Pain management in the context of workers compensation: a case study

Toby R O Newton-John, PhD, Anna J McDonald, BPsych (Hons)

¹Innervate Pain Management, 91 Chatham Street, Broadmeadow, NSW 2292, Australia

Correspondence to: T R O Newton-John tobynj@innervate.com.au

Cite this as: *TBM* 2012;2:38–46
doi: 10.1007/s13142-012-0112-0

ABSTRACT

The clinical management of chronic pain is a biopsychosocial challenge in itself; however, when the pain occurs in the context of workers compensation, there is even greater clinical complexity. A review of the literature shows that patients being treated for chronic pain under workers compensation are generally more distressed and have poorer outcomes both clinically and vocationally than non-compensated patients. A range of factors is identified to explain these differences, including operation of the system itself. However, a case study is presented involving a 49-year-old woman with chronic neck pain, whose clinical history illustrates how workers compensation can negatively influence outcomes, but where successful rehabilitation is also possible.

KEYWORDS

Chronic pain, Workers compensation, Vocational rehabilitation, Treatment outcome, Case study

INTRODUCTION

It is an unfortunate truism that sustaining an injury can occur in a workplace environment just as it can occur in everyday life. In Australia, approximately 20% of those reporting chronic pain are in receipt of workers compensation benefits [1], so the association between long-term pain and work-related injury is a strong one.

Since the late 18th century, there have been schemes in place to provide financial as well as health care support for those who suffer injury or loss at work [2]. Workers compensation is effectively an insurance scheme which provides coverage for those sustaining an agreed loss at work, and the literature analysing pain and injury arising from the workplace is extensive [3]. Mendelson et al.'s [3] review convincingly argues that while the *content* of one's work is important—for example, jobs that require heavy pulling/pushing/lifting or prolonged periods of standing or walking have a higher incidence of back pain [4]—it is the *context* of the work that ultimately influences the success of rehabilitation and the return to full pre-injury duties.

The present article will provide a brief overview of the various workers compensation systems and

Implications

Practice: Cognitive behavioural pain management programs for injured workers with chronic pain can achieve positive vocational outcomes when the strategies for managing pain specifically target regaining work fitness and address issues of returning to employment despite ongoing pain.

Policy: Resources for the rehabilitation of injured workers with chronic pain should be directed towards providing early delivery, functionally based interventions, so that the problems associated with excessive pain medication use and reliance upon passive treatments do not become entrenched.

Research: Research efforts should be directed towards elucidating the reasons for the consistently poorer treatment outcomes for patients in receipt of workers compensation payments when compared to outcomes for non-compensable patients.

how they relate to workplace injury. We will then present treatment outcome data comparing compensable and non-compensable injuries. Following up on the point above, we will argue that in many cases, the workers compensation system itself undermines successful physical and vocational outcomes. Finally, we will present a case study involving workplace injury which highlights both the inadequacies and benefits of the workers compensation system, as least as it applies to the state of New South Wales in Australia.

WORKERS COMPENSATION SYSTEMS

Confusingly, there are significant differences both between and within countries in how compensation systems are legislated and operated. For example, despite a relatively modest working age (i.e., aged 15–64 years) population of about 15 million people [5], Australia has 11 *different* workers compensation schemes. Schemes differ due to state versus territory legislations, self-insured companies, federally administered schemes and even industry-specific schemes (e.g., coal mining).

There are four primary sources of compensation, even taking into account inter- and intra-national differences: (a) worker's compensation or private disability insurance, (b) Social Security Disability Insurance, (c) military benefits from Veterans Affairs services and (d) schemes related to accidents (motor vehicles—the Compulsory Third Party scheme in Australia or product liability). The latter schemes relate to work injuries in the sense that a person may suffer an injury while travelling to or from work or while operating a faulty device in the course of their work.

As noted in the recent study by Busch et al. [6], disability pensions and worker's compensation claims have skyrocketed in modern times, at the same time as Occupational Health and Safety initiatives have been implemented in an attempt to reduce injury rates in work settings. Fordyce's report documents that there was a staggering 2,680% increase in the rate of compensation for low back pain between 1960 and 1980, yet no corresponding evidence of a change in the incidence of the disorder [7]. Such data highlight the multifactorial nature of clinical problems within compensable schemes.

