

Developing a systems thinking guide for enhancing knowledge mobilisation in prevention research

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Key points

- Knowledge mobilisation strategies increase the impact of research
- Systems thinking can guide knowledge mobilisation and inform strategies by providing insights into the complexity of processes and contexts
- Previous literature at the intersection of systems thinking and knowledge mobilisation has been developed, using thematic analysis into a systems thinking guide for knowledge mobilisation
- Researchers are encouraged to consider the questions in the guide to reflect on the system in which they work to create effective knowledge mobilisation strategies

Abstract

Knowledge mobilisation aims to increase research impact in policy and practice. 'Mobilising' knowledge implies a social interaction and involves an iterative, collaborative process. We argue that this process is strengthened when underpinned by systems thinking. Previous research has integrated systems thinking with knowledge mobilisation. We built on this to develop an applied tool to support prevention researchers seeking to incorporate systems thinking into their knowledge mobilisation work. We refer to this tool as the 'systems thinking guide for knowledge mobilisation'. Our guide was developed through a stepwise process that included: 1) An inductive thematic synthesis of previous research in this area; 2) Reflexive deliberation to identify critical focus areas, drawing on the synthesis and the authors' experiences of applying systems approaches to knowledge mobilisation; 3) Development of a set of questions designed for end users to consider against the backdrop of their own research and contexts; 4) Trialling these questions through a series of workshops; and 5) Revision based on user feedback. The proposed systems thinking guide includes 13 questions and 18 subquestions to help researchers frame their knowledge mobilisation strategies using a systems perspective. Our next steps are applying this guide to other research projects and reviewing and reporting on its implementation and real-world use. In the meantime, we invite other research teams to test this tool and contribute constructive feedback on its usefulness and potential further development.

Background

Public health research provides much of the evidence base for public health policy planning and implementing interventions to improve population health and quality of life. Our understanding of how research knowledge is incorporated into public health policy and practice has been evolving over the decades and is subject to an ongoing debate.¹⁻⁵ Increasing attention is being given to the complexity of policy processes and contexts that influence research uptake. These include the influence of competing policy needs, stakeholder interests, political perspectives, interest groups, and shifts in the economic climate and political priorities.⁶ Researchers need to understand and consider these complex factors when developing strategies to best support the uptake of their research. One way of addressing and negotiating this complexity of factors is to consider the engagement with, and use of, research and evidence as a process of knowledge mobilisation.

Knowledge mobilisation aims to increase the overall impact of research by making research accessible, by creating social interactions through purposeful connections between researchers and end users, and facilitating deliberative dialogue that can increase mutual understanding and improve the relevance and applicability of research. This, in turn, maximises the impact of the research through an increased likelihood it will be used in public policy and professional practice. Knowledge mobilisation, by its nature, has a systems thinking orientation because of its focus on iterative, emergent and collaborative processes.^{1,7} This takes it beyond linear translation and dissemination approaches and two-way processes such as knowledge exchange.⁸ It is, perhaps, most similar to the concept of integrated knowledge translation.⁹ A systems thinking approach views the world as complex systems of dynamic, interdependent parts that are often linked by a common purpose.¹⁰ Systems thinking can be used to understand the complex multifactorial drivers that influence health and 'wicked' problems such as growing rates of chronic disease.¹¹ It can also guide strategies for mobilising research knowledge for policy and practice.¹⁰

Previously, Haynes et al.¹⁰ analysed the literature at the intersection of systems thinking and knowledge mobilisation, framed by a) applied knowledge mobilisation archetypes developed by Huw Davies et al.⁵, and b) levers for enacting change within a system.¹⁰ In this review Haynes et al. proposed a "range of considerations that may be useful when planning, developing and implementing knowledge mobilisation activities for complex problems" and generated more than 100 recommendations for undertaking knowledge mobilisation using a systems thinking approach. Our paper reports on a practical 'systems thinking guide for knowledge mobilisation' – a tool developed by distilling the work by Haynes et al. and piloted as part of the ongoing work of the Australian Prevention Partnership

Centre (Prevention Centre) (Box 1). This guide aims to inform and support prevention researchers seeking to incorporate systems thinking into their research planning and development to improve knowledge mobilisation and, thus, the impact of their research.

