

Multidisciplinary chronic pain management in a rural Canadian setting

Robert Burnham, MSc, MD, FRCPC
Central Alberta Pain and Rehabilitation Institute, Alberta Health Services, Lacombe, Alta., and the Division of Physical Medicine and Rehabilitation, University of Alberta, Calgary, Alta.

Jeremiah Day, MD, CCFP
Centennial Centre for Mental Health and Brain Injury, Ponoka, Alta.

Wallace Dudley, PhD
Central Alberta Pain and Rehabilitation Institute, Alberta Health Services, Lacombe, Alta.

Correspondence to:
Dr. Robert Burnham, 1, 6220-Highway 2A, Lacombe AB T4L 2G5;
rburnham@telusplanet.net

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Introduction: Chronic pain is prevalent, complex and most effectively treated by a multidisciplinary team, particularly if psychosocial issues are dominant. The limited access to and high costs of such services are often prohibitive for the rural patient. We describe the development and 18-month outcomes of a small multidisciplinary chronic pain management program run out of a physician's office in rural Alberta.
Methods: The multidisciplinary team consisted of a family physician, physiatrist, psychologist, physical therapist, kinesiologist, nurse and dietician. The allied health professionals were involved on a part-time basis. The team triaged referral information and patients underwent either a spine or medical care assessment. Based on the findings of the assessment, the team managed the care of patients using 1 of 4 methods: consultation only, interventional spine care, supervised medication management or full multidisciplinary management. We prospectively and serially recorded self-reported measures of pain and disability for the supervised medication management and full multidisciplinary components of the program.
Results: Patients achieved clinically and statistically significant improvements in pain and disability.
Conclusion: Successful multidisciplinary chronic pain management services can be provided in a rural setting.

Introduction : La douleur chronique est un problème fréquent et complexe qui répond mieux à une approche pluridisciplinaire, surtout en présence de composantes psychosociales importantes. L'accès limité à de tels services et leur coût élevé empêchent souvent leur application chez les patients en milieu rural. Nous décrivons ici la mise en œuvre et les résultats à 18 mois d'un petit programme de prise en charge pluridisciplinaire de la douleur chronique dans un cabinet de médecine albertain en milieu rural.
Méthodes : L'équipe pluridisciplinaire réunissait les éléments suivants : médecin de famille, physiatre, psychologue, physiothérapeute, kinésithérapeute, personnel infirmier et diététiste. Les professions paramédicales participaient à temps partiel. L'équipe a procédé au triage à partir des renseignements figurant dans les demandes de consultation et les patients ont subi un examen de la colonne vertébrale ou une évaluation de leurs soins médicaux. Selon les résultats de l'examen, l'équipe prenait les patients en charge selon l'une de quatre méthodes, soit consultation seulement, intervention pour la colonne vertébrale, pharmacothérapie supervisée ou prise en charge pluridisciplinaire complète. Pour les volets pharmacothérapie supervisée et approche pluridisciplinaire complète du programme, nous avons consigné de façon prospective des séries d'automesures de la douleur et de l'invalidité.
Résultats : Les patients ont connu une amélioration cliniquement et statistiquement significative de leur douleur et de leur invalidité.
Conclusion : Il est tout à fait possible de prendre efficacement en charge la douleur chronique avec une équipe pluridisciplinaire en milieu rural.

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INTRODUCTION

Rural practitioners are frequently called upon to manage complex chronic pain problems. It is estimated that 21.5% of patients who see their primary care physician suffer from persistent pain.[1] In adult populations, epidemiological studies have estimated the prevalence of chronic pain to be between 2% and 40%.[2] In Alberta, it is estimated that about 11% of residents have chronic pain and about one-quarter of them classify their pain as severe.[3] For the solo rural practitioner, the care of the patient with complex chronic pain is challenging and burdensome. Research has confirmed that the most clinically and cost effective treatment for complex chronic pain is through a coordinated multidisciplinary team. Interestingly, the best outcomes have been recorded when individual treatment is in excess of 100 hours.[4,5] Unfortunately, access to such programs is limited, particularly for the rural chronic pain sufferer. Such programs are labour-intensive, expensive and, to be affordable, often require third-party funding. They typically are located in large urban settings. Establishment of rural multidisciplinary pain management programs is uncommon, which is possibly related to the lack of qualified and accessible team members, financial and infrastructure issues, and the lack of a functional, proven rural model.