TREATMENT OUTCOMES IN COMPENSABLE AND NON-COMPENSABLE INJURIES

It must be noted that the vast majority of workplace injuries resolve, and they do within the usual time frames [3]. However, one of the most reliable of findings in the pain management field is that patients being treated for a given problem under a workers compensation scheme have poorer outcomes than those being treated for the same problem in a non-compensation environment [8, 9]. This finding applies to a range of different surgical procedures, physical therapies, self management training and medication regimes [6, 10–12]. A meta-analysis by Rohling et al. [2] compared the effect of disability compensation on treatment efficacy in 136 controlled studies, totalling some 7,000 patients. They determined that “receiving financial compensation is associated with a greater experience of pain and reduced treatment efficacy”. They obtained effect sizes between .50 and .60, regardless of how conservative the modelling was.

Compensation status is also clearly related to the amount of time off work that individuals have following injury [13]. Teasell's review [8] indicates that compensation status does significantly impact on recovery, with average work loss being more than twice as long in individuals injured at work compared with those injured outside of work [14].

WHY DOES COMPENSATION NEGATIVELY IMPACT ON REHABILITATION?

There are a number of propositions as to why patients being treated under compensable schemes generally have poorer outcomes relative to their

non-compensated counterparts. It is too simplistic to attribute negative outcomes in the work injury arena solely to the potential for financial gain [3, 15], although a scheme that places the term “compensation” in its title (as opposed to say a “workers rehabilitation scheme” or “workers recovery scheme”) is arguably placing emphasis where it is least helpful.

Nevertheless, there are basic organisational factors that relate to funding for treatment being supplied by a third party payer which can hamper the recovery process. Before a claim is accepted as a legitimate workplace injury, the insurer must carry out some form of investigation to confirm their liability. This can create a delay in any initial investigations or treatment being provided, as the insurer decides whether to accept the claim or reject it.

While virtually all non-emergency treatment facilities have a waiting list of sorts whether the patient is a compensation case or not (and public hospital outpatient pain services are often the worst), there are often additional delays inherent in compensation schemes. In most systems, once the claim is accepted, the insurance carrier must then be supplied with documentation regarding requested investigations or treatments, which must in turn be reviewed before approval is given. This process may be repeated many times during a course of rehabilitation, and each step slows down the movement of a patient along the return to function path [16].

Contributing to the slowness is an anecdotal sense that case managers within insurance companies sometimes deliberately delay approving legitimate requests for treatment because of their concerns about containing costs which may be calculated on a monthly or biannual basis.

So, taking as a definition of chronic pain “Pain that has persisted on a more or less daily basis for a period of three months or longer” [17], the tardiness that is inherent in many compensation systems means that the pain problem could become chronic even before the investigation process is complete. For conditions such as complex regional pain syndrome, where intensive therapy is considered critical in the early post-injury phase to prevent the development of major disability [18], these delays can be disastrous.

In addition to system delays, the adversarial nature of workers compensation means that the injured worker must demonstrate in the first instance and over time that they have suffered a loss. Given that the experience of pain is purely subjective, this requires the injured workers to find some means of convincing others that their problems are genuine, which directly contradicts notions of rehabilitation and recovery. As noted by Mendelson et al. [3], “If you have to prove that you are ill, not only can you not get well but you are also likely to sink further into the abyss of vulnerability and to learn ‘illness behavior’ in the process. The diagnosis of ‘persistent pain disorder’ (ICD-10) or ‘pain disorder associated with psychological factors’ (DSM-IV) may denote iatrogenicity”.

It has been well documented that chronic pain patients with an externalised locus of control cope less well with pain than those with a strong internal locus of control [19]. In this light, consider that injured workers have their medical appointments made, monitored, enforced or refused by a third party; their healthcare information is shared around between a large group of people they often barely know including insurer, employer, vocational counsellors and various treatment providers; they can find their wages suddenly stopped or reduced without prior warning and they may be given written instructions regarding activities that they are not permitted to undertake that apply at home as well as at work. In each case, personal control and self-efficacy are eroded and that can detract from the motivation required for successful rehabilitation.

Not surprisingly, given the points raised above, patients in the workers compensation system tend to be more psychologically distressed, more severely disabled and less active than non-compensation patients [15]. From these basic clinical standpoints, rehabilitation and recovery are always going to be more problematic with this patient group.

