

Models of care for musculoskeletal health in Australia: now more than ever to drive evidence into health policy and practice

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Abstract. Musculoskeletal health conditions such as arthritis, osteoporosis and pain syndromes impart a profound socioeconomic burden worldwide, particularly in developed nations such as Australia. Despite the identified burden, substantial evidence-practice and care disparity gaps remain in service delivery and access that limit the potential for improved consumer outcomes and system efficiencies. Addressing these gaps requires a whole-of-sector response, supported by evidence-informed health policy. Models of care (MoCs) serve as a policy vehicle to embed evidence into health policy and guide practice through changes in service delivery systems and clinician behaviour. In Australia, MoCs for musculoskeletal health have been developed by networks of multidisciplinary stakeholders and are incrementally being implemented across health services, facilitated by dedicated policy units and clinical champions. A web of evidence is now emerging to support this approach to driving evidence into health policy and practice. Understanding the vernacular of MoCs and the development and implementation of MoCs is important to embracing this approach to health policy.

What is known about the topic? The impact of musculoskeletal health conditions is profound. As the awareness around the magnitude of the impact of these conditions increases, the importance of system-wide policy responses and platforms for health service improvements is now recognised. The term ‘models of care’ is not new. It has been used for many years, mainly at the hospital level, for planning and delivering clinical services. However, over the past 8 years an alternative approach using health networks has been adopted for the development and implementation of models of care to achieve broad engagement and a wider and more sustainable scope for implementation.

What does this paper add? Here, we provide a rationale for the development of models of care for musculoskeletal health and draw on experience in their development and implementation using a health network model, referring to an emerging web of evidence to support this approach. We describe what models of care are, how they are developed and question whether they make a difference and what the future may hold.

What are the implications for practitioners? All indications suggest that models of care are here to stay. Therefore, this paper provides practitioners with a contemporary overview of models of care in Australia, their relevance to musculoskeletal healthcare, particularly related to closing evidence-practice gaps, and opportunities for sector engagement.

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Introduction

Historically, the health and socioeconomic consequences of chronic musculoskeletal conditions such as arthritis, osteoporosis and pain syndromes have been considered to impart a less substantial community and personal burden than those chronic health conditions more closely associated with mortality, such as cancer and cardiovascular disease. However, a web of evidence now consistently and irrefutably identifies musculoskeletal health conditions and pain of musculoskeletal origin as imparting profound morbidity and socioeconomic burden.^{1–6} This burden is particularly pronounced in developed nations as evidenced by the 2010 Global Burden of Disease study.^{3,6} In Australia, the burden of disease attributed to musculoskeletal conditions now exceeds that of all other chronic health conditions in terms of years lived with disability (a morbidity-only index), and is second only to cancer when considering disability-adjusted life years (a composite index of morbidity and mortality). The prevalence in cases of chronic musculoskeletal conditions is conservatively projected to soar by 43% over the next two decades in Australia,² driven most sharply by cases of osteoarthritis. Fundamental systemic and sector-wide changes in the way health services are delivered and funded, the manner in which health professionals are trained and provide care, and participation by consumers in co-management of their conditions are critical to ensure Australians continue to benefit from accessible and high-quality musculoskeletal healthcare. This imperative is similarly acknowledged in other developed nations. For example, in the United States priorities to reduce the burden of musculoskeletal disorders by 2020 have been developed⁵ with particular emphasis on osteoarthritis.⁷ In Australia, evidence-informed models of care (MoCs) are an important facilitator to these change processes.^{8,9}

Models of care: what are they?

'Models of care' is a term that has been used for some time among clinicians and service providers, most commonly used to describe hospital-based modes of clinical service delivery.⁹ Further, MoCs have been used to describe clinical service delivery initiatives to consumers with musculoskeletal health conditions for some time. However, the development of MoCs for musculoskeletal health using a health network approach⁸ is a more recent method used in Australia to develop state-wide policy or platforms for state-wide service and health improvement. In this context, MoCs for musculoskeletal health now largely supersede earlier terms like 'Service Improvement Frameworks, National Action Plans, and Clinical Frameworks and Pathways'. Although the underlying conceptual and theoretical perspectives do not differ greatly between MoCs and these terms, MoCs have a greater emphasis on operational attributes. That is, describing not only what the care should be but also how to implement it. Davidson *et al.* provided an overview of theory underpinning development of MoCs.⁹ Here, we build on their work by describing a contemporary perspective on MoCs in Australia and their relevance to musculoskeletal health, a clinical area which has historically received less attention in the context of service improvement.