The purpose of this report is to describe the development and results of a multidisciplinary chronic pain management program over its first 18 months of operation, which was established in a rural setting in central Alberta.

METHODS

Finding and funding the team

The David Thompson Health Region is located in rural central Alberta and has a population of about 300 000 people. In 2006, the health region administration provided partial funding for the development of a multidisciplinary chronic pain management program (Central Alberta Pain and Rehabilitation Institute [CAPRI]). The program philosophy and mandate were to provide pain management services to patients in the public health care system (patients in the private health system often had funding available for the large urban programs) that involved active participation and personal responsibility on the part of the patient, using evidence-based techniques in a practical and cost-effective manner.

The clinic was located in Lacombe, Alta., a rural community of about 12 000 people. A physiatrist and 2–3 physiotherapists were already practising musculoskeletal pain management in the community. At that time, the existing pain management services included fluoroscopically guided spinal injections and nerve ablations, which were performed in the local hospital. To complement those services, a primary care physician was recruited, who was involved in the CAPRI program 4 days per week. His role was to coordinate medication management and assist with intake assessments. A part-time psychologist, nurse, dietician and kinesiologist were also recruited and were involved 1–2 days per week. Alberta Health and Wellness accredited the assembled team as a multidisciplinary chronic pain management program, which allowed the physicians to bill for their services on a timed basis and to be reimbursed for team and patient conferences. This was imperative, as most patients required lengthy comprehensive medical evaluations and there were frequent team conferences. The health region provided remuneration of the other team members through an annual budget of about $130 000. A one-time startup grant of $62 000 from the pharmaceutical industry also supplemented the initial funding. It was used primarily for staff and patient education.

The CAPRI program care path

Figure 1 outlines the CAPRI program care path.

Referral documentation review

Patients accessed the CAPRI program by physician referral. The CAPRI program director triaged referral information and assigned patients to 1 of 2 initial assessment paths: spinal or medical. During the first 18 months of the program, the team accepted 1905 patient referrals.

Initial assessment

1. Spine care assessment was selected for patients with primarily axial skeletal pain with or without radiculopathy, with concordant spinal imaging and minimal apparent medication management or psychosocial issues. The spinal intervention assessment involved a medical, neuromusculoskeletal and spine fitness screening examination performed jointly by the physiatrist and physical therapist. These assessments generally took about 1.5 hours to complete. The team provided advice regarding, and often referral to, community

physical therapy for a customized and supervised active spine fitness exercise program for each patient. Physical therapists within the community referral network had undergone training so that the spine fitness assessment, individualized exercise prescription and reporting format were standardized.

2. Medical care assessment was selected for patients with chronic pain complicated by significant medication management, psychosocial and/or comorbid medical illness issues. These patients underwent comprehensive medical evaluation by the primary care physician. The medical care assessments were generally 2 hours in duration.

Regardless of the care path, each patient received in the mail a questionnaire that they completed within 1 week of the initial consultation. The questionnaire included questions regarding patient demographics; pain character, including onset, intensity, frequency, exacerbating/remitting factors and a pain diagram; general family history and medical functional inquiry, including sleep quality; red flags (symptoms suggestive of sinister disease); yellow flags (psychosocial factors associated with pain and disability chronicity); opioid risk assessment; previous investigations; previous and current treatments and their effects; perceived disability (Patient-Specific Functional Scale[6]); and depression (Beck Depression Inventory short form[7]). Assignment to the initial assessment paths did not preclude secondary assessment by the alternate path.