By way of contrast, Hall and colleagues [20] carried out an interesting exploration of return-to-work rates of spinal surgeons who themselves undergo spinal surgery. Carrying out spinal operations involves prolonged periods of static standing with occasional lifting, pulling and pushing required. As noted above, these are known work activities that pose a risk for back pain. In this study of 716 US and Canadian spinal surgeons, 1 in 5 had themselves a back surgery.

For surgeons having a decompression operation, 77% were back at work within 4 weeks. Even in the group undergoing spinal fusion, 65% returned to work within 4 weeks. Seventy-six percent of those requiring surgery had missed less than 2 weeks of work before having surgery. Clearly, spinal surgeons are in many ways non-representative of the general population in terms of level of education, income, work autonomy and vocational options. Hence, these results are in a number of ways atypical. However, these data do offer comparative rehabilitation time frames for well-informed, self-employed and non-compensated patients who are able to exert a degree of control over their workplace environment.

SUCCESSFULLY MANAGING WORK-RELATED PAIN

Although the research referred to above points to the receipt of compensation as a negative influence on treatment outcome and prolonged work disability, it has been demonstrated that specific treatment programs can alter the expected trajectories. For example, McGuirk and Bogduk [21] showed that by instituting some basic acute back pain management initiatives in the workplace (immediate appointments, provision of reassurance, time contingent

analgesia, encouragement to remain at work, medical liaison with immediate supervisor), patients with compensable non-specific back injuries can recover speedily (63% returned immediately to normal duties) and with minimal recurrence rates (6% suffered a recurrence of back pain) compared to those under usual care (27% recurrence rate).

However, this study looked at acute injury management—what about chronic pain and workers compensation? The following is a case study which illustrates many of the issues raised above and how they might be addressed in multidisciplinary treatment.

CASE STUDY

Ms B was a 49-year-old married woman who was referred to our multidisciplinary pain management service in 2008 by her insurance company. She was referred for an assessment regarding her suitability to participate in an intensive pain management program, as her rehabilitation had stalled and the insurance company wanted to explore further treatment options for her. The assessment process involved hour-long individual consultations with a psychologist, physical therapist and vocational counsellor followed by a case conference for sharing of information and treatment planning. These assessments quantify the psychological and physical limitations due to pain, what barriers to regaining work exist and if treatment is required in the most suitable format (individual sessions, group program).

Some 4 years previously, while working as a part-time nursing assistant, she injured herself while showering a female patient who weighed over 100 kg (220 lb). She was helping the patient into a shower chair and “felt a pull in her neck” which was immediately painful. She reported the incident and completed her shift, but later that night, she could not move her neck at all and could not sleep. She attended her local doctor the next day, where analgesia was prescribed, and she was referred to a chiropractor. She was immediately certified as unfit for work.

After eventually obtaining insurance company approval, Ms B attended the chiropractor for several visits but was told that he could not help her, and a CT scan was recommended. This revealed “minor posterior bulge of the annulus of the C5/6 disc, some generative changes in the left C6-T1 zygapophyseal joints but there is no facet joint arthropathy”. She was then referred to a physiotherapist. She returned to work and was placed on light duties. After a considerable delay in getting approval for the physiotherapy treatment, she attended massage sessions twice weekly for 5 months but derived no sustained benefit. She then was given hydrotherapy twice weekly for several further months, which also helped at that time but which did not offer any sustained pain relief. She was now taking Tramadol (tramadol) 400 mg daily and was continuing with light duties at work.

In 2005, approximately 13 months after her injury with no improvement in her symptoms, her doctor referred her to a pain specialist. Her insurance company queried the referral and instead sent her to an independent medical examiner to determine whether the referral constituted “reasonable and necessary treatment” under the state workers compensation legislation. Ms B had to travel 2 h by car to that appointment in the capital city, which aggravated her symptoms considerably. Eventually, the pain specialist referral was approved, and over the next 10 months, she underwent four sets of C5/6 and C6/7 medial branch blocks and then radio-frequency lesioning of same. This produced little change in her pain levels, so in 2006, she was referred to a neurosurgeon who recommended an MRI scan.

Ms B was now in some two and a half years post-injury. The MRI demonstrated “C5/6 disc herniation with a broad based posterior and left posterocentral bulge. This displaces the thecal sac”. Surgery was not recommended for her, but her general practitioner noted that she was becoming depressed and prescribed Efexor (venlafaxine). She was also given 2-month off work.

