

# How far can systematic reviews inform policy development for “wicked” rural health service problems?

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## Abstract

Policy makers and researchers increasingly look to systematic reviews as a means of connecting research and evidence more effectively with policy. Based on Australian research into rural and remote primary health care services, we note some concerns regarding the suitability of systematic review methods when applied to such settings. It suggests that rural and other health services are highly complex and researching them is akin to dealing with “wicked” problems. It proposes that the notion of “wicked” problems may inform our understanding of the issues and our choice of appropriate methods to inform health service policy. Key issues including the complexity of health services, methodological limitations of traditional reviews, the nature of materials under review, and the importance of the service context are highlighted. These indicate the need for broader approaches to capturing relevant evidence. Sustained, collaborative synthesis in which complexity, ambiguity and context is acknowledged is proposed as a way of addressing the wicked nature of these issues.

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ACADEMIC RESEARCHERS and policy makers are under increasing pressure to strengthen the link between evidence and policy development through various means, most notably through improving knowledge transfer.<sup>1</sup> Knowledge transfer refers to the various activities contained in the process of generating knowledge based on user needs, disseminating it, building capacity for its uptake by decision makers, and, finally, tracking its application in specific contexts.<sup>2</sup> Ensuring uptake of research evidence into policy and practice is conditional on some matters outside of the control of the researcher — such as the right political conditions, the receptivity of decision makers, and organisational aspects that are

## What is known about the topic?

Systematic reviews are increasingly important as a source of evidence for public policy makers, but systematic reviews of rural and remote health issues are relatively scarce.

## What does this paper add?

Traditional systematic reviews may not be sufficient or the most appropriate means for knowledge generation in complex settings such as rural and remote health service delivery. Syntheses must be attuned to the context of the review, and relevant to the needs of policy makers.

## What are the implications for practitioners?

In this setting, systematic review methods are unlikely to generate a sufficient or adequate evidence base for policy formulation. Sustained research is required before elements of a solution can be identified, which can then inform policy.

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considered important in facilitating knowledge transfer and linkages with health policy organisations.<sup>3-4</sup> Some evidence uptake depends on the process and quality of translation that takes place between research and policy. Much also depends on the attributes of the knowledge generation process itself, and it is these latter aspects that form the focus of this article.

Researchers have relied on systematic reviews as a key element in the process of knowledge generation, since they are seen to contribute to rational decision making.<sup>5</sup> Systematic reviews have considerable capacity to contribute to public policymaking in that they limit the potential for bias and reduce the role that chance has in estimates of effectiveness by increasing the number of units of study.<sup>6</sup> Systematic reviews can provide a rich source of evidence that may form the basis for policy formulation, or at the very least assist policy makers in dealing with stakeholders who claim to have the best solution to a problem.

Indeed, because of the importance of systematic reviews in summarising advances in health care knowledge, their number is growing rapidly. By March 2008, the Cochrane Database of Systematic Reviews, a global enterprise to produce and disseminate systematic reviews of effectiveness, had published around 3500 systematic reviews, and other groups and individuals are likely to have produced three to five times that number in the past 20 years, dispersed throughout the medical literature.<sup>7</sup>

To support this growing industry, there exist numerous resources to guide researchers in the detail and process of undertaking systematic reviews,<sup>8-9</sup> together with a growing literature on search strategies, selection of studies for inclusion, and pitfalls of interpretation of reviews.<sup>10-12</sup> Encouragingly, recent work has also proposed guidelines for alternative methods in systematic reviews,<sup>13</sup> and strategies for systematic reviews in more complex settings.<sup>14</sup> Indeed, broader, multi-dimensional reviews are starting to emerge in the literature.<sup>15</sup> Clearly, the place of systematic reviews in dealing with more complex or multidimensional issues is an important and current issue, and there is a need for discussion on translating this kind of knowledge into the policy arena.

Based on our experience of conducting systematic reviews of rural and remote health service provision, this article considers key issues associated with the use of systematic review methods for synthesising evidence as the basis for rural health policy and planning. It outlines several key lessons that apply to the knowledge translation nexus between systematic reviews and policymaking, particularly in rural and remote health. We suggest that the task of generating knowledge for policy development in relation to how best to provide health services to rural and remote communities is complex. It proposes that an understanding of the nature of health services as “wicked” problems can meaningfully inform our understanding of policy issues in this area.