Treatment

Following initial assessment, the team selected 1 of 4 treatment modes:

1. Consultation only: the initial assessment included a detailed history and physical examination. Patients who underwent spine care assessment and were deemed to have a condition that could be self-managed through education, activity modification and a customized home exercise program received these services at the time of the initial assessment or received a referral to a community physical therapist. The team provided a consultation report to the referring physician and discharged the patient back to the referring physician's care. For patients who underwent medical care assessment and were deemed to have relatively uncomplicated conditions, the team provided the referring physician with detailed instructions for further management including recommendations for which medications to try, and the recommended therapeutic dosage and titration schedule. The referring physician had the option to send the patient back for a reassessment if the recommended treatment plan did not achieve satisfactory results.
2. Interventional management: in addition to the active exercise program, the team performed diagnostic local anesthetic blocks to identify the axial skeletal pain generator and/or localized treatment of the suspected pain generator (i.e., facet joint injection or medial branch blocks, sacroiliac joint or epidural injection; facet and sacroiliac joint radiofrequency sensory ablation). The CAPRI program physiatrist performed these in the operating room of the Lacombe Hospital. The primary purpose of the interventions was to control pain adequately to allow the patient to more successfully participate in his or her rehabilitation program.

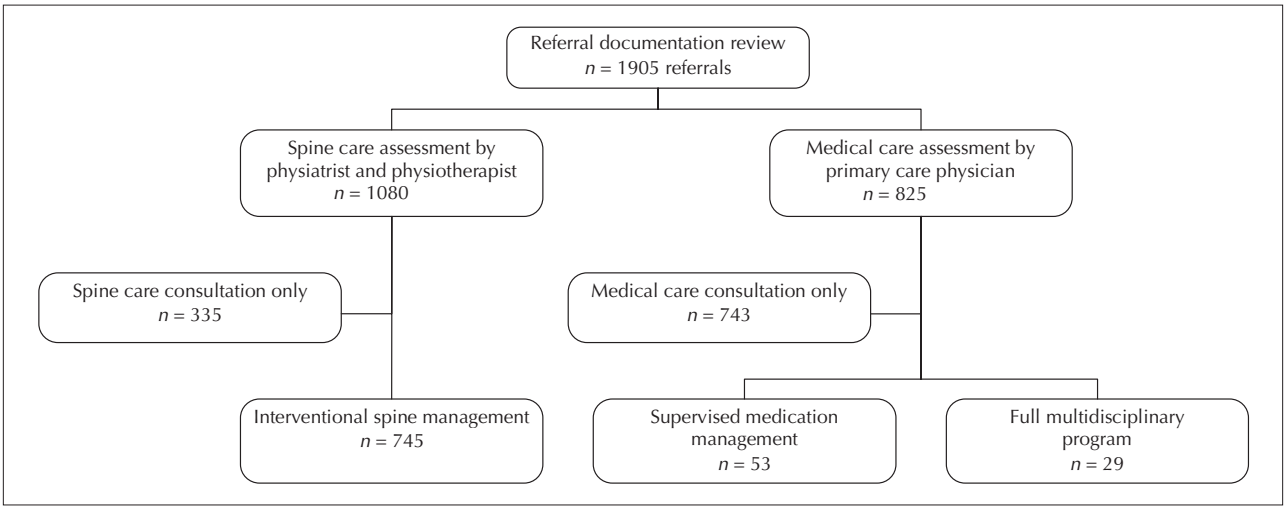


Fig. 1. The care path of the Central Alberta Pain and Rehabilitation Institute Program.

