

Translating knowledge into practice and policy: the role of knowledge networks in primary health care

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Abstract

The translation of information into practice is a well-recognised challenge for the health sector. In the primary healthcare sector, the last decade has seen an explosion of information generated by health systems, universities and a range of other sources. Without a system for translating that knowledge into practice and sharing it in a comprehensible form, it will remain meaningless to most practitioners. We propose the establishment of Knowledge Networks as a promising method for supporting the rapid adoption and generation of health information within the primary health care sector to advance health care services. These networks will be particularly important to the implementation of the national reform agenda, responsive decision-making and the translation of new frameworks or competencies into practice. This paper describes how interdisciplinary Knowledge Networks could be established focusing on a number of priority health research areas. Local Knowledge Networks would be used as a platform to support a collaborative web of evidence designed to influence health policy and planning. Our experience with Knowledge Networks indicates that they must be comprised of health professionals from Divisions of General Practice, researchers, policy-makers, consumers, government and non-government sectors. This paper will describe these networks and show how they might support the translation of knowledge into practice, thus driving systematic and institutional change.

Keywords (MeSH):

Health Policy; Healthcare Reform; Primary Healthcare; Community Healthcare; Information Networks; Information Sharing; Healthcare Research.

Supplementary keyword:

Knowledge Networks

Introduction

Demand for primary healthcare services is expected to increase due to factors such as the rise in chronic and complex chronic disease, an ageing population with multiple comorbidities, workforce shortages, geographical dispersion, increasing health care costs, advances in technology and changes in inter-professional service delivery models of care (Humphreys & Wakerman 2008; National Health and Hospital Reform Commission 2009; Tran et al. 2008). It is now widely acknowledged in Australia 'that the health system is struggling to maintain and respond to the health and well-being of our communities' (Telfer 2004: 1; National Health and Hospital Reform Commission 2009). These challenges are coupled with uncertainty about how best to balance public and private

sectors in the provision and funding of health services (Armstrong et al. 2007; Muenchberger & Kendall in press). There is broad support for and recognition that we must invest in preventive healthcare and early intervention (Armstrong et al. 2007), creating healthy and sustainable communities (National Health and Hospital Reform Commission 2009; Dooris 2004; Swerissen & Taylor 2008) and addressing social inequality in health, especially for Indigenous Australians (National Health and Hospital Reform Commission 2009; National Preventative Health Task Force 2009).

Never before in the history of the health sector in Australia have we seen a similar level of impending change and structural reform. This level of change brings challenges, but also significant opportunities.

If successful, the proposed healthcare reform process in Australia will re-design our health system, placing primary healthcare in a more central role (National Health and Hospitals Reform Commission 2009). As a result, the primary healthcare sector must provide the growth and leadership required to support the vision (Jackson & Nicholson in press), particularly in recognition of the proposed new models of Primary Health Care Organisations (PHCO) that were recently announced by the Australian Government as the foundation pillars and mechanism to support the implementation of primary health care governance and leadership¹, working closely with Local Hospital Networks to make sure that our hospital system and GP-led and primary care system work together to provide an integrated, coordinated and seamless service to the Australian people.

International research has confirmed that countries with stronger primary healthcare systems, effective models for the management of chronic disease and capacity to address broad systematic determinants of disease, have better health outcomes and lower costs (Starfield & Shi 2007; Swerissen & Taylor 2008). However, we know from reform experiences in both Canada and the United Kingdom that strategies are needed to support the transformation and improvement of our primary healthcare system. In this regard, there is increasing momentum to utilise research and adopt evidence-informed decision-making (Segone 2008). However, issues associated with the time delay between knowledge creation and innovation and its uptake in practice remain problematic. Mere exposure to information and new models of practice is insufficient to bring about change. We have learnt from these international experiences that transformation of evidence is dependent on the presence of key agents of change, the accumulation of collective experiential knowledge of the evidence, the development of critical mass and the full engagement of the clinical and community sectors to drive local activity (Baum 2007; Dobbins et al. 2009).

