/	117166
16	limit 15 to (abstracts and English language and humans and yr="2009-2015")	16992
17	"Academies and Institutes" / or research institute.mp. or research centre.mp.	18908
18	limit 15 to (abstracts and English language and humans and yr="2009-2015")	2294
19	research funding.mp.	1493
20	limit 15 to (abstracts and English language and humans and yr="2009-2015")	473
21	funded research.mp.	572
22	limit 15 to (abstracts and English language and humans and yr="2009-2015")	174
23	(Research Support as Topic/ og [Organization & Administration]	1383
24	limit 15 to (abstracts and English language and humans and yr="2009-2015")	98
25	(((research or review) and health policy) or commissioned).tw.	6026
26	limit 15 to (abstracts and English language and humans and yr="2009-2015")	2171
	16 and 18	136
	16 and 20	80
	16 and 22	29
	16 and 24	17
	16 and 26	243
	TOTAL MEDLINE	**1247**

CINAHL

	Searches (Run 9/7/15)	Results
1	(MH "Health Policy+") OR (MH "Policy Making") OR "policy" Limiters – English Language; Published Date: 20090101-20151231	42,133
2	(MM "Information Management") OR (MM "Selective Dissemination of Information") OR (MM "Health Information Networks") OR (MM Information Literacy") Limiters – English Language; Published Date: 20090101-20151231	1,927
3	(MM "Diffusion of Innovation") OR "knowledge or diffusion of innovation" Limiters – English Language; Published Date: 20090101-20151231	1,518
4	"research utilisation" Limiters – English Language; Published Date: 20090101-20151231	27
5	(MH "Knowledge Management+") Limiters – English Language; Published Date: 20090101-20151231	776
6	(MM "Models, Structural+") OR (MM "Models, Theoretical+") Limiters – English Language; Published Date: 20090101-20151231	5,878
7	"evidence-based policy" Limiters – English Language; Published Date: 20090101-20151231	35
8	S1 and S2	83
9	S1 and S3	189
10	S1 and S4	3
11	S1 and S5	78
12	S1 and S6	212
	TOTAL CINAHL	**600**

INFORMIT ONLINE (HEALTH)

	Searches (Run 10/7/15)	Filter	Results
1	health	2009-2015	218,979
2	policy	2009-2015	12,519
3	models	2009-2015	4060
4	(health) AND (policy) AND (models)	2009-2015	993
5	evidence-based policy	2009-2015	289
6	(knowledge translation) OR (knowledge exchange)	2009-2015	189
7	(rapid review) OR (rapid synthesis) OR (rapid approach) OR (commissioned review)	2009-2015	148
8	(policy) AND ((information dissemination) OR (knowledge mobilisation) OR (diffusion of innovation) OR (research utilisation)	2009-2015	347
	TOTAL INFORMIT ONLINE		**1966**