Ms B was then referred to a pain clinic in early 2007 where no medical treatment was undertaken, but she began seeing a psychologist for her depression. It was not exactly clear what this psychological treatment entailed—from Ms B’s account, it appeared to be more supportive counselling than active cognitive behavioural therapy—but she said she found it helpful “just talking to someone”. It did not appear that issues regarding her workers compensation claim were addressed in this treatment nor was there an evidence of any liaison with the workplace regarding her duties and current capacities. At this point (December 2007), having been on light duties for over 3 years and having never upgraded them, her employer advised that there were no longer any suitable work duties available to her, and she was put off work. Her antidepressant medication was increased. The loss of work and the worsening depressive symptoms were the catalysts for the insurance company to make the referral to our service.

When she was assessed by us approximately 12 months later, she was taking two opioids analgesics (Oxycontin 110 mg daily, Panadeine Forte 6 tablets daily), Mobic (non-steroidal anti-inflammatory) and her antidepressant. She spent her days lying on her sofa resting. She slept poorly at night. Her relationship with her husband was very strained, and she admitted feeling helpless and despondent.

She attended her assessment with us openly admitting she was sceptical about our ability to help her (“I’m only here because the insurance company sent me”). She was also quite hostile because the drive to our rooms had increased her pain, and she had been trying to avoid pain increases wherever

possible, hence her inactive lifestyle. However, Ms B’s pain medications were causing significant side effects (constipation, drowsiness), and she reported being motivated to address medication reduction in treatment. She also said that she missed working and the social contact of the workplace and was keen to return to work in some form if she could.

Ms B was considered appropriate for the program based on her preparedness to address her high medication use, her acceptance of her chronic pain (i.e., she was not searching for a cure) and because she could see a personal value in regaining work fitness. If patients do not have self management goals at assessment or they express no interest in regaining work fitness as a treatment goal, they are offered individual sessions with a psychologist to explore their readiness for change in more depth. If, after several sessions discussing issues of motivation, goal orientation and other treatment expectations, there has been no change in the patients’ engagement in the program approach, they are not recommended to participate in treatment at that stage.

THE INTERVENTION

Following her assessment, Ms B was referred into an outpatient multidisciplinary pain program which is similar to interventions described elsewhere [6, 22].

Staff

The program was headed by a clinical psychologist and included a pain specialist, psychologist, two physical therapists and a registered nurse with considerable experience as a vocational counselor. All staff had considerable experience in chronic pain and met daily during program time to discuss patient progress. Pain specialists were included in two formal case conferences (during the first and final weeks of the program) but were available at other times if required.

Setting

Patients attended a private outpatient clinic from 9:00 a.m. to 5:00 p.m. 3 days per week for 4 weeks and were free to leave the premises during their lunch hour if they choose. Depending on their living circumstances and capacity to travel, most patients travelled on their own accord to and from the program. Some patients would reside in nearby hotels from Tuesday to Friday.

Participants

All patients attending the program were funded by one of the compensation schemes—workers compensation insurance, Veterans Affairs, or motor vehicle accident insurance (Compulsory Third Party) schemes.

Content

All sessions were accompanied by a manual consisting of a timetable, worksheets, recording forms and handouts that was taken home by patients at the end of the course. The program itself totals 96 treatment hours (3 full days per week for 4 weeks) plus the follow-up schedule of 6 additional hours brings the total program time to 104 h. All participants are required to attend all program sessions and follow up appointments (follow-ups were done by telephone if the participant lived too far from the clinic to attend a 2-h appointment before travelling home again).

Exercise and stretch program

A half-hour stretch program occurred every morning (12 sessions in total) followed by approximately 2 h of light exercises every afternoon (11 sessions in total). These sessions were designed to improve overall fitness and flexibility, to build muscle strength and to correct individual postural problems. Frequency and intensity of exercises (e.g., how much weight to lift and carry) were determined by patients as they set their own manageable baselines and gradually improved tolerances over the 4 weeks. There was a focus on functionally based exercise with specific tailoring to current or future work tasks. Patients were videotaped on the first day walking and doing some basic movements, and this was reviewed to highlight to the individual their areas of particular need (e.g., limping, lumbar stiffness). The videos were again taken on the final day, and patients were able to observe their progress more objectively with before and after viewings. Videos are then deleted for confidentiality.