## Background

Internationally, governments currently face serious fiscal constraints in their quest to ensure equity of access to appropriate health services at a time when demands for health care are escalating due to the explosion of chronic diseases associated with population ageing.<sup>16-17</sup> A particular problem confronting geographically large countries such as Australia and Canada is how best to meet the health needs of residents of small rural and remote communities where services have diminished because the range and threshold requirements of existing models of health care cannot easily be met.

The absence of services in these regions, arguably, contributes to the poorer health status of rural and remote residents. The choice of how to provide accessible, sustainable health care in these situations is whether to deliver services to people or people to services. In assessing how best to deliver appropriate primary health care services to small rural and remote communities, Australian governments have funded numerous “innovative” pilots, trials and demonstration models, few of which have been comprehensively evaluated or sustained for any length of time.

This paper draws on the findings of the first Australian systematic synthesis of literature relating

to the provision of primary health care\* services in rural and remote communities. The research was based on recognition that the stringent application of a traditional systematic review methodology may be inappropriate for this context. It was agreed that a more multi-methods synthesis of existing literature conducted in a systematic and policy-focused way would be preferable, and would also be a first step towards providing a comprehensive evidence base on which appropriate and effective rural and remote health service delivery programs can be funded and sustained

In 2005, funded by the Australian Primary Health Care Research Institute, a multisite team of rural and remote health researchers undertook such a comprehensive systematic synthesis to identify evidence of apparently successful models of primary health care service delivery in small rural and remote health service communities, with a view to identifying evidence-based principles and guidelines that can inform development of Primary Health Care policy and implementation of sustainable programs in Australia. The Appendix summarises the key findings and policy implications from this review, further details of which are available in Wakeman et al<sup>18</sup> and Humphreys et al.<sup>19</sup>

The research of successful models of primary health care service delivery in small rural and remote health service communities also demonstrated that there are some important lessons associated with the application of systematic review and related techniques to this area. These include the need to recognise and integrate the complex reality of rural and remote health services, the importance of contextualising the findings from the review, balancing methodological purity with the need to maximise knowledge about the problem, problems with making informed judgements that guide the review, and the nature of the problem under scrutiny.

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\* Despite important differences, the terms primary care and primary health care are often used interchangeably. Primary care refers to first contact people have with the health system in their quest for diagnosis, treatment and follow-up for some health problem or access to routine check-ups. Primary health care more broadly encompasses determinants of health care in its focus on illness prevention and health promotion.

## Issues identified for synthesising evidence as the basis for rural health policy and planning

### *1. Rural health service problems are complex and have many of the hallmark characteristics of “wicked problems”*

Our scan of the rural health literature, and our collective experience in rural health indicated that the area is highly complex and multidimensional, and that traditional systematic review methods may have substantial limitations in this area. The complexity of issues, the closed nature of the information available, and the contextually linked nature of the information, in addition to the lack of relevance of conventional ways of understanding the issues are also reflective of what have become known, as wicked problems. Rittel and Webber<sup>20</sup> coined the term “wicked problems” to identify what they argued distinguished societal problems that formed the basis of governmental planning from those commonly dealt with by scientists. They argued that a number of characteristics made such planning problems inherently different. The distinguishing properties of wicked problems, together with how each characteristic is exemplified through aspects of health service planning for rural and remote communities are listed in Box 1. What becomes clear is that the evidence gained from any systematic review of health services can only ever partly contribute to the policy outcome. Due to the wicked characteristics of these problems, resolution will always rely on a number of additional factors, most notably a degree of elusive political judgement. Perhaps the critical issue is that if the emphasis is shifted from a formal systematic review, to a more collaborative synthesis, researchers will be able to contribute towards a shared understanding of the problem by various stakeholders, which in turn may lead to a shared commitment to possible responses.