To complicate this situation, Jacks and colleagues (2010) recently identified that different stakeholders have unique definitions of what constitutes evidence. In particular, Lomas and colleagues (2005) highlighted the difference between researchers and end-users where 'researchers tend to define evidence as knowledge systematically developed using the scientific process whereas individuals responsible for practice, managerial or policy decisions, more broadly define evidence to include scientific research

and locally relevant information' (Lomas et al. 2005 cited in Jacks et al. 2010: 652). Thus, collaborative and interactive mechanisms between researchers and practice/decision-makers are fundamental to the exchange of knowledge and its utilisation in practice. Having access to current knowledge and being able to review, consider and evaluate its implications for the policy and practice setting contribute to informed decisions. However, acquiring these skills is a multifaceted process, which requires an interactive, collaborative approach to effectively support and communicate information so it can be easily adopted into practice (Graham et al. 2006; Innvaer et al. 2002; Jacks et al. 2010). Strategies are required to incorporate more research evidence into the policy development process (Kalucy et al. 2009; Lomas et al. 2005).

If we are to achieve translation of multi-faceted knowledge into practice and policy effectively and in a timely way, a new way of organising and sharing evidence will be necessary. This approach must focus on engagement of practitioners in the generation of information and consensus about its meaning in practice. There is clearly a need to create an expanding learning community (Kalucy et al. 2009; Kilpatrick et al. 2003) that can develop, disseminate and deploy knowledge rapidly across artificial divides. Research and evidence must become more relevant and meaningful to practitioners, policy makers and consumers if it is to influence the future shape of health services in Australia. A consistent, integrated response is required, particularly during this tumultuous period of reform and rapid change within the health care sector. The need for a new approach is confirmed in the final report of the National Health and Hospitals Reform Commission *A Healthier Future for All Australians* (2009) and the *Report to support Australia's first National Primary Health Care Strategy* (Department of Health and Ageing (DoHA) 2009), which clearly states the need to build an evidence base and leadership capacity that will support healthy communities.

The reform recommendations of *A Healthier Future for All Australians* highlighted the importance of leadership and the formation of agencies that could act as platforms for creating healthy communities and integrating these elements of the health system. The establishment of regional primary healthcare organisations was one of the key recommendations from the reform commission in supporting and strengthening the primary care system. Similar recommendations were made recently by Kalucy and colleagues (2009), who highlighted the importance of partnerships and collaboration as critical elements in ensuring that

¹ <http://www.health.gov.au/internet/ministers/publishing.nsf/Content/mr-yr10-nr-nr064.htm?OpenDocument>

policy and practice agendas remain relevant and that networks are used to disseminate current knowledge.

The recent release by the Australian Government of the proposed *National Health and Hospitals Network for Australia's Future* (DoHA 2010a) sets out the framework and foundation for Australia's future health system. It provides a pathway to support improved public hospital and primary healthcare services with a focus on increased access to services and improved integration between acute, sub-acute and primary healthcare services. The release of the *National Health and Hospitals Network: Further Investments in Australia's Health* (DoHA 2010b), coupled with the recent historic reform agreements supported by the Council of Australian Governments (COAG) other than Western Australia, underpins these major reforms with an injection of funds into the Australian health system (COAG Communiqué 19 & 20 April 2010). While much of the focus and media attention has been directed at the implications for the hospital and acute sector, the role for primary healthcare organisations (PHCOs) as the key agent to support the integration, coordination and improve access to health services for Australian people in the future was recognised.

Although the full implications of the reform recommendations on primary healthcare have yet to be understood, strengthening and increasing support in primary health care is already well established as a strategy to improve efficiency, reduce hospitalisations and mortality, address issues of inequality and access, and improve health outcomes. Now, more than ever, there is a need to draw on our current knowledge in order to shape services in the future. No current platform exists in Australia to coordinate the level of interaction that would be required to draw on this knowledge and facilitate knowledge translation across the whole health sector. Knowledge Networks have the potential to provide such a platform as a cross-sectoral interface for knowledge translation.

Knowledge translation in healthcare

Knowledge translation and exchange (KTE) has been identified as being highly relevant to our healthcare sector (both government and non-government) as it can provide greater accountability and evidence-based practice in health planning, policy-making and service delivery (Tetroe et al. 2008). However, there is ample evidence to confirm that the passive dissemination of information is generally ineffective as a way of altering practice or policy. The translation of evidence into practice remains extremely challenging. Translational research has been described as a two-way interactive process – information and evidence must be translated

into practical solutions, but research activity must also reflect the real-world concerns of eventual end-users of research. To achieve this two-way model, the production of evidence and information must be based on good reciprocal relationships with practitioners and systems, and must fully engage end-users in the process (Anderson et al. 1999).