An MoC is an evidence-informed policy or framework that outlines the optimal manner in which condition-specific care

should be made available and delivered to consumers. MoCs aim to address current and projected community need in the context of local operational requirements. The guidance provided is coined as 'the right care, delivered at the right time, by the right team, in the right place, with the right resources'.⁸ Current Australian musculoskeletal MoCs are summarised in Table 1.

Despite a large volume of evidence, appraised and synthesised into clinical practice guidelines and other resources, the implementation of evidence into practice by clinicians and positive health behaviours by consumers remains inadequate in musculoskeletal care.^{10,11} This may be driven in part by inadequate implementation of clinical guidelines into practice, and that clinical practice systems inadequately support self-management or co-care for consumers. Further, for musculoskeletal health in particular, a lack of implementation research has been recently identified.¹² Ideally, MoCs are used as a facilitator to bridge the gap between evidence for what works (or doesn't work) in care delivery and practice, by describing not only what to do, but also how to do it within a health system. Recommendations are informed by multiple stakeholders, including consumers and carers and existing local health policy.⁹ Here, an important distinction is that an MoC is not a clinical practice guideline. Rather, MoCs complement clinical practice guidelines by serving as a guide to describe how best-evidence for delivery of musculoskeletal care can be implemented as a sector-wide model of service delivery by clinicians, consumers and health systems across the disease continuum, while considering practicalities of the local environment. For example, the Western Australian (WA) Spinal Pain Model of Care recommends building capacity among health professionals and consumers to adopt evidence-based practice and self-management behaviours using a community of practice approach facilitated by e-health, particularly for rural communities. The New South Wales (NSW) Osteoarthritis Chronic Care Program is a physiotherapist-led model delivered in a hospital ambulatory care setting that combines a multidisciplinary health professional assessment and intervention with health coaching to implement self-management strategies targeted to an individual patient's needs (<http://www.aci.health.nsw.gov.au/models-of-care/musculoskeletal/osteoarthritis-chronic-care-program>, accessed 11 February 2014).

Table 1. Models of care for musculoskeletal health in Australia developed in Western Australia and New South Wales

Inflammatory Arthritis Model of Care (2009) ^A
Spinal Pain Model of Care (2009) ^A
Elective Joint Replacement Service Model of Care (2010) ^A
Osteoporosis Model of Care (2011) ^A
Osteoporotic Re-fracture Prevention Model of Care (2011) ^B
Osteoarthritis Chronic Care Program Model of Care (2012) ^B
Model of Care for the NSW Paediatric Rheumatology Network (2013) ^B
Service model for community-based musculoskeletal health in Western Australia (2013) ^A
Model of Care for people with acute low back pain (draft) ^B

^ADeveloped by the WA Musculoskeletal Health Network (<http://www.healthnetworks.health.wa.gov.au/network/musculoskeletal.cfm>, accessed 11 February 2014).

^BDeveloped by the NSW Musculoskeletal Network (<http://www.aci.health.nsw.gov.au/networks/musculoskeletal>, accessed 11 February 2014).

Models of care for musculoskeletal health: how are they developed?