	Searches* (Run 16/7/15)	Results
1	Search ((knowledge translation[Text Word]) AND ("2009/10/1"[PDat] : "2015/07/16[PDat]))) AND (policy[Text Word] AND ("2009/10/1"[PDat] : "2015/07/16[PDat]))	228
2	Search ((knowledge translation[Text Word] AND ("2009/10/1"[PDat] : "2015/07/16[PDat]))) AND (program[Text Word] AND ("2009/10/1"[PDat] : "2015/07/16[PDat]))	172
3	Search evidence-based policy[Text Word]	282
4	Search ((((((research utilisation[Text Word]) OR knowledge mobilisation[Text Word]) OR knowledge use[Text Word]) OR information dissemination[Text Word]) OR innovation diffusion[Text Word]) AND("2009/10/1"[PDat] : "2015/07/16"[PDat]))) AND (policy[Text Word] AND ("2009/10/01"[PDat] : "2015/07/16"[PDat]))]	526
5	Search ((((((rapid review[Text Word]) OR "rapid approach"[Text Word]) OR "rapid synthesis"[Text Word]) OR "rapid synthesis method"[Text Word]) AND ("2009/10/01"[PDat] : "2015/07/16"[PDat]))) AND (policy[Text Word] AND ("2009/10/01"[PDat] : "2015/07/16"[PDat]))	18
6	Search ((((((rapid review[Text Word]) OR "rapid approach"[Text Word]) OR "rapid synthesis"[Text Word]) OR "rapid synthesis method"[Text Word]) AND ("2009/10/01"[PDat] : "2015/07/16"[PDat]))) AND (program[Text Word] AND ("2009/10/01"[PDat] : "2015/07/16"[PDat]))	16
7	Search ((("models/frameworks"[Text Word]) OR "models/methods"[Text Word]) OR "models/organisations"[Text Word]) OR "models/systems"[Text Word]	8
8	Search (((("knowledge broker"[Text Word]) OR "knowledge broker role"[Text Word]) OR "knowledge brokerage"[Text Word]) OR knowledge brokering"[Text Word]) OR "knowledge broking"[Text Word]	60
9	Search ((("research receptivity"[Text Word]) OR "organisational readiness"[Text Word]) OR "research capacity building"[Text Word]) OR "organizational readiness"[Text Word]	165
10	Search (((((collaboration[Text Word] OR collaborative[Text Word]) OR partnership{Text Word]) OR coproduction[Text Word]) AND policy[Text Word]) AND research[Text Word]	1,490
11	Search ((((research institution[Text Word]) OR funded research[Text Word]) OR research funder[Text Word]) AND health[Text Word]) AND government[Text Word]	20
12	Search (((commissioned research[Text Word]) OR commissioned review[Text Word]) OR government research[Text Word]) AND health	29
	TOTAL PUBMED	**3014**

* Filters for each search: Abstract; Publication date from 2009/10/1 to 2015/7/16

GOOGLE SCHOLAR

	Searches ("by relevance" and "by date") **(Run 12/8/15)**
1	"knowledge translation" and "policy" and "health"
2	"knowledge mobilisation" and "policy" and "health"
3	"knowledge translation" and "program" and "health"
4	"evidence based policy" and "health"
5	"research utilisation" OR "research utilization" and "policy" and "health"
6	"innovation diffusion" OR "information dissemination"
7	"rapid synthesis" OR "rapid review" and "policy" and "health"
8	"research receptivity" OR "organisational readiness" OR "research capacity building" and "policy" and "health"
9	"knowledge brokering" OR "knowledge broker"
10	"collaboration" OR "partnership" OR "co-production" AND "policy" AND "research"
	TOTAL new articles = 646

Appendix 2: Designations of levels of evidence

Level*	Intervention
I	A systematic review of level II studies
II	Randomised controlled trial
III-1	Pseudo randomised controlled trial (i.e. alternate allocation or some other method)
III-2	A comparative study with concurrent controls: • Non randomised experimental trial • Cohort study • Case control study • Interrupted time series with a control group
III-3	A comparative study without concurrent controls • Historical control study • Two or more single arm study • Interrupted time series without a parallel control group
IV	Case series with either post-test or pre-test/post-test outcomes; cross-sectional study
V-1	Qualitative methods including surveys/interviews/document analysis
V-2	Case studies (descriptive; no outcomes)
VI	Professional opinion

