

Chapter 2

Multidisciplinary Approach to Pain Management

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In 1996 the International Association for the Study of Pain defined pain as “an unpleasant sensory and emotional experience associated with actual and potential tissue damage or described in terms of such damage.” An estimated 50 million Americans live with chronic pain caused by disease, disorder, or accident. An additional 25 million are treated for acute pain related to surgery or accidental injury (National Pain Survey 1999). Approximately two-thirds of these patients have been living with pain in excess of 5 years. The loss of productivity and the quality of life due to pain is substantial (Chronic Pain America 1999). Million and even billions of dollars are lost from habitual health care utilization and disability compensation. In a study done in 2000 (Merck 2000), it was reported that 36 million Americans missed work in the previous year due to pain and 83 million indicated that the pain affected their participation in various activities.

In 1986, Koch estimated that 70 million office visits to physicians were motivated by pain complaints (Koch 1986). A 1994 estimate indicated that approximately one-fifth of adult population experience chronic pain and in 1999, Market Data Enterprise estimated that 4.9 million individuals saw a physician for chronic pain treatment (Joranson and Lietman 1994, Market Data Enterprise 1999). These statistics indicate that pain and its under treatment represents a major problem confronting society.

Acute pain is elicited by the injury of body tissues and activation of nociceptive transducers at the site of local tissue damage. The goals of acute pain management are to eliminate pain and to restore the patient's ability to function as rapidly as possible. Chronic pain is also elicited by an injury but may be perpetuated by factors that are both pathogenically and physically remote from the originating cause. Chronic pain is characterized by low levels of underlying pathology that does not correspond to the presence or extent of the pain experienced by the patient. Chronic pain prompts patients frequently to seek health care and it is rarely effectively treated in a primary care setting. Of the patients with chronic pain one-half to two-thirds are partially or totally disabled which all too often may become permanent. After the pain has become chronic its total eradication may be unrealistic.

Traditional biomedical methods of treating chronic pain have proven unsatisfactory both from the patients' and providers' prospective and this fomented a demand for effective therapy (Loeser). John Bonica first appreciated the need for a multidisciplinary approach to chronic pain during World War II after several months of experience in treating military personnel with the variety of pain problems (Loeser). Bonica put the concept of the multidisciplinary approach for the diagnosis and therapy of complex chronic pain problems during

his practice at Tacoma General Hospital. This became the world's first multidisciplinary clinic. The group consisted of specialists who had developed interest and expertise in pain management and included an anesthesiologist, a neurosurgeon, an orthopedist, a psychiatrist, an internist, and a radiation therapist.

The importance of the multidisciplinary approach to the management of chronic pain has been emphasized by two important task groups, one in the United States and one in Canada. The Quebec Task Force suggested that if management by the treating physician specialist was not successful and the patient still had pain after 3–6 months, the patient should be referred to a multidisciplinary team, which should focus primarily on psychosocial and psychological elements on the premise that these factors are primarily responsible for the persistence of the pain.

Most multidisciplinary pain programs focus on patients who manifest chronic pain behavior and disability long after healing process should have been completed and have no treatable structural pathology. These principles of multidisciplinary diagnosis and treatment should be applied to patients with obvious chronic pathology not amenable to surgical or medical therapy, such as arthritis, cancer, deafferentation pain, and other chronic pain syndromes. Chronic pain that is not adequately treated causes the patient to develop psychological, psychosocial, and behavioral problems as well as progressive physical deterioration with marked interruption of activities of daily living.

Treating physicians who have been unsuccessful with the first or at most the second attempt in using surgery or medical therapies in managing complex pain problems are encouraged to refer such patient to a multidisciplinary pain center that can carry out a coordinated effort to establish a diagnosis and develop an effective treatment strategy.

Multidisciplinary Pain Assessment

The objectives of multidisciplinary pain assessment are to (1) identify those patients who could benefit from a physical and psychological rehabilitation program based on cognitive behavioral principles of effecting behavioral change and pain reduction, (2) to rule out those patients who have a medical or psychological contraindication to such a program, and (3) to identify other, perhaps more effective methods of treatment and to help establish appropriate therapeutic goals.

Pain center referrals from primary care physicians are usually made by either a letter or a telephone call from another physician or on occasion from another type of health care provider. The pain center physician may accept the patient for multidisciplinary evaluation, for emergency treatment, and for a consult, ask additional information, reject the patient, or the patient may have unresolved medical problem that should be addressed before referral to a pain center. Once referral is established to a multidisciplinary program the initial screening evaluation consists of medical and psychological evaluation, review of patients' diaries, referral letter, medical records, and spouse interview.

Description of Multidisciplinary Pain Process:

Concepts of treatment at multidisciplinary pain clinics include

- reconceptualization of the patient pain and associated problems from uncontrollable to manageable;
- overt to covert efforts are made to foster optimism and combat demoralization;

- flexibility is the norm with attempts to individualize some aspects of treatment to patient's needs and unique physical and psychological characteristics;
- emphasize active patient participation and responsibility;
- provide education and training in the use of specific skills such as exercise, relaxation, and problem solving;
- encourage feelings of success, self-control, and self-efficacy;
- encourage patients to attribute success to their own role.