To ensure that an MoC is implementable in practice, recommendations are informed by the operational requirements and constraints of the jurisdiction for which the MoC is developed (Table 1). For example, it may be impractical to deliver services in some areas due to a lack of workforce volume and infrastructure capability, and thus e-health initiatives may be a preferable option.¹³ Another important attribute of MoCs which more readily facilitates implementation than other health policies or guidelines is the contemporary manner in which they have been developed. Nowadays a network model and the rigorous use of evidence are critical components to MoC development. Both WA and NSW have developed MoCs using a health network process.⁸ Here, a large group of multidisciplinary stakeholders, including health policy practitioners, from across the sector (e.g. more than 500 in WA and more than 300 in NSW) work collaboratively, supported by a central agency (the state Department of Health in WA; the Agency of Clinical Innovation in NSW), to identify priority areas for sector reform in musculoskeletal health and accordingly to develop and implement an MoC. The development process has been previously discussed in detail.⁸ The rationale underpinning this approach is that collaborative creation of an MoC facilitates its uptake and implementation.¹⁴ This is achieved principally through the engagement of multidisciplinary, cross-sector stakeholders. These stakeholders are supported by a central agency to form working relationships in order to identify and develop solutions to system barriers, informed by the best available evidence, that align with existing policy frameworks and health system characteristics or contemporary reform agendas. For example, primary care reforms promote development of workforce capacity in community and primary care centres to support relocation of health services for the management of chronic diseases from tertiary hospitals to community facilities, where appropriate and feasible.¹⁵ By working cooperatively from the initial stages of the MoC development, these same stakeholders become empowered to support implementation of the MoC in practice, thus creating a ‘pull’ translation of evidence-informed policy into practice (i.e. where end users actively access and apply evidence/policy), rather than a ‘push’ translation (i.e. where evidence creators attempt to disseminate evidence/policy to end users).¹¹ For musculoskeletal health in particular, a multidisciplinary, cross-sector collaborative approach to MoC development is highly appropriate as the magnitude of the burden imposed by these conditions warrants a whole-of-sector response. Moreover, health services for this suite of conditions are generally provided in ambulatory care settings, reinforcing the importance of involving stakeholders from across the community sector, as well as the hospital systems.

Models of care: do they make a difference?

Although the need for MoCs may be rationalised and the methods of development appropriate, a key question remains: do they actually make a difference to consumer outcomes or system performance? The introduction of MoCs as policy frameworks has been fairly recent, so definitive judgements around reach and impact are probably premature at this stage.¹⁴ A key principle in the development of an MoC is the use of contemporary evidence.⁹

MoCs are therefore important in contributing to closing critical evidence-policy gaps, and in the longer term may positively influence evidence-practice and care disparity gaps. For example, although an earlier review identified limited implementation of health policy into practice for osteoarthritis in Australia,¹⁶ this situation is slowly being redressed with the introduction of MoCs, in this context particularly through the NSW MoC for osteoarthritis and WA MoC for Elective Joint Replacement (Table 1). Further, although the wait to access pain medicine services in Australia has been protracted for consumers,¹⁷ timely access has been dramatically improved in WA owing to the introduction of a system-oriented MoC for pain services,¹⁸ introduced in parallel with initiatives to build workforce and consumer capacity to better manage musculoskeletal pain syndromes.^{19–23} A recent audit in WA identified positive uptake of all disease-group MoCs across the WA Health Services, particularly with respect to awareness and service planning, yet responders identified that sustainable implementation efforts were stymied by lack of resources to sustainably support implementation efforts.²⁴ In this regard, long-term sustainability and impact of MoCs will be dependent on their uptake and support by middle and senior health managers and policy makers and research providing evidence of their benefit for improving health outcomes and system efficiencies. There is no doubt that funding to support implementation of MoCs is critical. In many cases, up-front investments are predicted to save health systems considerable expenditure, such as the economic modelling undertaken to support the NSW Re-Fracture Prevention MoC. That evaluation demonstrated that if the MoC was systematically implemented across NSW over 240 000 fractures in people who have already sustained a minimal trauma fracture could be prevented over the next decade, averting over 250 000 bed days (unpubl. data). However, in many cases reform is underpinned by practice and culture shifts, which although take time, do not necessarily require major investment by government. Recent examples of low-cost, partnership-based implementation efforts are the development of an accredited postgraduate nursing course in musculoskeletal health, the WA painHEALTH initiative (<http://painhealth.csse.uwa.edu.au/>, accessed 11 February 2014) and a physiotherapy clinical training resource in rheumatoid arthritis (<http://www.rap-el.com.au/>, accessed 11 February 2014) by the networks.