According to a recent randomised controlled trial of knowledge translation strategies conducted by Dobbins and colleagues (2009), success factors associated with the uptake of evidence into practice included: the capacity to interpret and apply research; the development of tailored key health messages based on local issues and information; the use of 'language' that is meaningful to the audience; the development of trust and positive relationships; promotion of organisational and cultural change and; the provision of political and infrastructure support. Active communication and consultation is also essential to maximise the flow of information as well as the transfer of knowledge. Indeed, most strategies for translation recommend the development of relationships between researchers and end-users and a focus on integrating evidence and information from multiple sectors (Kothari, Birch & Charles 2005; Lomas 2005; Tetroe et al. 2008).

Dobbins et al. (2009) identified four key messages for those involved in knowledge brokerage and the implementation of knowledge translation strategies. These messages included: a) engaging early with end-users, organisations and projects; b) developing networks as a mechanism to promote interaction and knowledge sharing; c) allowing time for knowledge brokerage activity and; d) placing the evidence within the context of the political/practice environment within and across organisations.

Knowledge Networks as a potential solution

Given the diversity of the primary health care setting including general practitioners, allied health professionals and community service providers, the development of Knowledge Networks could offer a participatory action approach for addressing current issues associated with unmet need. Internationally, it is recognised that Knowledge Networks generate collective knowledge in ways that build capacity to apply that information to a practical problem. They drive the development of a practice-relevant evidence base. According to the Canadian Health Service Research Foundation (2005), Knowledge Networks are formal networks that bring together experts from different fields around a common goal or issue. Membership is usually drawn from several disciplines and provides a social and technical structure that fosters collabora-

tion and knowledge exchange. The governance, whilst guided by members, requires structures and development in order to support growth and sustainability. The Knowledge Networks focus on common issues, build their collective knowledge, guide planning and practice innovations and develop solutions to their concerns (Scott & Hofmeyer 2007).

Knowledge Networks respond to local challenges through a united, clear and shared sense of purpose. They support inter- and trans-disciplinary learning, which will enable information to be translated into new and novel ways of managing health care. By incorporating all the recommended translation strategies into one intervention, Knowledge Networks can offer a potentially effective mechanism for disseminating information, increasing the chance of its translation into relevant practices and refining the information gathering process. Thus, it is not surprising that networks have been identified as an extremely influential method of achieving greater research impact in the future (Dobbins et al. 2009; Tetroe et al. 2008). Indeed, Knowledge Networks have been described as the 'missing link' in the search for evidence-based health care (van Weel & Rosser 2004).

The value of practice-based research networks has begun to emerge across Europe, the United Kingdom (UK), United States (USA), Canada and Australia (Graham et al. 2006; Jones 2006; McMillen et al. 2009; Tetroe et al. 2008; Zwar et al. 2006). The usefulness of these networks as a way of addressing problems of global concern was demonstrated by the World Health Organization (WHO) in their commissioned report on the Social Determinants of Health (WHO 2006). These WHO networks consisted of members from academia, policy, practice and advocacy throughout the world, drawing on expertise not only from the health sector, but also from disciplines such as social policy, urban development, political science, social epidemiology and gender studies (WHO 2006). Australia's Professor Fran Baum, who was the WHO Commissioner on the Social Determinants of Health strongly advocated for the ongoing engagement of Knowledge Networks to deliver important policy outcomes (Baum 2007). At a more local level, Knowledge Networks have been influential in facilitating knowledge capacity in primary health care (Kalucy et al. 2009).

To date, however, the process and mechanics of establishing and operating networks focused on the translation of knowledge into practice remains under-researched. Most knowledge about Knowledge Networks or learning communities has been based on writings of consultants rather than rigorous research. Little is known about how to implement complex primary health care initiatives, and how to maximise

their success, sustainability, acceptability and impact. There is also a need to examine the impact of a collaborative learning model on capacity within the primary health care sector.

In the UK, debate continues about the most appropriate conceptual framework for Knowledge Networks and their associated performance indicators. The complex nature of primary care research networks (PCRNs) (Griffiths et al. 2000) create a challenge for determining outcome and process measures by which performance can be judged (Carter, Shaw & Sibbald 2000; Tetroe et al. 2008). Fenton, Harvey and Sturt (2007) evaluated five PCRNs to capture the potential of the network to create ideas, knowledge and/or intellectual capital and found that networks must take into account the local primary health care research infrastructure and resources, the development over time and potential long-term viability accounting for inputs (e.g. structures, activities, management) and outputs (increased research activity, number of funded researchers, published work).