3. Supervised medication management: in circumstances where the complexity of the medical or medication issues was high, the CAPRI program primary care physician personally managed the care of the patient until the pain was deemed satisfactorily controlled and stable. The physician then returned the care of the patient back to the referring physician for ongoing care. In some cases, patients were transitioned into the full multidisciplinary management treatment mode (see no. 4 below). A full review of medication management of chronic nonmalignant pain is beyond the scope of this article but has been recently reviewed.[8] Some important principles are as follows:
   - classify and specifically treat the type of pain (i.e., nociceptive, neuropathic or nonspecific)
   - optimize the use of simple analgesics and adjuvants (e.g., antidepressants, antiepileptics)
   - optimize the dosing of long-acting opioids, including adjusting the dose to effect and increasing the frequency of dosing as necessary in order to provide consistent analgesia without the need for "as required" doses of short-acting opioids
   - eliminate, if possible, the use of short-acting opioids
   - avoid the use of opioids and benzodiazepines in the same patient
   - identify and treat comorbidities commonly associated with chronic pain such as sleep disturbance, anxiety and depression
   - carefully screen for contraindications in the use of each of the various pain control medications
   - use opioids judiciously employing "universal precautions" to minimize the risks of misuse such as screening all patients for addiction risk; setting boundaries around opioid use (opioid contract); using urinary drug screening; identifying drug misuse behaviours early and intervening; introducing opioids as a trial of therapy with pretreatment agreed-upon goals that include both pain control and improvement in function; tapering off opioids if goals not achieved[9]
   - introduce new medication at a low dose, with slow upward titration to effect (improved pain control and function)
   - anticipate and proactively treat side effects including aggressively starting on a bowel routine at the introduction of opioids
   - be aware of drug interactions, including checking for cytochrome P-450 interactions before the introduction of a new medication
4. Full multidisciplinary management: select patients with complex chronic pain problems were initially assessed by the CAPRI team primary care physician and psychologist followed by the other allied health professionals (physical/exercise therapy, nursing, dietary). If it was perceived that the patient would likely benefit from each of the services available and the patient made a commitment to attend and comply with the program (program contract), the team developed in consultation with the patient a comprehensive problem and goal list, and treatment plan. The patient attended once weekly as a part of a group of 4–6 patients for about 5 hours per session. The initial half-hour consisted of a group meeting to troubleshoot challenges patients encountered during the week and to review and discuss their homework assignment. Each week, the patients were assigned a chapter to study in the workbook *Managing Pain Before it Manages You* by Dr. Margaret Caudill.[10] The psychologist or nurse facilitated this group session. Then, a 1-hour group education and psychotherapy session was held. A didactic presentation followed by discussion was presented by the team member most expert in the area. For example, the physician presented lectures on pain pathophysiology and medications. The physical therapist spoke on the dynamics of pain and maintaining a healthy spine. The exercise specialist discussed the adverse effects of deconditioning and the benefits and components of healthy exercise. The dietician discussed healthy eating, weight management and constipation prevention. The psychologist explored the topics of sleep hygiene, coping strategies, stress and mood management.

Over the following 2 hours, each patient had a one-on-one consultation with each of the individual CAPRI team members. Each team member was housed in a separate examining room of the clinic. During the individual consultation time, the team member reviewed the patient's progress, treatment program adherence, concerns and goal attainment pertinent to his or her area of expertise. Team members made modifications and upgrades to the patient's treatment plan and home program, and established new clearly defined goals for the upcoming week. Once the patient completed the consultation, each rotated to the next room and visited with the next health professional. Following the consultations,

patients took a nutrition break/rest while the CAPRI team conferenced together to discuss the progress and plans for each patient. Then, each patient individually met with one of the team members to summarize the progress and reinforce the updated home program for the upcoming week. At the end of the day, patients had the opportunity for additional services, as required, such as individual psychotherapy or an individualized exercise session. The number of weeks each patient was in the full multidisciplinary program depended on his or her individual progress. The mean duration of involvement was 2–3 months. Patients were discharged when the goals of the patient and the team were met, progress plateaued or the patient was noncompliant.

Analysis

Outcome measures for patients treated by consultation only are not available. The outcomes for interventional spine management have been published elsewhere.[11,12] We compared demographic data of the supervised medication management and full multidisciplinary program groups using unpaired *t* test for all variables except the educational level which we analyzed using χ^2 analysis. We used 2-way repeated-measures analysis of variance to analyze initial, midprogram and discharge pain intensity and interference scores. We quantified pain intensity using a numerical rating scale of 0–10, where 0 indicates no pain and 10 indicates worst imaginable pain. Using the Pain Interference Questionnaire, patients quantified their perception of how much pain interfered in 7 separate domains (0/10 = no interference at all; 10/10 = complete interference). The domains were general activity, mood, walking ability, normal work, relations with others, sleep and life enjoyment.