Goal setting

Three hour-long goal setting sessions were held in the program—on day 2, day 6 (midpoint) and day 12 the final day. Long- and short-term goals were identified by patients from the outset and were regularly reviewed. Goals covered work, leisure, social, family and domestic activities. Given the patients were in the workers compensation system, considerable effort was made to identify suitable vocational goals. Short-term goals usually consisted of increasing sitting, standing, typing and walking tolerances. These were systematically upgraded with the use of an electronic timer to assist activity pacing.

Education

A total of 15 education sessions, each from 30-min to 1-h long, were multidisciplinary in delivery (pain specialist, psychologist, nurse) and were designed to counteract fears of reinjury and to empower the client to feel confident to manage their chronic pain. Sessions covered concepts of chronic and acute

pain, general health and nutrition, appropriate use of pain medication and sleep hygiene. Plenty of discussion regarding patients' individual experiences within each topic was encouraged in order to identify and address individual fears.

Cognitive behavioural therapy and positive psychology

Nine 1-h sessions on problem solving, changing common unhelpful thinking patterns regarding pain, changing maladaptive behaviours, desensitizing to pain (mindful awareness) and maintaining proactive behavioural changes were delivered. Attention was raised regarding pain behaviours (e.g., limping, guarding, wincing) as habitual but maladaptive in the long term, and goals were set to reduce them. Positive behavioural change (increasing social interaction, medication reduction, increase in physical tolerances, decrease of rest) was reinforced by staff. Positive psychology strategies [23] were also incorporated (daily reflection on "3 good things", the Gratitude Letter, identification of both pleasure and gratification activities). Social interaction was particularly encouraged, and goals were set around increasing time spent with others.

Medication reduction

Pain medication reduction plans were developed collaboratively with pain specialists in the second week during a 30-min consultation. The reduction focused initially on reducing narcotics and benzodiazepines, but a complete cessation goal is encouraged. Reduction of caffeine, alcohol and illicit drug use is often part of the medication reduction plan, but psychotropic medications are not altered. Plans were reviewed with the specialist in the final week in a shorter consultation.

Applied relaxation

Nine sessions of approximately 15-min duration were held teaching a simple breathing/relaxation technique to be practiced within the group. As familiarity and confidence with the technique improved, patients were encouraged to use the strategy not just when still and quiet, but in standing, sitting and walking around outside in a dynamic, unpredictable and noisy settings (e.g., supermarket queue). Relaxation while focusing on pain was implemented in the second week to facilitate desensitization.

Inclusion of significant others

Family members or significant others were encouraged to attend on one full day to facilitate their understanding of chronic pain management. As well as teaching basic principles of good communication, patients and their significant others were taught to recognize the powerful impact of solicitous behav-

iours on pain-related disability and were given alternative strategies for expressing their care and concern. Many attend on the final day to watch the comparison videos of patient's movement on the first and the last days.

Vocational counseling

A large component of the pain management program is the emphasis placed on managing pain for vocational activities. Five 1-h group sessions provide education around principles of returning to work or remaining at work with a chronic pain problem. Further 1–2 h sessions are spent with each participant individually helping to identify potential work roles based on their qualifications and experience, or for those currently working, on incorporating the pain management strategies into the work environment. The physical therapy sessions then try to emulate work activity where possible, for example, climbing ladders or lifting boxes as would be done on the job. The vocational counselor also took a proactive role in contacting relevant stakeholders (such as the insurance company case manager, the line manager/supervisor or the treating doctor) to ensure that the vocational rehabilitation would continue once the pain management program was complete. For example, the vocational counselor might approach the insurance company with a request for retraining if likely to secure future employment for the patient or liaise with the management in an existing workplace to explain how and why pain management strategies could be incorporated within work duties.

FOLLOW UP

Patients were contacted via telephone every week for the first 4 weeks and then attended the clinic in a group format to discuss progress. This mostly focused on return-to-work goals and flare management. Another formal follow-up occurred at 3 and 6 months where they were also invited to attend the clinic in their initial group. If issues were identified, a few individual vocational, physiotherapy or psychology sessions could be requested. Psychometric

assessments are carried out on the first morning and the last afternoon of the program (representing pre- and post-treatment time points) and then again at 1, 3, 6 and 12 months post-program. For the sake of brevity, only the 6- and 12-month post-treatment data are presented here.