According to Fenton, Harvey and Sturt (2007), the effectiveness of Knowledge Networks will require two major inputs, namely 'knowledge (e.g. data, information, ideas/concepts, research and/or awareness) and relationships (e.g. collaborative research groups)' (Fenton, Harvey and Sturt 2007). Knowledge and relationships constitute the intellectual and social capital of network members. This capital then impacts on organisational productivity and creates an ongoing feedback loop that underpins the cycle of change (Nahapiet & Ghoshal 1998). Knowledge Networks aim to build capital by promoting a culture of innovation, supporting and fostering links between practitioners, and health system managers, policy makers and researchers.

Although networks come in varying forms, each with distinctive and important roles (Canadian Health Service Research Foundation 2005), there are some guidelines about what might be expected. Building on international evidence, Knowledge Networks should support a shared mandate for advancing primary health care reform in Australia (Baum 2007; Fenton, Harvey & Sturt 2007; Scott & Hofmeyer 2007; Tetroe et al. 2008). They will seek to develop responsive research and dissemination of health information that can build collective knowledge to advance primary health care reform into the future. By accumulating collective knowledge and critical mass, practical action and evidence-based applications become more likely (Baum 2007; Dobbins et al. 2009). Through supportive relationships, Knowledge Networks can support the

paradigm shifts that will be necessary to adopt new models of care (Starfield & Shi 2007).

According to Baum (2007), who has conducted research in University-Community partnerships, networks will only be successful if their purpose is clear, specific and realistic. As Baum noted, 'partnerships are built on overlapping interest that converge on the aim of improving community conditions' (Baum 2007: 235). Further, networks need to be sufficiently resourced to support the implementation of activity based on the knowledge they generate and translate. Substantial commitment is required to system change and network members must see themselves as the precipitators of this change. The network must provide an environment that promotes opportunities for discussion, mutual trust and effective engagement with information, resources and research activity (Kalucy et al. 2009; 2006; Tetroe et al. 2008).

Knowledge Networks in action

Healthcare systems across the world are increasingly seeking ways of improving service quality, efficiency and effectiveness and are relying on partnerships with researchers. However, knowledge translation is a complex and challenging process that necessitates the cultivation of relationships among stakeholders. In Australia, the demand for improved health service delivery is likely to continue (Productivity Commission 2005), ensuring ongoing emphasis on the incorporation of research evidence into practice. Interestingly, Fahey et al. (2003) noted that during the period of reform in the UK, when public health professionals merged from health authorities to primary care trusts, the most valued functions of these new public health networks included maximising scarce resources, identification of expertise, support for education, sharing information and knowledge management.

New ways of supporting and facilitating good research practices and improved primary health care outcomes are required to not only support practitioners who want to conduct research, but also to support entire primary health care organisations (PHCO), such as the Divisions of General Practice. These PHCOs need relevant research 'on-demand' information to inform planning and health outcomes. In Queensland, the establishment of the *Collaborative Research Hub* was a response to this need and has a key focus on increasing the relevance and use of health service research to inform primary health care decision-making by facilitating knowledge transfer and exchange. The *Collaborative Research Hub* provides an important nexus between the primary health care and research sectors, maintaining a focus on collaborative projects that engage relevant stakeholders in the

pursuit of solutions. The hub engages in knowledge transfer through 'linkage and exchange' (Lomas 2000) – the interaction, collaboration, and exchange of ideas.

In November 2007, General Practice Queensland and Griffith University formed a partnership to support the development of a research-practice health agenda. A Memorandum of Understanding (MoU) was signed, committing both organisations to the establishment of a *Collaborative Research Hub* focusing on the translation of evidence into practice. The MoU contained an operational model that also outlined the details of the appointment of the Joint Senior Research Fellow and explicated the 'rules' about how the partnership will operate. Following the signature of the MoU, a skill based *Collaborative Research Hub* Steering Committee was established. The Steering Committee is the overarching governing body within the model and supports the overall leadership, advocacy and implementation of the initiative. Included on the Steering Committee are representatives from Griffith University, General Practice Queensland, Queensland Divisions of General Practice (metropolitan, provincial, rural and remote), Queensland Health Policy Unit, Primary Health Care Research, Evaluation and Development (PHCRED) Strategy, University of Queensland and James Cook University. This collaboration aims to increase the dialogue between researchers, service providers, funding bodies and consumers at each of the critical stages of development in setting priorities, doing the research, sharing the findings and ensuring end-user application.