Appendix 3: Summary of studies testing strategies

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
(12) **Brennan SE Cumpston M Misso ML McDonald S Murphy MJ Green SE** Australia *2016*	Study of policy makers' perceptions of relevance and potential impact of Policy Liaison Initiative (PLI). The PLI is an initiative of the Australasian Cochrane Centre and the Australian Government Department of Health and Ageing that aims to support the use of systematic reviews in policy work. Strategies included: a community of practice to support knowledge sharing; skill development workshops; and a tailored website and review summaries	Post-implementation interviews with policy participants and participation data	Semi-structured individual (n=8 branch managers, n=2 section managers) and group interviews (n=33 staff) with Department staff across various levels and work units, supplemented by data on participation in workshops and seminars	• Commitment to using research evidence to inform policy • Use and awareness of systematic reviews • Individual-, unit- and organisation-level capabilities to acquire, assess, interpret and apply research • Links with researchers and other external experts to build capacity • Content and format of research reports • Alignment between existing research and policy makers' needs • Interactions with researchers to improve research supply	• Broad support for using research. Staff felt responsibility to be aware of relevant research • Reviews and syntheses were used. Perceived need to increase awareness of systematic reviews. Complexity navigating the Cochrane Library was a deterrent • Mixed views about skills for acquiring, assessing, interpreting research (staff wanted skill development) but managers and staff confident in applying research. Managers with good networks accessed expertise and existing research from colleagues • Graded entry in research reports important and summaries tailored for policy needs essential. Syntheses enhance accessibility and interpretation • Use of existing research influenced by match between policy and research questions, currency, trustworthiness • Links with researchers important but hindered by time constraints and limited contact	Relies on self-report interview data. Very low interview response rate (33 responses to invitation sent to more than 5,000 staff) suggests findings may not reflect views across the Department. Few interview respondents had direct experience of the PLI.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
(1) Brownson RC Dodson EA Stamatakis KA Casey CM Elliott MB Luke DA Wintrode CG Kreuter MW USA *2011*	Exploratory study to identify the factors that influence the likelihood that state-level (US) policy makers find a policy brief understandable, credible and useful	Random allocation to one of four policy brief groups and self-completion of questionnaire	Three groups of policy makers (legislative staff, state legislators, executive administrators) from 6 US states randomised to one of four groups: data-focused brief with state-level data; data-focused brief with local-level data; story-focused brief with state-level data; story-focused brief with local-level data	Primary outcomes: whether the brief was understandable, credible, likely to be used, and likely to be shared	• All 3 policy groups found the briefs to be understandable and credible; mean ratings ranged from 4.3 to 4.5 (5-point scale) • Likelihood of using the brief differed by study condition for staffers and legislators. Staffers were most likely to use the story/state brief and least likely to use the data/state brief, while legislators were most likely to use the data/state brief and least likely to use the story/state brief	Low response rate (35%). Note that sample brief was about breast cancer screening.
(4) Bullock A Morris ZS Atwell C UK *2012*	Evaluation of the Service Delivery and Organisation (SDO) Fellowships, a collaborative research program that allows NHS managers to become directly involved in research for the equivalent of 12 months full time, typically spread over the life of the research project to which they are seconded	Semi-structured interviews	Fieldwork undertaken at 10 sites through semi-structured interviews conducted with all fellows, chief investigators and co-investigators (if appropriate)	• Contribution of management fellows to improving research quality and relevance • Development of capacity in accessing, appraising and using research evidence by the collaboration	• Fellows' contributions included: helping to recruit study sites and participants using their 'insider' status; using contextual understanding to improve the design of data collection tools and processes; contributing to data analysis and interpretation, including being a 'sounding board' and validating emerging findings; and improving the relevance of research through supporting and offering guidance on dissemination activities • Fellows' capacity development included new knowledge and skills about research methods acquired through formal courses and exposure to the research teams • Factors affecting the experience included: fellows' knowledge and experience of the NHS; fellows'	No independent assessment of impact on research quality and relevance. Relies on proxy, process-based indicators, self-report and triangulation of participant responses.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
					characteristics (e.g. seniority, type of role, support of line manager, personal traits); mutual respect and being valued; and timing and flexibility of the fellowships	
