

PERSPECTIVE ARTICLE

System Plasticity and Integrated Care: Informed Consumers Guide Clinical Reorientation and System Reorganization

Stephanie J. Davies, MB BS, FANZCA, FFPMANZCA,*†‡ Christopher Hayes, B Med Hons, FANZCA, FFPMANZCA,§ and John L. Quintner, MB BS, FFPMANZCA‡

*School of Physiotherapy, Curtin University, Bentley, Western Australia, Australia;

†Faculty of Medicine, Dentistry and Health Sciences, University of Western Australia, Crawley, Western Australia, Australia;

‡Pain Medicine Unit, Fremantle Hospital, Fremantle, Western Australia, Australia;

§Hunter Integrated Pain Service, Newcastle, New South Wales, Australia

Reprint requests to: Stephanie Davies, MB BS, FANZCA, FFPMANZCA, Pain Medicine Unit, Fremantle Hospital, Alma Street, Fremantle, Western Australia, 6160 Australia. Tel: +61412928697; Fax: +61894313693; E-mail: stephanie.davies@health.wa.gov.au and stephanie@davies.obt.com.au.

Abstract

Setting. Two Australian public hospital multidisciplinary pain centers (MPCs) situated on opposite sides of the country.

Objective. Restructuring our services to become patient-centred and patient-driven by enabling entry to our MPCs through an education portal, inclusive of both knowledge and self-management skills, and to then be free to select particular treatment options on the basis of evidence of known efficacy (risk/benefit).

Design. Group-based education to inform our patients of the current state of uncertainty that exists in Pain Medicine, both in regard to diagnostic and therapeutic practices. Using an interprofessional team approach, we aimed to present practical and evidence-based advice on techniques of pain self-management and existing traditional medical options.

Results. Early, resource efficient, group intervention provides many patients with sufficient information to make informed decisions and enables them to partner us in engaging a whole person approach to their care. We have implemented routine comprehensive audits of clinical services to better inform the planning and provision of health care across health services.

Conclusions. System plasticity is as important to the process of integrated health care as it is to our understanding of the complexity of the lived experience of pain. Better-informed consumers partnered with responsive health professionals drive the proposed paradigm shift in service delivery. The changes better align the needs of consumers with the ability of health care providers to meet them, thus achieving the twin goals of patient empowerment and system efficiency.

Key Words. System Redesign; Interprofessional Education; Self-management; Multidisciplinary Pain Centre

Introduction

Our current system of health care has evolved under the guidance of health professionals and health system managers. It has both strengths and weaknesses when applied to multidisciplinary pain centers (MPCs). A major weakness is that it excludes consumers from having an influence on service delivery. One way to address this weakness is to involve the consumers of our pain medicine services. However, if they are to make a meaningful contribution they need to be adequately informed about these services. This necessitates the routine outcome measurement of clinical interventions so that accurate and up to date information can be passed on. With such education and guidance patients can then choose their preferred treatment strategies. Allowing consumer choice has the potential to profoundly reorganize our system. They are able to influence the balance of treatments offered by a service and hence contribute to the process of clinical re-orientation and system plasticity. We raise the possibility that this form of interaction of a patient with a system that is plastic may produce more positive outcomes for patients than is currently the case.

This article explores the conceptual basis for the introduction of pre-assessment group education sessions at two Australian MPCs.

Contemporary Pain Medicine Systems

The current practice of Pain Medicine in Australia rests upon strong foundations, having been inspired by notable pioneers, both international and national. Dr John Bonica founded the first multidisciplinary pain centre in Seattle in 1961. In 1974, the International Association for the Study of Pain (IASP) was formed, bringing together for the first time basic scientists and committed clinicians from many health professions. Professor Michael Cousins from Australia figured prominently in the formative years of the organization [1].

Over the next 20 or so years, MPCs were established in most Australian State capital cities, as well as in a number of larger regional centers. In 1999, through the vision of Michael Cousins, the Faculty of Pain Medicine was established as a unique collaboration between the Australian and New Zealand Colleges of Anaesthesia and Psychiatry, along with the Australian Colleges of Physicians and Surgeons, and the Faculty of Rehabilitation Medicine. In 2005, Pain Medicine in Australia was officially recognized as being a specialty in its own right. This was a remarkable achievement in so short a time-span.

The theoretical underpinnings for the development of clinical services offered by MPCs comprised the “gate control theory” of Melzack and Wall [2] and the biopsychosocial model of illness proposed by Engel [3,4] and then adapted to pain medicine [5]. These landmark contributions highlighted the huge potential for therapeutic modulation of the lived pain experience.