CLINICAL OUTCOMES

As can be seen in Fig. 1, Ms B's psychometric profile showed good improvements over the course of treatment. Her perceived disability on the Roland Morris Disability Questionnaire (RMDQ, [24]) greatly reduces and remains minimal throughout the follow-up period. The depression subscale from the Depression Anxiety and Stress Scale (DASS, [25]) was initially in the extremely severe range. Depression improves substantially by the end of treatment, but there is some deterioration between the 6- and 12-month follow-up periods. Ms B, as all patients in the program, was recommended to remain on her antidepressant medication while she attended the course. The data here show marked lessening of her depressive symptoms at post-treatment, but this is only the beginning of the change process and there are still many obstacles to overcome during the follow-up phase (e.g., finding and maintaining employment, working on physical tolerances, learning to apply new pain management strategies in all facets of life). Ms B remained on the antidepressant medication throughout the follow-up phase, monitored by her general practitioner, and her psychometric profile shows that her depressive symptoms remained in the mild range over this period. Fear avoidance scores also reduce on the Tampa Scale of Kinesiophobia (TSK, [26]) and remain consistently improved over the 12-month follow-up.

In terms of pain medication use, Ms B was able to cease Oxycontin, Panadeine Forte and Mobic during the 4-week pain management program, following the reduction plan written out for her by the pain specialist. She reported 3 to 4 days of withdrawal effects, mainly headaches and excessive sweating, but she coped well with these using her applied relaxation techniques. She did not recom-

Fig 1 | Changes in disability, mood and fear avoidance

mence regular pain medications during the follow-up period, citing the unpleasantness of the withdrawals as her main motivation to remain drug-free.

VOCATIONAL OUTCOMES

Figure 2 illustrates the changes in her confidence to self-manage her pain on the Pain Self Efficacy Questionnaire (PSEQ, [27]), with dramatic improvement at post-program, and on generally well-maintained gains over the follow-up period, but some drop off at 12 months. In terms of her medically assessed work capacity, she was certified as totally unfit for work at pre-treatment but is then cleared for 15 h of work per week by the end of the pain management program. By the 12-month follow-up, she has been declared fit for full-time hours (38 h per week) by her doctor. Interestingly, she was only working 24 h per week prior to her injury. Figure 2 shows that it took to the 6-month follow-up period for Ms B to find employment, but she eventually increases her work hours to her pre-injury level by the end of the follow-up period.

Because her pre-injury nursing assistant duties were considered to be unsuitable for someone with chronic neck pain due to the frequent heavy lifting and pushing/pulling of wheelchairs required, Ms B had vocational counselling during the program to try to identify alternative career options. Her lack of formal education (she did not complete high school) and few qualifications meant that job goals were not easily identified; however, pathology collection was determined to be a suitable option given the restrictions imposed by her pain condition and educational background.

Because of her positive response to the pain management program after many years of escalating medication use and deteriorating function, her insurance company supported retraining. She was given financial backing for the 3-month retraining program required to gain the necessary certification as a pathology collector, and Ms B was able to gain work in this field for 15 h per week initially. Pathology collector was a very good person to job match, as Ms B already had a nursing background, enjoyed patient interaction, and the physical

requirements of the job were within her existing tolerances for lifting, carrying, bending and so on. As her work stamina improved, she was able to increase her work hours back to her previous levels.

CONCLUSIONS

The case of Ms B highlights a number of the inherent problems but also strengths chronic pain management in the context of workers compensation. The initial management of her injury was poor, in so far, as she was immediately taken out of work when there was no immediate indication that this was necessary and generally is not advised [21]. She was made to wait for treatment approvals which delayed accessing services but was then given passive physiotherapy for much longer than is considered useful [28]. Overtreating by the psychologist was also apparent, with no functional improvement noted after 18 months of intervention but an increasing reliance on opioids analgesics and possibly some dependence on the therapeutic relationship also. When the insurance company refused to continue supporting the sessions, Ms B was suddenly left unprepared for the termination of treatment and expressed some anxiety about this at assessment. The fact that Ms B was referred to our service by her insurer, rather than by her doctor or other health professional, may have further contributed to her passivity and hostility at her initial assessment.