(2) Campbell DM Donald B Moore G Frew D Australia *2011*	Evaluation of processes and outcomes associated with Evidence Check, a program that assists policy makers to commission high-quality rapid reviews of research	Interviews with commissioners and reviewers, independent assessment of rapid reviews	8 policy makers who commissioned reviews during 2007-2008 and 11 researchers who were lead authors of reviews participated in structured interviews. 6 reviews commissioned in the same period were randomly selected and each sent to 2 independent examiners for assessment	• Satisfaction with the knowledge brokering (KB) process (policy makers) • Satisfaction with agreed review questions and parameters determined through the KB process (policy makers and researchers) • Relevance and policy impacts of the review product (policy makers) • Relevance and accuracy of reviews (independent examiners)	• KB process useful for helping to define research questions, especially refining broad policy issues into targeted questions • KB process useful for shaping project parameters (scope, budget, timeframe etc.) • Linkage function of KB valuable for policy clients with little academic contact • Research questions defined through KB acceptable to policy makers and researchers, although some researchers felt questions were broad • Reviews generally accurately reflected the state of the evidence • Reviews mostly perceived by policy makers as useful for decision making, with most impacts indirect (e.g. informing policy deliberations, identifying evidence gaps)	Small sample size. Relies on self-report data on perceptions of process and outcomes. Reported use of reviews in decision making not independently verified.
(10) Dilworth K Tao M Shapiro S Timmings C Canada	Study to determine the impact of being a Best Practice Spotlight Organisation (BPSO) candidate on the use of evidence, collaboration	Phase 1: Document analysis, participation data Phase 2:	Evaluation reports from each of 5 projects analysed to assess impact of guideline implementation on staff practice. Metrics on number and type of staff trained	• Use of evidence-informed practice • Inter-professional and inter-program collaboration • Sustained, system-wide	• High agreement among champions that evidence used to inform practice (85.5%), evidence-informed practice is part of the organisation's culture (80.0%), there were increased opportunities for professional growth	Retrospective design (no pre- and post- measures) and no control group.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
2013	and knowledge transfer opportunities for staff. BPSOs are organisations selected to implement best practice guidelines; this urban health unit focused on implementing and evaluating best practice strategies in 5 health promotion areas (e.g. prevention of childhood obesity).	Retrospective online survey Phase 3: Online focus group	collected. Retrospective online survey of 72 'champions' and online focus group involving 11 Steering Committee members	changes • Perceived impact on organisational reputation • Opportunities for staff growth, training, and development • Knowledge transfer opportunities and activities	and development (81.9%) • Themes that emerged from steering committee focus group included: design and delivery of programs increasingly becoming evidence based; organisational change and increased capacity (through new programs/ projects, policy, building a culture of evaluation, training); increased collaboration (internal and external); increased staff opportunities for professional growth; increased knowledge transfer; improved reputation; sustainability and innovation	
(6) Dwan KM McInnes P Mazumdar S Australia *2015*	Study to assess the efficacy of a strategy of facilitated engagement, Australian Primary Health Care Research Institute (APHCRI) Conversations, which provide a forum for knowledge producers to present their contextualised findings to potential knowledge users in the Australian Department of Health	Participant assessment of events	Participants in 23 seminars and 13 roundtables completed a one-page evaluation after the event. A total of 979 evaluations were analysed (52.5% response rate). Effectiveness, relevance and receptivity tested for internal consistency using Cronbach's alpha and exploratory factor analysis undertaken.	• Perceived effectiveness of event (broadening of knowledge, stimulating thinking) • Perceived relevance of event (applicability to work, potential to use in work) • Research receptivity (use of academic research in work in past 12 months, perceived use of research if research more easily available)	• Overwhelmingly participants indicated that meetings broadened their knowledge and stimulated their thinking • Over three quarters of participants had used research in the past 12 months and would use research more if it were easily available • Around three quarters indicated they may be able to use knowledge presented and content was directly applicable to their job • Content of roundtables more applicable to participants' work than seminars, and roundtable participants had higher research receptivity	Relatively low response rate (52.5%). Relies on self-report data with focus on perceptions.
(11) Hoeijmakers M Harting J Jansen M	Study to assess the progress of an Academic Collaborative Centre for	Mixed-methods approach guided by the	Regular individual debriefings with program leader; annual group interviews with PhD	• Outputs achieved in relation to program theory (e.g. studies	• ACC **activities** included: research (PhD studies by 'science practitioners' and researchers who also acted as	Study limited to first three year term of the ACC;