Box 1. The Australian Prevention Partnership Centre

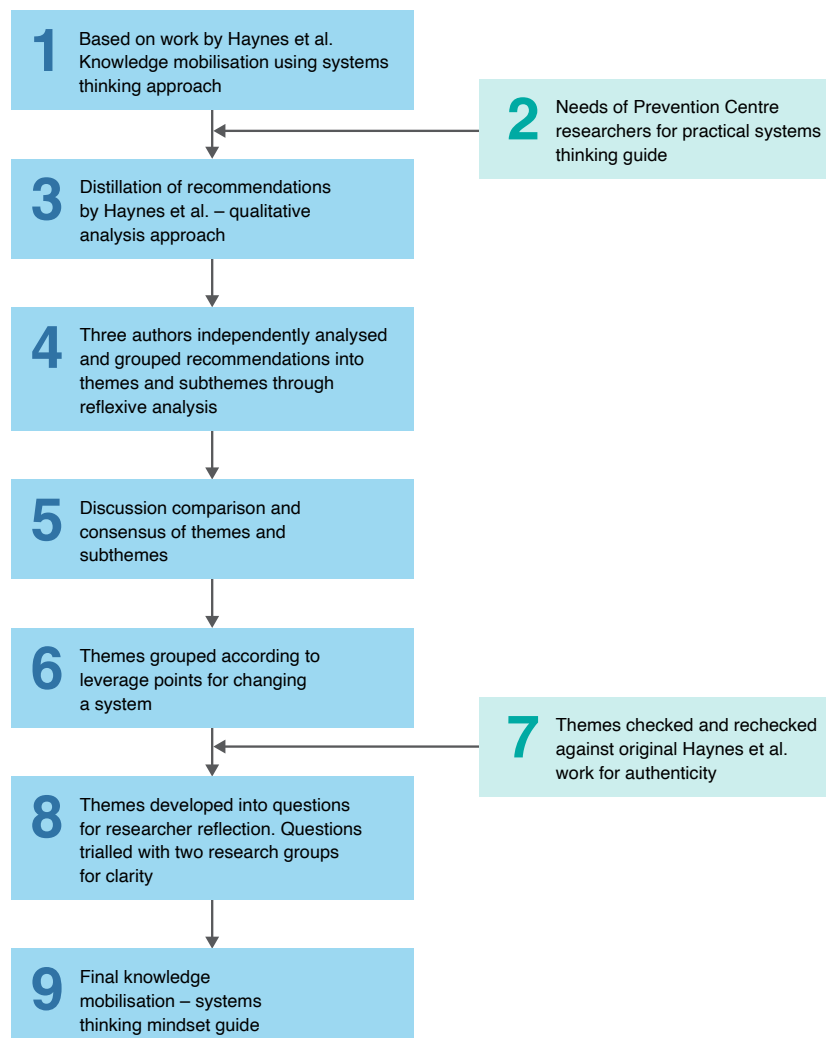
The Australian Prevention Partnership Centre was first funded in 2013 with the remit, among others, to take a systems thinking approach to the prevention of chronic disease. The Prevention Centre is currently cofunded (2018–2023) by the NHMRC, Australian Government Department of Health, NSW Health, ACT Health, Tasmanian Department of Health, Wellbeing SA, Cancer Council Australia and VicHealth. The Centre supports research projects in key areas of chronic disease prevention. It also builds quality and capacity in prevention research and seeks to expand the profile of prevention research locally and internationally. The Centre is also taking a systems thinking approach¹² to how knowledge moves through the prevention 'system' and how this might be continually improved.

Developing a systems thinking guide for knowledge mobilisation

We undertook a process of distilling the core elements of the table of recommendations by Haynes et al. for undertaking knowledge mobilisation using a systems approach (see Figure 1 for our methods). This was completed using a combination of thematic synthesis and expert deliberation at a workshop conducted with three authors of that paper (AH, MI and LR) and further analysis and iteration with the authorship team. AH contributed her skills and experience as a qualitative researcher and as the first author of the original paper that this guide synthesised. MI, an experienced mixed-methods researcher, conceptualised the project and arranged and facilitated the workshop and iterations. LR brought her 30 years of experience mobilising knowledge for public health policy and practice to the deliberation and synthesis process. MP and EH drew on their expertise in systems thinking and the policy environment to guide the iteration of the completed guide.

This work was informed by the Prevention Centre's need for a practical systems thinking guide that could be readily implemented in research teams' knowledge mobilisation practices. At the workshop, the three authors independently analysed the more than 100 recommendations to group them into major themes and subthemes. Using an iterative process of deliberation, each author's analysis was discussed

Figure 1. Flow chart of methods for qualitative distillation of recommendations by Haynes et al. for systems thinking for knowledge mobilisation of research



in relation to their own experiences with knowledge mobilisation and systems thinking¹³, and the themes and subthemes were compared and developed further until consensus was reached. This involved trade-offs – less critical or more peripheral recommendations were discarded in favour of core concepts that had the most resonance for the work of the Prevention Centre. The themes were then grouped according to their relationships to levers for changing a system and finally rechecked for authenticity and alignment with the original work of Haynes et al.¹⁰

Next, the themes were developed into a set of questions designed for the reader to reflect on their research and how they might think about mobilisation of the knowledge derived from their research. MI further refined these questions with expert advice given by the authorship team and trialled them as a pilot with two separate research teams. In these sessions, the research teams discussed the draft systems thinking guide and developed answers to the questions based on their experiences with their ongoing research projects. Their discussions and responses were analysed to determine

which questions needed to be further refined for clarity and ease of use.

The final systems thinking guide for knowledge mobilisation includes 13 questions and 18 subquestions. The 13 questions are divided into four categories with the levers for changing the system grouped into the following structure: 1) Goals, structure and rules, and feedback of the target system – including describing the system, mapping the system and the goals for changing the system; 2) Paradigms and core beliefs of the system – including understanding the system through reflection on system goals and core assumptions; 3) Relationships and power in the system – including determining key stakeholders and how to work with key stakeholders for improved outcomes; 4) Actors, elements, practices and resources of the system – including determining capacity, structures and resources that exist and need to be leveraged or need to be created. (Table 1).