However, there were a number of factors that contributed to Ms B's positive response to the intervention once she completed her assessment. Firstly, she still had sight of life goals that she wanted to achieve, and she accepted that it would require considerable effort on her part to achieve them. Secondly, she enjoyed her work as a nurse and obtained considerable personal pride from being a health care provider. Her previous job satisfaction was a motivator, but she was also fortunate in having some transferable skills that made retraining possible. Thirdly, although it is not poverty that had stricken Ms B, she was not independently wealthy (her husband was on a retirement pension), and there were financial incentives for her to return to

Fig 2 | Changes in self-efficacy and work capacity

work despite ongoing pain, which do not exist for all program participants. Finally, her husband and adult daughter fully supported her participation in the pain program. Her husband attended the communication day and learned more about chronic pain management. He gave her the time and space to do her exercises and stretches and was encouraging Ms B of her medication reduction plan despite the withdrawal effects.

This case also represents many of the strengths of a compensation system in assisting the rehabilitation of injured workers. The data are clear that for the most disabled and distressed chronic pain patients, only intensive, multidisciplinary intervention is sufficient to produce clinically meaningful improvements [29, 30]. However, a 100-h, multidisciplinary pain management program is an expensive treatment as a lump sum, and funding for such programs would be beyond the scope of many injured workers who were faced with paying themselves. The insurer was able to also financially support Ms B's retraining, which was necessary given the impossibility of her return to her physically demanding previous work role. Ms B's case manager was also very pleased with her progress, and her praise and encouragement helped Ms B's motivation.

While it is widely acknowledged that chronic pain is a major health issue affecting a significant proportion of the population [1], multidisciplinary pain services are still a relatively rare commodity. It is not difficult to see why—there are major logistical difficulties in bringing together a host of clinicians from different backgrounds but with common specialist knowledge, finding premises large enough to cater for the various services that are typically offered (e.g., gymnasiums, procedure rooms, group training rooms, etc.) and then establishing ongoing funding for these services. Adding to that, a particular knowledge and commitment to vocational rehabilitation among the clinical team and the feasibility of developing programs such as this one become clearer. It is equally true that as a single case study, the generalisability of the findings presented here will be limited. There are many factors influencing these outcomes including local compensable injury legislation, the involvement of the insurer at case management level and even work availability that may not be replicable in other centres.

Chronic pain management is a challenging clinical area in its own right, but the issue of compensation for injury adds a further level of complexity. Much of the data reviewed here point to the fact that clinical and vocational outcomes are often poorer for compensable patients, but a range of organisational, psychosocial and even iatrogenic factors has been proposed that may account for this. As the case study illustrates, despite the odds, patients with chronic pain who are in receipt of workers compensation benefits can make positive clinical changes that can be sustained over time.

Nevertheless, vocational rehabilitation can be successfully achieved in the context of chronic non-malignant pain provided that realistic goals are set, the rehabilitation team are well coordinated, and the patient's clinical situation is taken on its merit.