From the broader medical viewpoint, it became obvious to physicians that other health professionals could play an important role in successfully implementing Engel's model. Naturally, this raised the expectation that the inter-professional team approach would assume a prominent place in Pain Medicine [6,7]. However, biomedicine has continued to occupy a powerful and central role in the *modus operandi* of MPCs. The patient enters and gains access to the health care system through the medical portal, and usually only at the discretion of the physician, may then be referred on to other members of the health professional team.

There is also evidence that the above-mentioned theoretical underpinnings of Pain Medicine and inter-professional collaborative practice have been only variably embraced by health professionals [8], with consequent neglect of their translation at many levels of health care [9,10] and their virtual absence from the medical undergraduate curriculum [11–13]. In fact, Australian medical students tend to become less team-orientated over the course of their studies compared with students in other health professions [14].

Consequently, much of formal health care continues to take place in “silos” [15] that results in gaps in providing early interprofessional care, discontinuity between community and hospital-based care and disempowerment of patients to participate equally in decision-making with health professionals.

Social scientists have challenged Medicine to redress this imbalance:

Biomedicine . . . has a responsibility to re-examine its own motivations, goals, and ethical ideals in the pursuit of that goal. Cure must be reconciled with care, and care must be conceptualized in ways consistent with patients' perceptions [16].

This sentiment is echoed by multiple stakeholders currently involved in health care delivery who are also recognizing the value of forging links and networks (both formal and informal) to share information and experiences [17]. They include consumer groups representing people with persistent pain and their carers, dynamic inter-professional associations (e.g., Australian Pain Society), academic institutions, and many professional training bodies.

The purpose of this article is to encourage the redesign of health care delivery in ways that minimize (if not eliminate) imbalances of knowledge and power that exist between health professionals and their patients, prioritize early access to interprofessional care, and improve linkages and communication between the patient, their carers, and health systems to facilitate the patients' system navigation and choices.

The Multidisciplinary Pain Center

Blyth has drawn attention to the relative neglect of active self-management strategies, which is disturbing given that their utilization can be associated with both reduced pain-related disability and use of formal health services [18].

We suspect that the continued dominance of the passive biomedical treatment approach in tertiary centers (*the tertiary, sequential care biomedical model* [19]) may even have contributed to long waiting lists for tertiary services available at MPCs.

Those on long waiting lists can build up unrealistic hopes for curative biomedical intervention (hopes that are unsupported by current evidence) [20,21] and may not have been made aware of the potential gains to them by implementing active self-management strategies [22].

From our observations of current practice at MPCs, which may or may not reflect the breadth of Australian pain medicine, patients are usually offered two pathways—individual medical consultations leading to medications or interventional procedures, and/or lengthy pain management programs. There is generally no provision for early access to interprofessional education in pain-related matters in a time-efficient manner.

Are Guidelines the Answer?

Guidelines for the management of pain-related disorders that are now available provide excellent summaries of the relevant scientific evidence but do not necessarily guide what “to do” in clinical practice [23]. Other barriers that impede their successful application are physicians being unaware of their availability, their ease of use, the level of agreement with the recommendations, realistic outcome expectancy, and inertia of previous practice [24]. For example, general practitioners with a self-reported special interest were more likely to countenance longer periods of bed rest, more time off work, and to rate the usefulness of radiological investigations and procedural interventions above and beyond the published evidence [25].

Physician perception of patient-related barriers to guideline recommendations include patient preference for or against particular treatment modalities, resistance to the concept of following guideline recommendations, and inability of the patient and clinician to reconcile patient preference with guideline recommendations [24].

Measuring Service Outcomes

Comprehensive audits across all arms of clinical services are lacking [26] and this constitutes an enormous “gap” that makes problematic the planning and provision of health care across all health services. Moreover, reported outcomes from randomized controlled trials (RCTs) are not representative of the larger population of people in pain [27]. Until such time as measurement of outcomes is routinely performed in clinical practice it will not be possible to know whether patients are benefiting from specific biomedical intervention(s) in everyday clinical practice [28,29].

Significant barriers to outcome documentation as a routine part of patient management could include the cost of instituting measurement processes without remuneration, the lack of an easy audit process, and the reluctance of health professionals to acknowledge the possibility of treatment failure.

When Systems Fail to Meet Demand

We saw at least three “drivers” for health system change; an aging population, a constrained health care workforce, and uncertain financial resources. In addition long waiting lists to access our pain services and evidence from RCTs pointing to limited outcomes from unimodal biomedical management approaches, prompted us to critically examine our own systems of service delivery.