An initial operational plan (Research Management Plan) was developed to guide the framework for working jointly and to support the Steering Committee in decision-making processes. Key topic areas included governance and management structures, membership, the objectives and research priority areas, the consultation process and the proposed strategies to enable informed policy development and primary health care reform through innovation and engagement with key stakeholders. A series of literature reviews and scoping projects was initially completed under the auspice of the MoU between November 2007 and June 2008. A set of briefing papers was disseminated to stakeholders, evidenced based models of care were identified, relevant research papers and profiles of activity across Queensland were made available through the website, health forums and round table discussions. A series of workshops was held in 2009 to further scope research ideas and build on existing capacity to ensure the research was timely, relevant and met the demands of the primary health care environment.

These KTE activities have informed an ongoing research agenda. However, they have also led to the proposal of Knowledge Networks as a strategy to meet the challenges of the current reform agenda. The Knowledge Networks will be used as a platform to support research that focuses on the complex social determinants of health and the way in which primary health care can respond to this complexity. Knowledge Networks will be comprised of experts drawn from Divisions of General Practice, researchers in the field, policy makers and representatives from government and non-government agencies. The role of decision makers in this process is fundamental to supporting the translational research agenda. Active participation and engagement of health managers, early dissemination of key findings and discussion about the implication of these findings in practice are key elements of the Knowledge Networks and are critical to supporting the adoption of evidence in practice.

The proposed Knowledge Networks will focus on four identified research priorities, which have been informed by a combination of sources. These priority areas include 1) health promotion and preventive medicine; 2) capable consumers 3) coordinated systems of care and; 4) workforce development. In each priority area, the proposed Knowledge Networks would support an outcome-driven approach to building participation and capacity in the application of existing and new knowledge to inform the practice community and decision-makers. When fully established, the Queensland network of Knowledge Networks will provide a systematic approach to KTE across a range of identified areas of critical need. As a whole, the network will contribute to a reflective and collaborative approach to reform in primary health care, providing a platform for discussion and supporting the process of translation. They will bring together diverse databases, collective knowledge and inter-disciplinary skills to inform policy development. It is anticipated that they will assist in the dissolution of sectoral boundaries that contribute to translation failure. It is intended that the Knowledge Networks would encompass both public and private representation and would require a mixed resource allocation model engaging all stakeholders, but with predominant government investment for establishment and maintenance.

The functions of the Knowledge Networks have been based on the conceptual framework developed by Graham et al. (2006), which is based on the common elements identified in over 60 theories (Graham et al. 2005). This Knowledge-Translation-Action (KTA) cycle takes a planned approach and is represented by the following phases (Graham et al. 2006: 20):

- collaboratively identify a problem that needs addressing
- identify, review, and select the knowledge or research that is relevant to the problem (e.g., practice guidelines, research findings, other knowledge databases or repositories)
- adapt the identified knowledge or research to the local context if necessary
- assess barriers to using the knowledge in practice
- select, tailor, and implement interventions to promote the use of knowledge (i.e., implement the change)
- monitor knowledge use
- evaluate the outcomes of using the knowledge
- sustain ongoing knowledge use.

The Knowledge Networks will focus on knowledge translation activities, pool expertise and resources, share best practice models, develop dissemination strategies and provide knowledge management practices through efficient health information practices. The Knowledge Networks will have relevance at both ends of the Knowledge Network transfer cycle from the generation of knowledge by researchers, to the use of the new knowledge by health system managers, to the successful application of knowledge in practice. Ensuring the loop from the generation of knowledge to its successful use in practice is the key goal for health reform and health outcomes for individuals (Graham et al. 2006). Thus, Knowledge Networks must ensure a focus on evidence, cost-effectiveness and accountability.

The Knowledge Networks proposed in Queensland will contribute to the development of the evidence-base and new knowledge that reflects the complexity of contemporary primary health care. This systematic approach to the development of networked practice-based collectives focused on a specific area of need, will also contribute to a reflective approach to reform in primary health care. It will assist the dissolution of sectoral boundaries that contribute to translation failure. Further, the Knowledge Networks will contribute to the development of knowledge about how to describe and measure complex community processes and systems of change. They will represent a partnership approach between key stakeholder agencies, researchers and the community with a view to improving health capacity for Queensland including health managers and policy makers who support translational research through the adoption of evidence informed approaches.

Knowledge Networks could become an important tool for policy-makers and health information managers in future. However, it is also likely that the success of these networks will rely heavily on

input from Health Information Managers and health informatics. For instance, both technical and human input will be critical to the generation and compilation of information to underpin Knowledge Networks, facilitating access to information and transforming the knowledge into meaningful conclusions to inform discussions. Clearly, as Knowledge Networks grow, they will become more sophisticated in their demands for knowledge, potentially providing critique and suggestions for improvement to Health Information Managers. Indeed, our preliminary work in this area has shown that the operation of Knowledge Networks is heavily influenced by the available information, infrastructure and its interpretability (Kendall et al. 2009). Consequently, we have proposed that Knowledge Networks will require access to health information technology and the services of a Health Information Manager. Not only will the addition of Health Information Management improve access to data, but it will also facilitate the dissemination of new knowledge generated by the Knowledge Networks into other areas of the health system, creating the potential for economies of scale.