1. Access Economics. The high price of pain: the economic impact of persistent pain in Australia, November 2007. *Report by Access Economics Pty Limited for MBF Foundation in collaboration with University of Sydney Pain Management Research Institute*; 2007.
2. Rohling M, Binder L, Langhinrichsen-Rohling J. Money matters: a meta-analytic review of the association between financial compensation and the experience and treatment of chronic pain. *Heal Psychol*. 1995;14(6):537-547.
3. Mendelson G, Mendelson D, Hadler N. Medicolegal aspects of chronic pain. In: Jensen T, Wilson P, Rice A, eds. *Clinical Pain Management: Chronic Pain*, vol. 1. London: Arnold; 2003:173-188.
4. Macfarlane G, Thomas E, Papageorgiou A, Croft P, Jayson M, Silman A. Employment and physical work activities as predictors of future low back pain. *Spine*. 1997;22(10):1143-1149.
5. Australian Bureau of Statistics. Australian Demographic Statistics. *December Quarter 2010* (cat. no. 3101.0); 2010.
6. Busch H, Bodin L, Bergstrom G, Jensen I. Patterns of sickness absence a decade after pain-related multidisciplinary rehabilitation. *Pain*. 2011;152:1727-1733.
7. Fordyce W. Back pain, compensation and public policy. In: Rosen JC, Solomon LJ, eds. *Prevention in Health Psychology*. Hanover: University Press of New England; 1985:390-400.
8. Teasell R. Compensation and chronic pain. *Clin J Pain*. 2001;17: S46-S51.
9. Lysgaard A, Fonager K, Nielsen C. Effect of financial compensation on vocational rehabilitation. *J Rehabil Med*. 2005;37(6):388-391.
10. Koljonen P, Chong C, Yip D. Difference in outcome of shoulder surgery between workers' compensation and nonworkers' compensation populations. *Int Orthop*. 2007;33(2):315-320.
11. Higgs P, Edwards D, Martin D, Weeks P. Carpal tunnel surgery outcomes in workers: effect of workers' compensation status. *J Hand Surg*. 1995;20:354-360.
12. Kennedy C, Haines T, Beaton D. Eight predictive factors associated with response patterns during physiotherapy for soft tissue shoulder disorders were identified. *J Clin Epidemiol*. 2006;59(5):485-496.
13. Gabbe B, Cameron P, Williamson O, Edwards E, Graves S, Richardson M. The relationship between compensable status and long-term patient outcomes following orthopaedic trauma. *Med J Aust*. 2007;187(1):14-17.
14. Sander R, Meyers J. The relationship of disability to compensation status in railroad workers. *Spine*. 1984;11:141-143.
15. Turk D, Okifuji A. Perception of traumatic onset, compensation status, and physical findings: impact on pain severity, emotional distress, and disability in chronic pain patients. *J Behav Med*. 1996;19(5):435-453.
16. Gallagher R, Myers P. Referral delay in back pain patients on worker's compensation: costs and policy implications. *Psychosomatics*. 1996;37(3):270-284.
17. Bogduk N, Merskey H. *Classification of chronic pain: descriptions of chronic pain syndromes and definitions of pain terms*. 2nd ed. Seattle: IASP Press; 1994.
18. Schurmann M, Gradl G, Rommel O. Early diagnosis in post-traumatic complex regional pain syndrome. *Orthopedics*. 2007;30:450-456.
19. Cross M, March L, Lapsley H, Byrne E, Brooks P. Patient self-efficacy and health locus of control: relationships with health status and arthritis-related expenditure. *Rheumatology*. 2006;45:92-96.
20. Hall H, McIntosh G, Melles T, White A. Outcomes of surgeons who have undergone spine surgery. *J Spinal Disord*. 1997;10(6):518-521.
21. McGuirk B, Bogduk N. Evidence-based care for low back pain in workers eligible for compensation. *Occup Med*. 2007;57:36-42.
22. Williams AC, Richardson P, Nicholas M, Pither C, Harding V, Ridout K, et al. Inpatient vs. outpatient pain management: results of a randomised controlled trial. *Pain*. 1996;66(1):13-22.
23. Seligman M, Steen T, Park N, Peterson C. Positive psychology progress: empirical validation of interventions. *Am Psychol*. 2005;60(5):410-421.

24. Roland M, Morris R. A study of the natural history of back pain. Part 1: Development of a reliable and sensitive measure of disability in low back pain. *Spine*. 1983;8:141-144.
25. Lovibond S, Lovibond P. *Manual for the Depression Anxiety Stress Scales*. 2nd ed. Sydney: Psychology Foundation; 1995.
26. Roelofs J, Goubert L, Peters M, Vlaeyen J, Crombez G. The Tampa Scale for Kinesiophobia: examination of psychometric properties in patients with chronic low back pain and fibromyalgia. *Eur J Pain*. 2004;8:495-502.
27. Nicholas M. The pain self-efficacy questionnaire: taking pain into account. *Eur J Pain*. 2007;11(2):153-163.
28. Levoska S, Keinänen-Kiukaanniemi S. Active or passive physiotherapy for occupational cervicobrachial disorders? A comparison of two treatment methods with a 1-year follow-up. *Arch Phys Med Rehabil*. 1993;74(4):425-430.
29. Haldorsen E, Grasdøl A, Skouen J, Risa A, Kronholm K, Ursin H. Is there a right treatment for a particular patient group? Comparison of ordinary treatment, light multidisciplinary treatment, and extensive multidisciplinary treatment for long-term sick-listed employees with musculoskeletal pain. *Pain*. 1992;95:49-63.
30. Guzmán J, Esmail R, Karjalainen K, Malmivaara A, Irvin E, Bombardier C. Multidisciplinary bio-psycho-social rehabilitation for chronic low back pain. *Cochrane Database Syst Rev*. 2002;1:CD000963.