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
Netherlands *2013*	Public Health (ACC) in terms of knowledge transfer and exchange. ACCs are long-term partnerships between one or more regional public health services, municipal departments and university departments funded with grants from the Netherlands Organisation for Health Research and Development	ACC's program theory, conducted during last 3 years of first funding term (2007-2010)	students (n=7); group interviews with master class participants (n=28); individual interviews (n=15); focus groups; network analysis with managers (n=34) and operational staff (n=69); regular program reporting; case studies. Manual qualitative content analyses used for debriefing and interview data, and case study data analyses used NVivo.	conducted with policy/ practice involvement; structure for collaboration and exchange of knowledge; support and implementation capacity available) • Outcomes achieved in relation to program theory (e.g. collaboration on research and grants; research skills; new products and advice; publications and presentations)	'ambassadors' to facilitate exchange; short term studies conducted by masterclass students); organisational development (cross-organisational steering committee; public health department/academic thematic groups; policy/practice/ academic study groups to support PhD students) • **Outputs:** most 'science practitioners' made substantial progress with PhD studies but had difficulty with ambassadorial role. Most committees functioned well but thematic groups were less successful due to lack of support from public health department managers • **Outcomes:** collaborative structure of the ACC provided a platform for continuous dialogue and interaction. PhD students particularly important for cross-domain interaction. Collaboration within research projects did not evolve into permanent thematic collaboration. Number of collaborative projects and number of participants increased over time but structure and density of networks did not change. Policy actors remained less involved in the ACC than research and practice actors. New collaborative research proposals were written but non-researchers mostly consulted in preparatory stages and	as program is still developing, scope of results is restricted. Method of sampling and response rate not reported.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
					traditional research designs/timeframes used. Use of research limited to direct uptake by those working in close collaboration with PhD students.	
(14) Househ MS Kushniruk A Maclure M Carleton B Cloutier-Fisher D Canada *2011*	Description of the experiences of three groups working within the field of drug policy using conferencing technologies to support knowledge exchange activities. The three groups were: education task (produced research reviews); research task (evaluated physician education materials); decision making task (disseminated information on research trends)	Action case research field study	Phase 1: baseline interviews with education and research task groups and observational data on all three groups Phase 2: meeting transcripts Phase 3: post-study interviews with key stakeholders from each group	Impacts of conferencing technologies on knowledge exchange	- When using new technologies, groups adapt their structure of communication around technology features - Web-conferencing is an appropriate choice for knowledge exchange when there are limited budgets, large geographic dispersion, and a need for a high level of collaboration - When compared to web-conferencing, audio conferencing technology is a very simple and convenient technology to use for knowledge exchange - Web-conferencing forces group interaction "within text": web-conferencing will shift interactions away from interacting with each other to interacting via the text displayed on the whiteboard - When moving from a non-verbal rich medium, such as face-to-face, to a less rich non-verbal medium, such as web-conferencing, the facilitator needs to have strong facilitation skills to engage participants effectively. Otherwise, the knowledge exchange process may fail - Technology impacts information sharing: neither audio conferencing nor web-conferencing impacted the *type* of	Drug policy groups were not homogeneous (different numbers of participants, data types, etc.) which impeded comparisons. Applicability of findings to other policy contexts and other parts of the policy development process (i.e. beyond knowledge exchange) unclear.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
					evidence that was shared between group members but both impacted *how* the information was shared	
(47) Jansen MWJ Hoeijmakers M Netherlands *2013*	Evaluation of Masterclass on Scientific Research Training for Public Health Professionals. The masterclass consisted of 6 x 1 week courses delivered over 18 months and aimed to train public health professionals and policy makers to design and conduct scientific research based on a problem in practice or policy	Multiple method design involving quantitative and qualitative methods during- and post-masterclass	Participant data including level of interest, initiation, withdrawal and completion. Evaluation forms completed by participants for each of 42 lectures. Focus group interviews with participants at end of masterclass and 6 months after completion. Questionnaire completed by all 16 masterclass participants at end of final course week to assess personal learning objectives and career prospects.	• Perceptions of teaching activities • Participants' experience of attending training courses • Professional development and changes in the work environment • Participants' future expectations • Use of the scientific knowledge and skills acquired • Personal learning objectives • Career prospects	• Lectures were rated highly with respect to instructiveness (mean 7.9 of 10), clarity (7.6), relevance for public health (7.8), relevance for the participant (7.6), presentation (7.8), structure (7.8) and professionalism (8.5). 94% of participants reported having gained sufficient knowledge about research methodology • Focus groups participants regarded themselves as well equipped and confident to initiate and carry out scientific research in their own professional domain. The main facilitators of participation were time (permission to attend during working hours), motivation, and social support (by management, colleagues, and their private social environment) • Participants expected to disseminate and implement their research findings via presentations, reports, protocols and policy proposals. 75% of participants thought they would be able to translate problems into research questions and to develop a research proposal • At 6-month follow-up participants had presented findings at international (n=3) and national (n=5) conferences and	Small sample size. Participants may not be representative of broader group of public health professionals, with potential over-representation of early adopters.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
					were in the process of submitting journal articles (n=6)	