### *2. Traditional systematic review methods are not well suited to the complex (and wicked) reality of rural and remote health policy and planning: Broader “synthesis” approaches may be preferable*

## I Characteristics of “wicked problems”<sup>20</sup>

### Distinguishing properties of wicked problems<sup>20</sup>

### Rural health service issues as wicked problems

The problem can't be defined until the solution has been found

*One cannot understand the problem without knowing about its context; one cannot meaningfully search for information without the orientation of a solution concept; one cannot first understand, then solve (p. 162)*

Rural health service problem definition is likely to reflect current status of knowledge and dominant way of thinking, and government priorities of the time  
*eg: Is poor rural health status a function of geographical access to health services or other broader social determinants?*

Wicked problems have no stopping rule

*This is the best I can do within the limitations of the projects (p. 162)*

Delimitation of the health service problem reflects the time and resources available  
*eg: The predominant focus on short-term process and impact studies is because rigorous health service outcome evaluations require longitudinal studies to assess impact on health status*

Solutions to wicked problems are not true-or-false

*... assessments of proposed solutions are ... “better or worse” or “satisfying” or “good enough” (p. 162)*

Judgements of possible responses to health service problems differ according to interest group values and ideological predilections  
*eg: Differences between perspectives of rural community groups, nurse and doctor organisations, health authorities, political parties*

There is no immediate nor ultimate test of a solution to a wicked problem

*Any solution will generate waves of consequences over an ... extended period of time (p. 163)*

How do we ever know the impact of health service reform?  
*eg: Closure of obstetric facilities based on safety and cost arguments may trigger rural community out-migration and deter new residents*

Every solution is a “one-shot” operation ... the consequences count significantly

*Every solution ... leaves traces that cannot be undone ... many people's lives will have been irreversibly influenced and large amounts of money will have been spent (p. 163)*

The impact of health services interventions affects people's life-paths  
*eg: Closure of local hospital and decline of procedural activity may deter medical workforce despite the existence of costly recruitment and retention incentives*

There are no criteria to show that all solutions have been identified and considered

*It is ... a matter of judgment which ... solutions should be pursued and implemented (p. 164)*

Decisions about funding arrangements for rural health services invariably do not consider all options  
*eg: Cashing-out of health care “entitlements” to rural communities as an option*

Every problem is essentially unique

*... there always might be an additional distinguishing property [so that] there are no classes of wicked problems in the sense that principles of solution can be developed to fit all members of a class (p. 164)*

Implementation of any health service program will require some degree of flexibility regardless of the merit of the overarching parameters  
*eg: Implementation of a multipurpose service program must still take account of local circumstances*

Every wicked problem can be considered a symptom of another problem

*The problem ... is a symptom of another “higher level” problem (p. 165)*

Problems of ensuring health service sustainability ultimately reflect the impacts of global economic restructuring and social change  
*eg: Changing social lifestyles of health workers who prefer not to live outside of cities*

The choice of explanation determines the nature of the problem's resolution

*There is no rule ... to determine the “correct” explanation (p. 166)*

Poor rural health status may be due less to service access than health literacy  
*eg: Visiting health workers may seem an economic way to improve access to health care, but the absence of a resident health worker may ultimately exacerbate service costs through the absence of health promotion and early interventions*

The planner has no right to be wrong

*Planners are liable for the consequences of the[ir] actions, the effect [of which] can matter a great deal (p. 167)*

Health service planning decisions matter!  
*eg: Lack of emergency, mental health and palliative care services can have irreversible effects on the lives of rural residents*

Our decision to adapt the systematic review methodology led to a number of insights into the process as a means of generating and translating research knowledge into the policy arena. It has been recognised that neither systematic reviews in general, nor the Cochrane Library specifically are a panacea for public policy makers,<sup>2</sup> and this was borne out in our study of sustainable primary health care models for small rural and remote communities. Despite the recognised attributes of systematic review methods (Box 2), there remain several unresolved issues which require important value judgements. Building on and extending recent recommendations,<sup>21</sup> in our study we relied on guidance from a policy reference group — a carefully selected authoritative panel of experts in rural and remote health issues and health policy, who were involved at a number of stages. Some of

the many decisions involved in undertaking the systematic review, where the policy reference group proved invaluable in making underpinning value judgements and carefully considering their policy consequences, are also highlighted in Box 2.