Models of care: the future

Although clinicians and other stakeholders may view the concept of, or term, ‘models of care’, with some scepticism, we contend that all musculoskeletal health stakeholders, particularly health administrators, need to be at least aware of the existence of MoCs. All indications suggest that MoCs are here to stay in Australia and internationally,^{25,26} thus an understanding of their purpose and scope will enable more informed participation in the Australian musculoskeletal healthcare debate, reform agenda and defining of research priorities. Increasingly, MoCs are being considered in planning of health services and decisions around resource allocations,²⁴ providing preliminary evidence of system-related impact and a ‘pull’ policy translation. Key factors in the long-term success and sustainability of sector reform through MoCs will be the continued support by central agencies for their

development (and updating to ensure alignment with best evidence) and implementation, acceptance by the sector, and investment or resource re-allocation by Government and other agencies to drive implementation and evaluation.¹⁴ Engagement of health administrators and middle management is critical to this process, emphasising socioeconomic benefits of investing in implementation (e.g. multidisciplinary care), particularly minimising chronic disability and other health sequelae associated with chronic musculoskeletal disorders. Sector-wide support for reform in musculoskeletal health and support for MoCs is a critical component of this reform agenda. Ideally, this would be undertaken across jurisdictions to have a nationally aligned approach to addressing the burden of musculoskeletal conditions, such as that proposed by the US Bone and Joint Initiative.⁵ In Australia, a national strategy to improve care for people with arthritis called 'A Time to Move' was launched by Arthritis Australia in 2014. Further, targeted and pragmatic research supported by economic and program evaluation will be an additional requirement to support reach, impact and sustainability of MoCs for musculoskeletal health.^{5,27} The first step is to understand the purpose of MoCs, now more than ever.

Conflicts of interest

None declared.