(8) Kothari A Sibbald SL Wathen CN Canada *2014*	Study to determine the extent to which the PreVAiL (Preventing Violence Across the Lifespan) Research Network built effective partnerships among network members, with a focus on the knowledge user partner perspective. PreVAiL is an international public health network with an interdisciplinary composition including researchers (including trainees) and policy/advocacy partners	Mixed methods study conducted two years after network became operational	Partnership Indicators Questionnaire (PIQ) completed by 36 PreVAiL members (n=26 researchers, n=9 partners, n=1 missing; 63% response rate). 19 semi-structured telephone interviews conducted (86% response rate).	• Quality of partnerships within PreVAiL network (levels of partner involvement, quality of communication, value of network) • Initial impacts of the partnerships on the application of knowledge to policy and practice (instrumental, conceptual)	• Events and activities perceived as beneficial with respect to networking, linkages and meeting international researchers. Face-to-face meetings particularly valued. Desire to be more involved with network activities such as collaborating on grants, research proposals and joint advocacy • Most partners tended to use the same researchers as contact people. Researchers felt that there was a common language, but partners variously agreed and disagreed • Majority of respondents agreed that being part of network was helpful. Partners valued the ability to work with committed researchers and networking led to collaborations in writing papers, working on grants and speaking at events. 75% of PIQ respondents felt their contributions were valued • Partners used the network as a source of synthesised information and valued the ability to call on network researchers for information. Some partners functioned as an 'information conduit' in their own organisation • Examples of instrumental use of research included actively sharing network research briefs and using a	Network still in its early stages when this study conducted so some questionnaire items perceived as not applicable. Relies on self-report data.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
					face-to-face meeting to shape the direction of an organisation • Most participants used knowledge more conceptually, such as to change or augment their own understanding of violence, resilience, data collection and analysis	
(5) Morris ZS Bullock A Atwell C UK *2013*	Evaluation of the Service Delivery and Organisation (SDO) Management Fellowship program, a collaborative research program that placed NHS managers with large SDO-funded research projects for a 12-month full time equivalent period spread over the duration of the research project	Case study approach with each case study centred on managers appointed as Fellows, chief investigators (CIs) and Fellows' line managers	Semi-structured face-to-face interviews with all 11 Fellows who had been appointed prior to the start of the evaluation, and with the 10 CIs and 3 co-applicants of the research projects in which the Fellows were involved. Telephone interviews with 12 work-based line managers and other colleagues	• Extent to which the program encouraged (a) linkage, (b) engagement, (c) exchange	• CIs and Fellows consistently reported that the program increased their links. Benefits for CIs included better access to groups in NHS Trusts and more targeted access to organisational networks. CIs viewed Fellows as a means of closing the gap between researchers and study participants (via improved site access and insights into the NHS) and between researchers and the audience for findings. Linkage benefits for Fellows included research access and exposure and emerging knowledge. Linkages with universities developed by Fellows had benefits to the employing organisations • Fellowships encouraged engagement between Fellows and research teams, and between workplaces and research teams with the Fellow as conduit. Evidence of engagement includes the provision by Fellows of insights from projects to workplace colleagues • Line managers anticipated some benefit from Fellows (e.g. hearing about research findings first), however Fellows	Focus on processes and use of self-report and triangulation of responses rather than a before and after analysis of impact. Limited time period not including dissemination of final project outputs.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
					were limited in how much project knowledge they could convey and could be protective of emergent findings • Lessons learned included: potential benefits of recruiting Fellows not already known to the research team in order to expand linkages, and of selecting a well-linked Fellow; formal structures for reporting back to the workplace; importance of ongoing support and interest from line manager; need for training to support knowledge exchange work within organisations	
(3) van der Heide I van der Noordt M Proper KI Schoemaker C Van den Berg M Hamberg-van Reenen HH Netherlands *2016*	Evaluation of barriers to and facilitators of the implementation of the Writing on Effectiveness (WE) tool in the Dutch National Institute for Public Health and the Environment (RIVM). WE is a web-based tool developed in collaboration with policy makers that aims to facilitate communication about the effectiveness of interventions to facilitate the use of evidence by policy makers and practitioners	Mixed-method approach	7 RIVM knowledge workers who had used the WE for a specific product (e.g. research report, scientific paper, web page) participated in semi-structured interviews (qualitative), and 24 knowledge workers completed a brief online questionnaire about barriers and facilitators (quantitative)	• Barriers and facilitators during implementation of WE	Findings reported under 4 themes: • **Intervention:** WE perceived as clear and accessible, but perhaps more relevant to academic versus policy-relevant products (qual). High level agreement that WE offered advantages compared to current approach (71%), was clear (88%) and not complicated to use (63%), but most felt its usability depended on type of product (79%) (quant) • **Individual:** Potential barriers included changing current work processes and the applicability of WE to some interventions (qual). High level agreement with potential for tool to lead to better product (67%) (quant) • **Social/interpersonal:** Support from management to use WE and its acceptance among colleagues was	Although RIVM is a research institute, its role in the dissemination of information has similarities with the role of some government health departments (e.g. products such as web-based messages, brochures, reports). 'Knowledge workers' are not defined.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
					perceived as important (qual), but not high level agreement with importance of management (50%) and colleague support (50%) to stimulate use (quant) • **Organisation:** Mixed perceptions of value of supervision in using WE (qual)	Small sample and low response rate to questionnaire (35%)
(9) Wathen CN Sibbald SL Jack SM MacMillan HL Canada *2011*	Evaluation of the impact of knowledge translation and exchange (KTE) processes undertaken during a series of studies on screening women for exposure to intimate partner violence. KTE activities included collaborative key message development, stakeholder workshops and exchange forums, online community of interest	Longitudinal cross-sectional design with concurrent mixed data collection methods	Phase 1: Observation of process of message development, workshop evaluation survey (n=75), 3 month follow-up survey (n=33), 6-month follow up in-depth interviews (n=20), website usage data Phase 2: Observation of process of message development, forum group discussions and evaluation survey (n=38), 6 month follow-up survey (n=21), 9-12 month follow-up interviews (n=12)	• Perceptions of utility of KTE strategies among recipients of research evidence • Factors influencing the uptake, sharing and use of new knowledge • How research findings are used	• Opportunities to meet face-to-face with researchers and other stakeholders highly valued. Providing feedback on key messages while study in progress a positive experience, and research team perceived as genuine and respectful regarding participants' suggestions. Wiki-based online community of interest was not used • 88% of workshop participants and 79% of forum participants shared research with colleagues after events. Few reported knowledge use 3-6 months post-event; instances of use mostly symbolic or conceptual (e.g. increased understanding of issues, reinforced current policies) rather than instrumental. Some participants did not use evidence when it contradicted their personal experiences • Modest overall perceived impact of KTE activities on participants' work (mean 2.65 on 5-point scale from no to high impact) • Difficulty in framing knowledge and communicating it to different	Relatively short follow-up intervals may be insufficient to allow for research 'use'.