Conclusion

There is an overriding concern that professional learning and knowledge generated through research is mismatched with the conditions of practice (Cross 1998; Graham et al. 2006; 2005). There is also a concern that evidence from practice rarely informs research, increasing its irrelevance (McDonald & Viehbeck 2007). Workable solutions cannot be developed from the knowledge base in the absence of those who will apply the knowledge. Thus, to promote a movement towards reform in primary health care, it is necessary to focus on the 'whole system' and to do so in collaboration with those who govern practice.

In this paper, we have explored a potential solution to this dilemma. We have argued that Knowledge Networks, comprised of practitioners, health service decision makers, researchers, policy makers and consumers, have the capacity to provide 'grass roots' approaches to the translation of evidence into practice and could serve as instruments for building a useful evidence base at the point of primary care service delivery (Jones 2006: 1045). Information technology provides a means whereby knowledge can be stored and shared by multiple users in different locations. By effectively sharing information across sectors, Knowledge Networks can support the 'top-down' reform agenda, but by increasing the voice of those at the forefront of research and practice. Specifically, they can facilitate the development of localised and meaningful action plans for applying evidence to

practice (Smith-Merry, Gillespie & Leeder 2007). By encouraging network members to engage with information in a meaningful way, the networks can ensure commitment to the solutions that are generated. Health Information Managers with their expertise in organising, classifying and abstracting clinical information from databases and their in-depth understanding of information flows across various health sectors will play an integral role in the design, implementation and use of Knowledge Networks. However, the effective operationalisation of Knowledge Networks will depend heavily on researchers and 'end users' adopting new practices and on the successful engagement of Health Information Managers and health information technology.

References

- Anderson, M., Cosby, J., Swan, B., Moore, H. and Broekhoven, M. (1999). The use of research in local health service agencies. *Social Science and Medicine* 49(8): 1007-1019.
- Armstrong, B.K., Gillespie, J.A., Leeder, S.R., Rubin, G.L. and Russell, L.M. (2007). Challenges in health and health care for Australia. *Medical Journal of Australia* 187(9): 485-9.
- Baum, F. (2007). Cracking the nut of health equity: top down and bottom up pressure for action on the social determinants of health. *Promotion and Education* 14(2): 90-132.
- Canadian Health Services Research Foundation (2005). *Knowledge exchange at work*. Available at: http://www.chsrf.ca/knowledge_transfer/pdf/network_notes_1_e.pdf (accessed 21 April 2010).
- Carter, Y.H., Shaw, S. and Sibbald, B. (2000). Primary Care Research Networks: an evolving modeling meriting national evaluation. *British Journal of General Practice* 50: 651-2.
- Council of Australian Governments COAG Communiqué (April 19 & 20 2010). Council of Australian Governments Meeting April 19 and 20 Communiqué. Available at: http://www.coag.gov.au/coag_meeting_outcomes/2010-04-19/docs/Communique_20_April_2010.pdf (accessed 22 April 2010).
- Cross, K. (1998). Why learning communities? Why now? *About Campus* 3(3): 4-11.
- Department of Health and Ageing (2009). Primary Health Care Reform in Australia: Report to Support Australia's First National Primary Health Care Strategy. Australian Government. Available at: <http://www.yourhealth.gov.au/internet/yourhealth/publishing.nsf/Content/nphc-draftreportsupp-toc> (accessed 22 April 2010).
- Department of Health and Ageing (2010a). *National Health and Hospitals Network for Australia's future* (2010). Australian Government. Available at: <http://www.yourhealth.gov.au/internet/yourhealth/publishing.nsf/content/home> (accessed 20 March 2010).
- Department of Health and Ageing (2010b). *A National Health and Hospitals Network: further investments in Australia's health* (2010). Australian Government. Available at: [http://www.health.gov.au/internet/main/publishing.nsf/Content/B5E2F0FD961B3F65CA257703001981AE/\\$File/NHHN%20Report%20two.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/B5E2F0FD961B3F65CA257703001981AE/$File/NHHN%20Report%20two.pdf) (accessed 22 April 2010).