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References

- Dall TM, Gallo P, Koenig L, Gu Q, Ruiz D. Modeling the indirect economic implications of musculoskeletal disorders and treatment. *Cost Eff Resour Alloc* 2013; 11: 5. doi:10.1186/1478-7547-11-5
- Arthritis and Osteoporosis Victoria. A problem worth solving. The rising cost of musculoskeletal conditions in Australia. Melbourne: Arthritis and Osteoporosis Victoria; 2013.
- Vos T, Flaxman AD, Naghavi M, Lozano R, Michaud C, Ezzati M, *et al.* Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010 [erratum published in *Lancet* 2013; 381: 628]. *Lancet* 2012; 380: 2163–96. doi:10.1016/S0140-6736(12)61729-2
- Henderson JV, Harrison CM, Britt HC, Bayram CF, Miller GC. Prevalence, causes, severity, impact, and management of chronic pain in Australian general practice patients. *Pain Med* 2013; 14: 1346–61. doi:10.1111/pme.12195
- Jacobs JJ, King TR, Klippel JH, Berven SH, Burr DB, Caskey PM, Elderkin AL, Esposito PW, Gall EP, Goldring SR, Pollak AN, Sandborg CI, Templeton KJ. Beyond the decade: strategic priorities to reduce the burden of musculoskeletal disease. *J Bone Joint Surg Am* 2013; 95: e1251–6. doi:10.2106/JBJS.L.01370
- Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C, *et al.* Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010 [erratum published in *Lancet* 2013; 381: 628]. *Lancet* 2012; 380: 2197–223. doi:10.1016/S0140-6736(12)61689-4
- Hunter DJ, Neogi T, Hochberg MC. Quality of osteoarthritis management and the need for reform in the US. *Arthritis Care Res (Hoboken)* 2011; 63: 31–8. doi:10.1002/acr.20278
- Briggs AM, Bragge P, Slater H, Chan M, Towler SC. Applying a health network approach to translate evidence-informed policy into practice: A review and case study on musculoskeletal health. *BMC Health Serv Res* 2012; 12: 394. doi:10.1186/1472-6963-12-394
- Davidson P, Halcomb E, Hickman L, Phillips J, Graham B. Beyond the rhetoric: what do we mean by a 'model of care'? *Aust J Adv Nurs* 2006; 23: 47–55.
- Runciman WB, Hunt TD, Hannaford NA, Hibbert PD, Westbrook JI, Coiera EW, Day RO, Hindmarsh DM, McGlynn EA, Braithwaite J. CareTrack: assessing the appropriateness of health care delivery in Australia. *Med J Aust* 2012; 197: 100–5. doi:10.5694/mja12.10510
- Grimshaw JM, Eccles MP, Lavis JN, Hill SJ, Squires JE. Knowledge translation of research findings. *Implement Sci* 2012; 7: 50. doi:10.1186/1748-5908-7-50
- Bourne AM, Whittle SL, Richards BL, Maher CG, Buchbinder R. The scope, funding and publication of musculoskeletal clinical trials performed in Australia. *Med J Aust* 2014; 200: 88–91. doi:10.5694/mja13.10907
- Briggs AM, Slater H, Bunzli S, Jordan JE, Davies SJ, Smith AJ, Quintner JL. Consumers' experiences of back pain in rural Western Australia: access to information and services, and self-management behaviours. *BMC Health Serv Res* 2012; 12: 357. doi:10.1186/1472-6963-12-357
- Cunningham FC, Ranmuthugala G, Westbrook JI, Braithwaite J. Net benefits: assessing the effectiveness of clinical networks in Australia through qualitative methods. *Implement Sci* 2012; 7: 108. doi:10.1186/1748-5908-7-108
- Department of Health (Western Australia). WA primary health care strategy. Perth: Health Networks Branch; 2011.
- Brand C, Hunter D, Hinman R, March L, Osborne R, Bennell K. Improving care for people with osteoarthritis of the hip and knee: how has national policy for osteoarthritis been translated into service models in Australia? *Int J Rheum Dis* 2011; 14: 181–90. doi:10.1111/j.1756-185X.2011.01613.x
- Hogg MN, Gibson S, Helou A, DeGabriele J, Farrell MJ. Waiting in pain: A systematic investigation into the provision of persistent pain services in Australia. *Med J Aust* 2012; 196: 386–90. doi:10.5694/mja12.10140
- Davies S, Quintner J, Parsons R, Parkitny L, Knight P, Forrester E, Roberts M, Graham C, Visser E, Antill T, Packer T, Schug SA. Preclinic group education sessions reduce waiting times and costs at public pain medicine units. *Pain Med* 2011; 12: 59–71. doi:10.1111/j.1526-4637.2010.01001.x
- Davies SJ, Hayes C, Quintner JL. System plasticity and integrated care: informed consumers guide clinical reorientation and system reorganization. *Pain Med* 2011; 12: 4–8. doi:10.1111/j.1526-4637.2010.01016.x
- Slater H, Briggs AM, Bunzli S, Davies SJ, Smith AJ, Quintner JL. Engaging consumers living in remote areas of Western Australia in the self-management of back pain: a prospective cohort study. *BMC Musculoskelet Disord* 2012; 13: 69. doi:10.1186/1471-2474-13-69
- Slater H, Briggs AM, Watkins K, Chua J, Smith AJ. Translating evidence for low back pain management into a consumer-focussed resource for use in community pharmacies: a cluster-randomised controlled trial. *PLoS ONE* 2013; 8: e71918. doi:10.1371/journal.pone.0071918
- Slater H, Davies SJ, Parsons R, Quintner JL, Schug SA. A policy-into-practice intervention to increase the uptake of evidence-based management of low back pain in primary care: A prospective cohort study. *PLoS ONE* 2012; 7: e38037. doi:10.1371/journal.pone.0038037
- Slater H, Briggs AM, Smith AJ, Bunzli S, Davies SJ, Quintner JL. Implementing evidence-informed policy into practice for health care professionals managing people with low back pain in Australian rural settings: A preliminary prospective single-cohort study. *Pain Med* 2014; doi:10.1111/pme.12351
- Department of Health (Western Australia). Results of the Models of Care Survey: a snapshot of how models of care have been implemented in Western Australia. Perth: Health Networks Branch; 2012.

- 25 MacKay C, Veinot P, Badley EM. Characteristics of evolving models of care for arthritis: a key informant study. *BMC Health Serv Res* 2008; 8: 147. doi:[10.1186/1472-6963-8-147](https://doi.org/10.1186/1472-6963-8-147)
- 26 Li LC, Badley EM, MacKay C, Mosher D, Jamal SW, Jones A, Bombardier C. An evidence-informed, integrated framework for rheumatoid arthritis care. *Arthritis Rheum* 2008; 59: 1171–83. doi:[10.1002/art.23931](https://doi.org/10.1002/art.23931)
- 27 Haw SJ, Gruer L, Amos A, Currie C, Fischbacher C, Fong GT, Hastings G, Malam S, Pell J, Scott C, Semple S. Legislation on smoking in enclosed public places in Scotland: how will we evaluate the impact? *J Public Health (Oxf)* 2006; 28: 24–30. doi:[10.1093/pubmed/fdi080](https://doi.org/10.1093/pubmed/fdi080)