*3. Methodological purity, relied on in systematic reviews, does not necessarily address ambiguity: confidence of public policy makers may be more effectively achieved by means of a reference group*

Gruen et al<sup>5</sup> noted that “reviews of health services interventions differ in that, to be useful for policy-makers and managers, the goal of methodological rigour that characterises Cochrane reviews needs to go hand in hand with an understanding of the challenges inherent in health services research” (p. 5). Because of the need to strike the right balance between relevance and practicality (in

## 2 Key decisions associated with meeting requirements of a robust systematic review

Characteristic of systematic review methodology in providing “evidence”	Ability to fulfill these attributes based on first-hand experience of researching significant key rural and remote health service issues
Objective	Dependent on defining the nature of the problem specifically enough to yield unambiguous variables as objects of enquiry  Can be influenced by the sheer weight of publications on a topic rather than the importance of that topic
Comprehensive	Dependent on search terms and database (MeSH) indexing. Considerable “grey” literature that must be identified and sourced elsewhere  Many rural and remote health issues are intricately interrelated. The risk is that the research will become an overwhelming task if the problem can’t be broken down into sensible bite-sized chunks. At the same time, problem dissection may result in failing to recognise important interrelationships that are essential to developing effective policy responses and interventions
Valid	Dependent on the terminology employed in the source research — for example, workforce retention is often equated with workforce recruitment or turnover, when in fact they are different aspects of the broad workforce issue. However, exclusion of one risks missing out on some useful insights and evidence, while inclusion of both can generate an excessively large review  Dependent on any “quality” filter applied and the criteria used
Consistent	Need to minimise possible bias in data included and extracted. Importance of team training, protocols and blind reviewing to ensure selection consistency
Reproducible	Recognising the range of skills and expertise required, and the importance of balancing “objectivity” in decisions related to data extraction with “informed judgement” often associated with experienced researchers has major implications for reproducibility
Transparent	A detailed decision-making tree, together with its rationale, is mandatory given the number of occasions upon which informed judgements are required in executing data inclusion and extraction

terms of resources and timeframes) the initial scoping of the domain of the study is critical. The contribution of an expert policy reference group to guide the study questions and overall direction brings significant benefits in such agenda setting, albeit recognising that genuine and regular involvement of a reference group takes time and resources.

Similarly, the selection of the data (that is, the literature under review) should be carefully considered. Given its enormous diversity, the issue of literature “relevance” versus “quality” requires careful balancing. Much of the “grey” literature has not been through any review process, and consequently does not conform to the conventional protocols and quality criteria associated with the peer-review process. As a result, the development of instruments and criteria for selecting and integrating evidence from diverse sources is required, ideally with involvement of the reference panel.

*4. Rigid inclusion criteria may be too prescriptive since what is “known” is significantly more than what is “documented”. Definitional and descriptive uncertainty of this wicked problem may be better addressed by informed judgement in reviews of health services*

In the field of health services research, the emphasis of systematic reviews on peer-reviewed literature risks the exclusion or the under-reporting of certain types of research or evaluation studies that can be highly pertinent to the issue under review. Greenhalgh and Peacock<sup>22</sup> highlighted the danger of relying solely on protocol-driven search strategies in their review of service-level innovations in health care organisations. Our experience is that there exists a considerable amount of relevant material, albeit of variable quality, “out there”, but which is relatively inaccessible or has only restricted circulation. Many program evaluations that have been undertaken through government tender processes are not publicly available because of commercial-in-confidence clauses (sometimes applied because the evaluation results are not supportive of existing programs or initiatives). Arguably, this restricted grey literature, especially contracted program

evaluations, could be more instrumental in influencing policy than the more academic research most often published in black literature.

Moreover, because of the relative recency of rural and remote health as a recognised field of enquiry, research has lagged behind actual developments in the field. There exists considerable knowledge and experience held by key health service stakeholders associated with a number of undocumented primary care models which may be as useful, relevant and effective for policy formulation and implementation as that in the limited published literature available. Also, some published successful initiatives may develop over time into unpublished failures. Again in our experience, a reference panel integrally involved in the area under review can be an excellent resource in assisting to locate grey literature and provide up-to-date information.

Likewise, the acquisition and extraction of grey literature benefits immensely from having knowledgeable researchers in the field on the team, including input from an expert librarian. Such required expertise may not be available at one location. Working across sites raises issues of logistics and cost, as well as the need for protocols to ensure reviewer reliability.