- Dobbins, M., Robeson, P., Ciliska, D., Hanna, S., Cameron, R., O'Mara, L., DeCorby, K. and Mercer, S. (2009). A description of a knowledge broker role implemented as part of a randomised controlled trial evaluating three knowledge translation strategies. *Implementation Science* 4(23) doi: 10.1186/1748-5908-4-23.
- Dooris, M. (2004). Joining up settings for health. *Critical Public Health*. 14(1): 49-61.
- Fahey, D.K, Carson, E.R., Cramp, D.G. and Muir Gray, J.A. (2003). User requirements and understanding of public health networks in England. *Journal of Epidemiology and Community Health* 57: 938-944.
- Fenton, E., Harvey, J. and Sturt, J. (2007). Evaluating primary care research networks. *Health Services Management Research* 20: 162-173.
- Graham, I.D., Logan, J., Harrison, M.B., Straus, S.E., Tetroe, J., Caswell, W. and Robinson, N. (2006). Lost in knowledge translation: time for a map. *The Journal of Continuing Education in the Health Professions* 26: 13-24. DOI: 10.1002/chp.
- Graham, I.D., Harrison, M.B., Logan, J., and the KT Theories Research Group (2005). *A review of planned change (knowledge translation) models, frameworks and theories*. Presented at the JBI International Convention, Adelaide, Australia, Nov 28-30.
- Griffiths, F., Wild, A., Harvey, J. and Fenton, E. (2000). The productivity of primary care research networks. *British Journal of General Practice* 50: 913-15.
- Humphreys, J. and Wakeman, J. (2008). *Primary health care in rural and remote Australia: achieving equity of access and outcomes through national reform. A discussion paper*. Available at: <http://www.health.gov.au/internet/nhhrc/publishing.nsf/Content/discussion-papers> (accessed 22 April 2010).
- Innvaer, S., Vist, G., Trommald, M. and Oxman, A. (2002). Health policy-makers perceptions of their use of evidence: a systematic review. *Journal of Health Services Research and Policy*. 7: 239-244.
- Jacks, S., Brooks, S., Furgal, C. and Dobbins, M. (2010). Knowledge transfer and exchange processes for environmental health issues in Canadian Aboriginal communities. *International Journal of Environmental Research & Public Health* 7: 651-674; doi:10.3390/ijerph7020651.
- Jackson, C. and Nicholson, C. (In Press). Making integrated health care delivery happen – a framework for success. *Asia Pacific Journal of Health Service Management* 3(2).
- Jones, C. (2006). Laboratories of primary care. *Practice-based research networks in Canada* 52: 1045-1046.
- Kalucy, E.C., Jackson Bowers, E., McIntyre, E., Hordacre, A.L. and Reed, R. (2009). *Exploring the impact of primary care research. Final report stage 2 Primary Health Care Research Impact project*. Project Report, February. Available at: http://www.phcris.org.au/phplib/filedownload.php?file=/elib/lib/downloaded_files/publications/pdfs/phcris_pub_8108.pdf (accessed 22 April 2010).
- Kalucy, E.C., Pearce, C.M., Beacham, B., Lowcay, B. and Yates, R.E. (2006). What supports effective research links between Divisions of General Practice and universities? *Medical Journal of Australia* 185(2): 114-116.
- Kendall, E., Ehrlich, C., Young, M., Muenchberger, H., Wilkie, K. and Rushton, C. (2009). Health partnerships: perspectives of medical practitioners in general practice, health systems and hospital settings. *Australian Journal of Primary Health* 15(4): 319-325.
- Kilpatrick, S., Barrett, M. and Jones, T. (2003). *Defining Learning Communities*. Available at: www.crlra.utas.edu.au/files/discussion/2003/D1-2003.pdf (accessed 21 April 2010).
- Kothari, A., Birch, S. and Charles, C. (2005). Interaction and research utilisation in health policies and programs: does it work? *Health Policy* 71: 125.
- Lomas, J. (2005). Using research to inform healthcare managers' and policy makers' questions: from summative interpretive synthesis. *Healthcare Policy* 1: 55-71.
- Lomas, J., Culver, T., McCutcheon, C., McAuley, L. and Law, S. (2005). *Conceptualizing and combining evidence for health system guidance*. Ottawa, Canadian Health Services Research Foundation,
- McDonald, P and Viehbeck, S. (2007). Evidence-based practice. *Health Promotions Practice* 8(2): 140-144.
- McMillen, J.C., Lenze, S.L., Hawley, K.M. and Osborne, V.A. (2009). Revisiting practice-based research networks as a platform for mental health services research. *Springer Science*: doi: 10.1007/s10488-009-0222-2.
- Muenchberger, H. and Kendall, E. (In Press). Predictors of preventable hospitalisation in chronic disease: priorities for change. *Journal of Public Health Policy* (Accepted).
- Nahapiet, J. and Ghoshal, S. (1998). Social capital, intellectual capital and the organisational advantage. *Academy of Management Review* 23: 242-66.
- National Health and Hospitals Reform Commission (2009). *Interim Report. A healthier future for all Australians*. Canberra, Australian Government. Available at: <http://www.yourhealth.gov.au/internet/yourhealth/publishing.nsf/Content/nhhrc-report-toc> (accessed 22 April 2010).
- National Preventative Health Taskforce (2009). *Australia: the healthiest country by 2020*. Canberra, Commonwealth of Australia. Available at: <http://www.yourhealth.gov.au/internet/yourhealth/publishing.nsf/Content/NPHS> (accessed 22 April 2010).
- Productivity Commission (2005). *Economic implications of an ageing Australia*. Productivity Commission Staff Working Paper. Available at: <http://ssrn.com/abstract=738063> (accessed Feb 2010).
- Scott, C. and Hofmeyer, A. (2007). Networks and social capital: a relational approach to primary healthcare reform. *Health Research Policy and Systems* 5(9) doi:10.1186/1478-4505-5-9.
- Segone, M. (2008). Evidence-based policy making and the role of monitoring and evaluation within the new aid environment. In: *Bridging the gap: the role of monitoring and evaluation in evidence-based policy*. Segone, M. (Ed.). Geneva, UNICEF Evaluation Working Papers 12:16-45.
- Smith-Merry, J., Gillespie, J. and Leeder, S.R. (2007). A pathway to stronger research culture in health policy. *Australian and New Zealand Health Policy* 4: 19 doi:10.1186/1743-8462-4-19.
- Starfield, B. and Shi, L. (2007). Commentary: primary care and health outcomes: a health services research challenge. *Health Research and Education Trust* 42 (6 part 1): 2252-2256.
- Swerissen, H. and Taylor, M. (2008). *System reform and development for chronic disease management*. Australian Institute for Primary Care on behalf of the Funding and Resourcing Branch of the Policy, Planning and Resourcing Division of Queensland Health. Available at: [http://www.health.gov.au/internet/nhhrc/publishing.nsf/Content/038-aiplatrobe/\\$FILE/038%20Australian%20Institute%20for%20Primary%20Care,%20La%20Trobe%20University%20Attachment%20B.pdf](http://www.health.gov.au/internet/nhhrc/publishing.nsf/Content/038-aiplatrobe/$FILE/038%20Australian%20Institute%20for%20Primary%20Care,%20La%20Trobe%20University%20Attachment%20B.pdf) (accessed 21 Feb 2010).
- Telfer, J. (2004). Workplace planning – thinking outside the square for a flexible allied health workforce. In: *Walking together - side by side. Proceedings of The National SARRAH Conference 26-28 August 2004, Services for Australian Rural and Remote Allied Health, Alice Springs, NT*.