RESULTS

1. Consultation services: 335 patients received spine care consultation only, and 743 patients received medical care consultation only. The mean age of patients was 51 (range 20–91) years and 60% were female. A review of the medical care consultation patients revealed that all received some form of medication management. Of those prescribed medication as a result of the consultation, 61% received a tricyclic antidepressant, generally to help restore sleep hygiene and/or to treat soft tissue pain sensitization; 41% received an antiepileptic drug, typically for neuropathic pain control; 35% received opioid management for pain control; and 7% received an anti-inflammatory medication. Additionally, 41% were prescribed or were receiving physical therapy treatment and 15% were referred for psychological services.
2. Interventional management: 745 patients with chronic spine pain underwent at least 1 interventional spinal procedure. We performed about 2100 fluoroscopically guided spinal procedures (injections/neurotomies). The outcomes of these interventions have been published.[11,12] Essentially, the spinal pain generator was identified by local anesthetic blockade of selected joints. When most of the patient's pain resolved following facet or sacroiliac joint block, radiofrequency neurotomy of the symptomatic joint resulted in a mean reduction of pain intensity, frequency and disability of about 50% that lasted 6–9 months and then gradually dissipated. Additionally, there was a significant reduction of analgesic intake, direct financial cost of spine care and dissatisfaction.
3. Supervised medication management: 53 patients received medication-oriented pain management services by way of serial visits with the CAPRI program primary care physician. Patient demographics are described in Table 1. The diagnostic categorization of patients in this group was as follows: 35% mechanical spine pain; 22% soft tissue pain (myofascial or fibromyalgia); 29%

Table 1. Demographic characteristics of chronic pain patients enrolled in the medication management program and the full multidisciplinary management program

Characteristic	Mean (SD)*		*p* value
	Supervised medication management	Full multidisciplinary program	
Age	47.9 (15.7)	45.2 (10.0)	> 0.05
Sex, % female	73	62	> 0.05
Pain duration, yr	8.1 (9.2)	8.4 (8.3)	> 0.05
Pain intensity score	7.6/10 (1.6)	7.8/10 (1.4)	> 0.05
Pain frequency score	9.1/10 (1.6)	9.2/10 (1.2)	> 0.05
Employed, %	43	31	> 0.05
Educational level†	1.1 (0.8)	2.4 (0.9)	< 0.05
Beck Depression Inventory score	9.8 (7.0)	14.1 (7.5)	< 0.05
Pain Interference Questionnaire score	47.1 (13.8)	49.3 (11.6)	> 0.05

SD = standard deviation.
*Unless otherwise indicated.
†Highest level of formal education: 1 = did not complete high school; 2 = high school graduation; 3 = 2 years or less postsecondary education; 4 = more than 2 years of postsecondary education.

neuropathic pain; 14% other (e.g., headache, peripheral joint pain). Significant reductions in pain intensity occurred over the course of the medication management (Table 2). In terms of magnitude, the pain intensity reduction was about 3 points on the 0–10 numerical rating scale, which constituted about 40% less pain overall. This was statistically significant and certainly clinically significant.[13] There was also significant reduction in disability as measured by the Pain Interference Questionnaire overall. The drop was significant in each of the 7 domains measured by this questionnaire.

4. Full multidisciplinary management: 29 patients were enrolled. Demographics are described in Table 1. Four patients left the program prematurely (3 because of psychosocial/noncompliance issues; 1 because of illness). The diagnostic categorization was as follows: 34% mechanical spine pain; 48% soft tissue pain (myofascial or fibromyalgia); 18% neuropathic pain; 0% other. Statistically, there was a higher proportion of patients with soft tissue pain in this group compared with the medication management group. Additionally, at the time of initial assessment they had significantly higher Beck Depression Inventory scores and had attained a significantly higher educational level compared with the medication management group (Table 1). Over the course of the program, there was significant reduction in pain intensity comparable to that documented in the medication management group. There was also significant reduction in disability as measured by the Pain Interference Questionnaire overall and for each of the 7 domains individually. The reduction of disability was significantly greater in this group compared with the medication management group (Table 2).