Did we simply need more funding to expand the existing system of health care delivery or did we need to completely restructure our service delivery by working more efficiently to improve measured patient outcomes? We chose the second option as it was our belief that by actively involving patients in their own health manage-

ment (with the goal of their empowerment), both system and patient outcomes would substantially improve.

Introducing System Plasticity

Given the dynamic complexity of the lived experience of pain, and the failure of our current health care systems to address the many issues of concern to people in pain, we raised the question as to what a health care system would look like if it underwent a “philosophical inversion” to become truly patient-centred and patient-driven?

When considering the different strategies to restructure our services along these lines we decided to maximize those that were more likely to engage the whole person and thereby harness the plasticity of mind and body that has become an increasingly important component of therapeutic approaches to people with persistent pain [30,31].

Accordingly, we decided to build “plasticity” into our system of service delivery. We envisaged that the people entering the system would partner with us to shape service delivery to meet their particular needs.

Matching Services to the Needs of Consumers?

We envisaged that patients would enter our MPC’s through an education portal, inclusive of knowledge and skills, and then be free to select particular treatment options on the basis of evidence of known efficacy (risk/benefit). We recognized that simply providing patients with information alone, without the necessary skills in application, would be insufficient to meet their needs and to enable them to make informed choices for their own care [32].

Initial health care would therefore aim to provide groups of patients with sufficient up-to-date comprehensible information in an educational package that would allow them to reframe their own experiences and respond in more functional ways to their predicament, which is of course their lived experience of pain. Educational sessions would need to be short compared with traditional higher intensity cognitive behavioural programs and flexible enough in their scheduling to allow patients to attend at their convenience.

We decided to honestly inform our patients of the current state of uncertainty that exists in Pain Medicine, both in regard to diagnostic [33] and therapeutic practices [34]. Using an interprofessional team approach, we would offer them practical and evidence-based advice on techniques of pain self-management and existing traditional medical options. Our vision is for patients to partner with us in engaging a whole person approach to their care.

Early, resource efficient, group intervention should provide many patients with sufficient information to make informed decisions as to whether they wish to progress further to

consult with one or more pain management professionals, to co-ordinate their care with their referring health practitioner, or to undertake solo self-management, i.e., disengage entirely from the health care system, with the option of future re-engagement if desired.

We would undertake to follow their progress in terms of their satisfaction with the new model of service delivery, their balance of active and passive strategies of pain management and their ongoing utilization of, and cost to the health care system.

Conclusion

The change to a health care system in which health professionals are employed primarily to provide expert advice on aspects of care and which is underpinned by the recognition that patients are the “experts in their own experience of pain,” requires significant system plasticity. Plasticity is as important to the process of health care reorganization as it is to our understanding of the neurobiology of pain. The proposed paradigm shift in service delivery is driven by informed consumers partnered with responsive health professionals. The changes would better align the needs of those consumers with the ability of health care providers to meet their needs and the twin goals of patient empowerment and system efficiency would be achieved.