Table 1. Systems thinking guide for knowledge mobilisation

Systems lever: Goals, structure and rules and feedback of the target system

1. What is the system(s) that we are working in and want to change?
 - a) What are the boundaries of the systems that we will tackle? Where will we stop and why?
2. Can a causal loop diagram, concept map or social network analysis of the system be created to enhance understanding of the system?
3. What are we ultimately trying to change in the system?
 - a) What is the overall goal of the change you want to make?
 - b) What are some of the objectives that will assist to achieve this goal? (These need to be flexible and be able to adapt in the process).
4. Are there factors within the systems (feedback loops) that are reinforcing the status quo? How can you break this? Can you create 'health promoting' feedback loops?
5. How could the system respond to the messages arising from our work? Can you envision any push back to the changes occurring? How might we mitigate this from the start?

Systems lever: Paradigms and core beliefs of the system

6. What are the underlying core beliefs or values, within the system(s) we are trying to change, do they need to be challenged?
 - a) Are there beliefs that are 'core', or are there any which may be more amenable to change?
 - b) Does any knowledge need to be produced or brokered to target these core beliefs?
7. Reflect on the team's core beliefs, assumptions, or values about the system(s) we are trying to change
 - a) Are there any blind spots as they relate to the system we are trying to change?
 - b) How will we implement ongoing learning and reflection on the core beliefs within the system and within the team?

Systems lever: Relationships and power in the system

8. Who are the key players, power brokers or influential actors that need to be engaged? Who should use the knowledge?
 - a) Who has the power to make key decisions? Who can influence them?
 - b) How can you increase the diversity of alliances, partnerships, or stakeholders?
 - i) To more deeply understand the value, core beliefs and assumptions underpinning the system.
 - ii) To increase the range of opportunities for the knowledge to move through in the system to effect, influence, or support change.
 - c) Can you 'blur' the boundaries between these groups, not just 'bridge the gap'? How can you bring these groups together?
 - d) Are there any power imbalances in your collaborations? How are you dealing with this?
9. Who will use this knowledge? How can we ensure our research is fit for purpose for your stakeholders/knowledge users?
 - a) What matters to the key players and stakeholders? How can we find out? Are there any policy or practice challenges?

Systems lever: Actors and elements of the system including practices and resources

10. What parts of the system do we need to influence to make changes?
11. What capacity already exists in the system to engage with and use our work? E.g., peak bodies, other researchers. How can this be harnessed or increased?
12. How will we engage with the key actors and elements in the system?
 - a) How many of our research process steps include meaningful involvement with our stakeholders? When will we involve them? What are they going to do as part of this project?
 - b) How can we maximise achievement of this? E.g., Steering committee, brokering, regular communication, engagement with stakeholder groups
13. What resources are within the system?
 - a) What resources are present, how could they be shifted to create change?
 - b) What additional resources are needed to create change?

Discussion and implications

Although designed to support researchers to apply the principles of systems thinking to improve their knowledge mobilisation practices and ultimately the impact of their work, this guide could also be used when intervening in a system, for example by policy practitioners. This tool is designed to explore and promote knowledge mobilisation through a targeted approach of understanding the system influences and working more deeply with stakeholders and decision makers, so it could also be valuable for developing research-practice partnerships.

Many researchers have noted the importance of using systems thinking approaches to address complexity and support evidence-informed policy and practice in public health and prevention.^{14,15} This guide is one example of a practical way of fostering this process for knowledge mobilisation. The guide is intended to be used iteratively, and users can focus on sections and questions best suited to their needs.

Users of the guide are encouraged to reflect on the questions in the guide against the backdrop of the system within which they work. The guide invites consideration of the intended role of their research or project within that

system. The goal is to develop a 'mindset' for taking a systems approach to knowledge mobilisation to inform current and future work to mobilise the knowledge emerging from their research effectively. This guide will provide a structure for the research or project planning process that analyses the system structure of the area of interest. The guide can be used to plan how best to make changes within the system to achieve the desired outcome, for example through effective stakeholder analysis and targeted networks within the system and ensuring capacity and resources are appropriate for the process.

Conclusion

Systems thinking can guide knowledge mobilisation by providing insights into the complexity of processes and contexts and inform strategies to address that complexity. The systems thinking guide for knowledge mobilisation is a practical tool to support this goal. We invite feedback from researchers and policy experts for further inclusions, adaptations or revisions to the guide.

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Peer review and provenance

Externally peer reviewed, not commissioned.

Competing interests

None declared.

Author contributions

MI conceived the project, designed the analysis, collected data, analysed, and wrote the paper. AH contributed data, contributed skills and analysis tools, performed analysis and edited the paper. MP contributed skills in analysis and iteration and edited the paper. EH contributed skills in analysis and iteration and edited the paper. LR provided oversight in conceiving the project and designing the analysis, collected and analysed data and edited the paper.

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