- Tetroe, J.M., Graham, I.D., Foy, R., Robinson, N., Eccles, M.P., Wensing, M., Durieux, P., Legare, F., Nelson, C.P., Adily, A., Ward, J.E., Porter, C., Shea, B. and Grimshaw, J.M. (2008). Health research funding agencies' support and promotion of knowledge translation: an international study. *Milbank Quarterly* 86(1): 125-155.
- Tran, D., McGillis Hall, L., Davis, A, Landy, M., Burnett, D., Berg, K. and Jaglal, S. (2008). Identification of recruitment and retention strategies for rehabilitation professionals in Ontario, Canada: results from expert panels, *BMC Health Research* 8: 249 doi:10.1186/1472-6963-8-249.
- van Weel, C. and Rosser, W.W. (2004). Improving health care globally: a critical review of the necessity of family medicine research and recommendations to build research capacity. *Annals of Family Medicine*: 2 Supp 2: S5-S16.
- World Health Organization (2006). *The social determinants of health*. World Health Organization. Available at: http://www.who.int/social_determinants/en/ (accessed 16 Nov 2009).
- Zwar, N.A., Weller, D.P., McCloughan, L. and Traynor, V.J. (2006). Supporting research in primary care: are practice-based research networks the missing link? *Medical Journal of Australia*. 185: 110-113.

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