Table 2. Pain intensity and pain interference questionnaire scores for the medication management and full multidisciplinary program groups

Measure of pain; program	Mean (SD) score		
	Initial	Midprogram	Discharge
Pain intensity (0–10)			
Supervised medication management	7.8 (1.5)	5.2 (2.0)	4.5 (2.0)*
Full multidisciplinary program	7.7 (1.4)	5.4 (1.6)	4.7 (1.9)*
Pain interference (0–70)			
Supervised medication management	47.1 (13.8)	37.1 (16.1)	30.6 (17.0)†
Full multidisciplinary program	49.3 (11.6)	36.7 (12.2)	23.4 (13.3)†

*Significant reduction in pain intensity scores over the course of both the medication management and full multidisciplinary programs ($F = 89.7$). Not significantly different between programs.
†Significant reduction in pain interference questionnaire scores for both the medication management and full multidisciplinary programs ($F = 75.4$). The reduction was significantly greater in the full multidisciplinary program group ($F = 3.7$).

DISCUSSION

The purpose of this report was to describe the development and results of a multidisciplinary chronic pain management program that was established in a rural setting during its first 18 months of operation. The CAPRI program has generally been considered a success by the staff, health region and patients. Our experience suggests it is feasible to establish a rural multidisciplinary chronic pain management program, but it is not without challenges.

Attracting interested and qualified staff to a rural area can be a challenge. We acknowledge it is unusual to have a physiatrist with expertise in interventional spinal pain management in a rural setting. However, as demonstrated by the success of the care paths of the program that did not involve spinal intervention services, significant improvements in pain and disability can still be achieved. Primary medical care, nursing, dietary and physiotherapy are often available in rural communities. Psychology services may be less available. If not, social work or occupational therapy may be available to provide similar services. The challenge is to pull the available services together as a functioning team. For example, the CAPRI program had staffing problems during the inaugural 18 months in that there were periods when the team did not include a nurse or physical therapist. Team flexibility and innovation are necessary. We concede that working with these patients is labour-intensive. Physicians are often working under significant time constraints. It is helpful to use the allied health professionals as physician extenders as much as possible. For example, the CAPRI program has now added a pharmacist to help the physician with day-to-day medication management issues, thus leaving the physician more time for medical consultations.

Our experience has been that the integrated multidisciplinary team model is an attractive working environment for the allied health professionals and has been a selling point in their recruitment. The biggest challenge is funding their services. Without the support of the health region, and in the absence of third-party funding, establishing a multidisciplinary pain

management program would be virtually impossible. The other big challenge our team has encountered is trying to keep up with the demand for service. As the program has become more widely known, the referral base and wait list have also expanded.

We are now exploring the feasibility of offering off-site full multidisciplinary and medication management services via telemedicine. Preliminary work in this area suggests it is feasible and acceptable to both the service provider and recipient.[14,15] It remains to be seen if it is equally effective. Telemedicine has the potential advantage of providing a greater number of services to patients who may not otherwise be able to access them, at a lower cost both in terms of time and dollars.

Another challenge has been how to decide which care path a patient should be allotted. For example, the only guideline we gave our team for enrolment in the full multidisciplinary program was that patients were to be able to benefit from the services of each discipline represented on the treatment team and patients needed to be able to comply with the program. This treatment mode is the most expensive and labour-intensive. Pain reduction achieved in the full multidisciplinary program was comparable to the less expensive supervised medication management care mode; however, the disability reduction was greater. Interestingly, it appears that the team naturally selected a different cohort of patients to enter into the full multidisciplinary program. Specifically, they were a more highly educated group and scored higher on the intake Beck Depression Inventory Questionnaire. The latter factor suggests a higher level of psychosocial complication. Accordingly, it was appropriate that they be treated by the entire team, which included psychology. The difference in education level is interesting and may reflect the team's perception that a patient with higher education would be more adept at learning the skills taught in the full multidisciplinary program.

CONCLUSION

We have presented our experience of establishing a rural multidisciplinary pain management program and are of the opinion that, with the proper support and staff, such programs can function in a rural setting and offer a useful service.

Competing interests: None declared.

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