*5. Rather than emphasising objectivity and detachment, the importance of context and interconnectedness should feature in the formulation of policies for rural and remote health services*

A major aspect of uptake of evidence in policy development and practice is contextualising the evidence within the environment in which it is to be used. An appreciation of the importance of context often leads investigators to answer that they do not know whether the same intervention will work in a different setting or whether a modified intervention will work in any setting.<sup>6</sup> Perhaps nowhere more than in the case of small rural and remote communities is there a greater need to ensure that results are relevant to the Australian context. Although our study focused on Australian research (partly because of time and resource constraints), there is always a balance between learning from overseas research and making the assumption that such findings readily

translate to the particular characteristics of the Australian context. Even within Australia, translation of successful primary health care models identified in this study to other communities (while still meeting the service requirements) may require some reconfiguration in order to meet the specific characteristics of a different rural or remote context.

## Conclusion

Our systematic reviews of primary health care services in rural and remote communities provided an excellent opportunity to consider the place of a systematic review methodology in providing an evidence base for rural and remote health policy makers.<sup>18,23</sup> As with many research methodologies, what is readily apparent is the need for both policy makers and researchers to be cognisant of its limitations and impact on research findings.

Undoubtedly, public policy decision making can be assisted through the ready availability of systematic reviews of evidence relating to the problem in question. What our study illustrates, however, is that in using this resource, public policy makers need to be aware of the constraints and context that delimit the systematic reviews. Likewise, researchers should note that including contextual factors will enhance the generalisability of systematic reviews and their usefulness to policy makers.<sup>5,24</sup> It is critical that the rationale underpinning the decisions is explicit, so that the validity and reliability of the evidence can be evaluated in its contribution to public policy decisions. As has been previously recognised,<sup>21</sup> there are clear benefits to be gained when policy makers are actively engaged in the systematic review process through dialogue with researchers and stakeholders. This will ensure a shared understanding of the problem and of the parameters of potential policy responses.

Reviewers also need to give consideration to the limitations of systematic review methods and how best to identify and include supplementary material in their quest to provide timely and relevant knowledge to policy makers. Information held in

the grey literature and the knowledge and experience of recognised experts in the field should not be ignored simply because it may not fulfil the peer review requirements of black literature. Engagement of policy makers in a reference group will assist to ensure both the relevance of the research questions as they evolve and the usefulness of the review findings. It may also be necessary to collect primary data in order to determine health science developments over time and to clarify what is documented vis-à-vis what is known. Traditional protocol-driven systematic reviews by themselves are unlikely to provide a sufficient gold standard, particularly in situations where the nature of the problem is complex and not always easily circumscribed. For that reason, recognition of the complex and multifaceted nature of wicked rural and remote health issues will lead to a realistic expectation of the resources and time required to approximate a meaningful response.

The methodological lessons noted above also reflect key strategies for responding to wicked problems. We suggest that, given the complexity and ambiguity of these issues, no one method is sufficient by itself, but multiple perspectives are required. Our reliance on a policy reference group permitted consultation with key stakeholders and ensured that the research was informed by broader understandings of the context and nature of the issues. In acknowledging the interconnectedness and change inherent in this wicked problem, we adopted an iterative methodology that emphasised relevance rather than methodological purity. Finally, we recognised that the seemingly intractable nature of this question requires sustained inquiry over a long period before elements of a solution can be identified, which can then inform policy. We suggest that such health services research will inform policy in a more comprehensive way than can be achieved by an over-reliance on systematic reviews.

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## Competing interests

The authors declare that they have no competing interests.

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## Appendix: Key findings and policy implications of the synthesis

- There is no “one size fits all” health service model for rural and remote communities — primary health care services relate closely to their geographical context.
- Several primary health care model types emerge — *discrete, integrated, comprehensive* and *visiting* services — which are amenable to generalisation and evaluation in other regions.
- Successful primary health care models address diseconomies of scale by aggregating a critical population mass, whether it is a discrete population in a country town or a dispersed population across a region.
- Successful implementation is linked to systematically addressing:
  - *environmental enablers* — namely appropriate policy; compatible Commonwealth/state relations, and community readiness; and
  - *essential service requirements* — namely: funding; workforce; governance, management, leadership; infrastructure; and linkages.
- Effective primary health care service planning for small rural and remote communities requires comprehensive, sustainable and systems-based solutions that address all components in an integrated way.
- Generalising these models through the local adaptation of the principles will improve access to primary health care services in rural and remote Australia and reduce the need to fund more “innovative pilots”.
- “Local solutions” need to fit within a wider conducive political environment in order to capitalise on new policy and program opportunities that facilitate local flexibility and change management necessary to meet local needs.

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