References

- 1 Bond MR, Dubner R, Jones LE, Meldrum ML. The history of the IASP: Progress in pain since 1975. In: Merskey H, Loeser JD, Dubner R, eds. *The Paths of Pain: 1975–2005*. Seattle: IASP Press; 2005:23–32.
- 2 Melzack R, Wall PD. Pain mechanisms: A new theory. *Science* 1965;150(699):971–9.
- 3 Engel GL. The clinical application of the biopsychosocial model. *Am J Psychiatry* 1980;137(5):535–44.
- 4 Engel GL. The need for a new medical model: A challenge for biomedicine. *Science* 1977;196(4286):129–36.
- 5 Quintner JL, Cohen ML, Buchanan D, Katz JD, Williamson OD. Pain medicine and its models: Helping or hindering? *Pain Med* 2008;9(7):824–34.
- 6 Watt-Watson J, Hunter J, Pennefather P, et al. An integrated undergraduate pain curriculum, based on IASP curricula, for six health science faculties. *Pain* 2004;110(1–2):140–8.
- 7 Turk DC, Rudy TE. Towards a comprehensive assessment of chronic pain patients. *Behav Res Ther* 1987;25(4):237–49.
- 8 Butler CC, Evans M, Greaves D, Simpson S. Medically unexplained symptoms: The biopsychosocial model found wanting. *J R Soc Med* 2004;97(5):219–22.
- 9 Armstrong D. Theoretical tensions in biopsychosocial medicine. *Soc Sci Med* 1987;25(11):1213–8.
- 10 Lolos F. The integration of the behavioral sciences and biomedicine: The need for a metatheory. *Bol Oficina Sanit Panam* 1990;109(1):38–45.
- 11 Perkins RJ, Horsburgh M, Coyle B. Attitudes, beliefs and values of students in undergraduate medical, nursing and pharmacy programs. *Aust Health Rev* 2008;32(2):252–5.
- 12 Hunter J, Watt-Watson J, McGillion M, et al. An inter-faculty pain curriculum: Lessons learned from six years experience. *Pain* 2008;140(1):74–86.
- 13 Engel GL. The biopsychosocial model and the education of health professionals. *Ann N Y Acad Sci* 1978;310:169–87.
- 14 Perkins RJ, Horsburgh M, Coyle B. Attitudes, beliefs and values of students in undergraduate medical, nursing and pharmacy programs. *Aust Health Rev* 2008;32(2):252–5.
- 15 Mann L. From “silos” to seamless healthcare: Bringing hospitals and GPs back together again. *Med J Aust* 2005;182(1):34–7.
- 16 Loustaunau MO, Sobo EJ. *Cultural Context of Health, Illness and Medicine*. Westport: Bergin and Garvey; 1997:107–44.
- 17 Gatchell RJ, Okifuji A. Evidence-based scientific data documenting the treatment and cost-effectiveness of comprehensive pain programs for chronic nonmalignant pain. *J Pain* 2006;7:779–93.
- 18 Blyth FM, March LM, Nicholas MK, Cousins MJ. Self-management of chronic pain: A population-based study. *Pain* 2005;113(3):285–92.
- 19 Gallagher R. Primary care and pain medicine: A community solution to the public health problem of chronic pain. *Med Clin North Am* 1999;83:555–83.
- 20 Chou R, Loeser JD, Owens DK, et al. Interventional therapies, surgery, and interdisciplinary rehabilitation for low back pain: An evidence-based clinical practice guideline from the American Pain Society. *Spine* 2009;34(10):1066–77.
- 21 Chou R, Atlas SJ, Stanos SP, et al. Nonsurgical interventional therapies for low back pain: A review of the evidence for an American Pain Society clinical practice guideline. *Spine* 2009;34(10):1078–93.
- 22 Turner JA, Ersek M, Kemp C. Self-efficacy for managing pain is associated with disability, depression, and pain coping among retirement community residents with chronic pain. *J Pain* 2005;6(7):471–9.

Davies et al.

- 23 Furlan AD, Pennick V. Limitations of guidelines for low back pain therapy. *Nature Reviews Rheumatology* 2009;5:473-4.
- 24 Cabana MD, Rand CS, Powe NR, et al. Why don't physicians follow clinical practice guidelines? A framework for improvement. *JAMA* 1999;282:1458-65.
- 25 Buchbinder R, Staples M, Jolley D. Doctors with a special interest in back pain have poorer knowledge about how to treat back pain. *Spine* 2009;34(11):1218-26.
- 26 Dobkin PL, Boothroyd LJ. Organizing health services for patients with chronic pain: When there is a will there is a way. *Pain Med* 2008;9(7):881-9.
- 27 Grimshaw JM, Thomas RE, MacLennan G, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess* 2004;8(6):1-72.
- 28 Bogduk N, Fraifeld EM. Proof or consequences: Who shall pay for the evidence in pain medicine? *Pain Med* 2010;11(1):1-2.
- 29 Nicholas MK. Pain management in musculoskeletal conditions. *Best Pract Res Clin Rheumatol* 2008;22(3):451-70.
- 30 Flor H. Cortical reorganisation and chronic pain: Implications for rehabilitation. *J Rehabil Med* 2003;41(suppl):66-72.
- 31 Ramachandran VS, Altschuler EL. The use of visual feedback, in particular mirror visual feedback, in restoring brain function. *Brain* 2009;132(7):1693-710.
- 32 Murray E. Providing information for patients is insufficient on its own to improve outcomes. *Brit Med J* 2008;337:306-7.
- 33 Cherkin DC, Deyo RA, Wheeler K, Ciol MA. Physician variation in diagnostic testing for low back pain. Who you see is what you get. *Arthritis Rheum* 1994;37:15-22.
- 34 Cherkin DC, Deyo RA, Wheeler K, Ciol MA. Physician views about treating back pain. The results of a national survey. *Spine* 1995;20:1-9.