(Ref) Author Country Year	Brief description	Design	Method	Outcome measures	Results	Comments
					stakeholder groups in one room acknowledged	
(48) Yost J Ciliska D Dobbins M Canada *2014*	Evaluation of the impact of an intensive educational workshop on evidence informed decision making (EIDM) knowledge, skills and behaviours	Explanatory mixed methods, longitudinal study	Self-completion (n=40) of: - Demographic form (baseline) - EIDM Skills Tool (baseline, post-test, 6-month follow up) - EBP Implementation Scale or EBP Implementation in Public Health Scale (baseline, 6-month follow up) - Continuing education preferences questionnaire (post-test) - Telephone interviews with 8 participants (6-month follow up)	• Impact on EIDM knowledge and skills • Impact on EIDM behaviours • Relationship between EIDM knowledge, skills and behaviours before and after workshop • Preferences for continuing education	• Significant increase in EIDM knowledge and skills from baseline to post-test and baseline to 6-months, but decrease from post-test to 6-months • Non-significant increase in EIDM behaviours from baseline to 6-months • Non-significant, weak positive correlation between EIDM knowledge and skills and EIDM behaviours at baseline and 6-months	Small convenience sample. No control group.

Appendix 4: Bibliography

Primary research studies (studies testing strategies, qualitative methods, descriptive case studies)

Note that this bibliography includes some papers that were available online within the search date range (October 2009 to July 2015) but published in print after July 2015.

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