Programs usually emphasize physical conditioning, medication management, acquisition of coping and vocational skills, and gaining knowledge about pain and how the body functions. Individual and group counseling addresses patient needs. In contrast to traditional Western health care, the emphasis is on what the patient accomplishes, not on what providers accomplish. The providers can be teachers, coaches, and sources of information and support.

Multidisciplinary pain management requires the collaborative efforts of many health care providers including but not limited to physicians, psychologists, physical therapists, occupational therapists, vocational counselors, social workers, ergonomists, and support staff.

Facilities

The facilities for a multidisciplinary pain treatment program can exist within a large hospital or medical center or they can be free standing. They can be associated with academic centers or private practice scenarios.

Patient Treatment Strategies

Each patient will present with different mixtures of functional limitations, pain behaviors, affective disturbance, physical disability, and vocational dysfunction. The original multidisciplinary pain management programs were all inpatient based. It is now apparent that outpatient programs can be equally successful if they have adequate intensity and duration (Turk et al. 1993).

There are no controlled studies to determine the optimal duration of treatment and hours per day, nor does the literature reveal which aspects of the various components are most important for a treatment program. It is clear that the effects of multidisciplinary pain treatment program are greater than the sum of its parts. Common features of all programs include physical therapy, medication management, education about how the body functions, psychological treatment (e.g., coping skills learning, problem solving, communication skill training), vocational assessment, and therapies aimed at improving function and the likelihood of returning to work. The overall length of a program depends in part on unique patient requirements. Typical programs operate 8 h a day, 5 days a week and last 3–4 weeks, although some programs meet less frequently and last for longer periods.

Role of the Physicians

The physicians are responsible for the initial history, physical examination, review of outside records, determination of the need for any future diagnostic tests. Other responsibilities of the physicians include:

- detailed assessment of the patient's medication history;
- implementation of medication management;

- reviewing the medical issues and the findings in diagnostic tests and imaging studies with the patient;
- education of the patient and legitimizing all of the other components of the program.

Role of The Psychologists

Roles of the psychologists are as follows:

- conducts the initial psychological evaluation;
- monitors and implements the cognitive and behavioral treatment strategies;
- teaches the patient coping skills;
- educates patients about the relationships among thoughts, feelings, behavior, and physiology;
- leads both individual and group educational and counseling sessions for the patients.

Role of the Nurse

The nurse is a key part of the treatment program and plays a major role in patient education regarding topics such as medication, diet, sleep, hygiene, and sexual activity. Another nursing function is assisting patients in the practice of newly learned skills, assessing medication response, and acting as a focal point of communication to coordinate patient care. The role of the nurse varies with their skills and the interaction with other providers. Since the nurses tend to be with patients throughout their active treatment course, they are a focal point for continuity in the treatment program.

Role of the Physical and Occupational Therapists

Physical and occupational therapists provide assessment and active physical therapy for patients to improve their strength, endurance, and flexibility. They do not provide passive modalities for treatment. Therapists assist the patient in developing proper body mechanics and strategies for coping with the physical demands of a job and everyday life. They function mainly as teachers and coaches.

The occupational therapists review the patient's work history, disabilities, and factors that may play a role in determining the ability of the patient to return to the work force. They help in the establishment of "work-hardening" and training activities.

Some programs heavily emphasize ergonomic issues and use high technology in physical therapies; however, the need for this type of treatment is unclear.

Role of the Vocational Counselor

The vocational counselor plays a critical role in the treatment of patients for whom return to work is a treatment goal. Initial assessment occurs as part of the screening process, but in-depth evaluation of interest, education, aptitude, physical capacities, learning capabilities, work experience, transferable skills, and vocational goals occurs on entry into the treatment program.

The goals are to identify vocational opportunities and barriers to effective employment. In addition to occupational counseling, the vocational counselor provides job-seeking skills

training, placement counseling, job hardening, and information about educational options and liaisons services.

Treatment Principles

General Goals of the Multidisciplinary Pain Center (MPC)

- Identification and treatment of unresolved medical problems
- Elimination of inappropriate medications
- Symptomatic improvement
- Restoration of physical functioning
- Restoration of social and occupational functioning, social integration, and return to productive employment
- Reduction in use of the health care system
- Improvement in coping skills, foster independence

Principles of MPC Program

The single most important ingredient is the existence of health care providers who are willing to work as a team. The health care providers must care about chronic illness and not be totally locked into acute diseases as is fostered by the biomedical model. The commitment of the provider to the patient is essential. Patients must want to change their lives and must be willing to give the program a try. They must recognize that in this type of program the patients do the therapeutic work. The treatment is the start of a journey to reclaim one's life; long-term support is required to keep the patient on the road to recovery. The attempt to treat the untreatable leads to demoralization of the treatment team. Patients must be properly selected.

Physical Therapy

Physical therapy uses behavioral medicine principles and engages few, if any passive modalities (Turk et al. 2000). Biofeedback can be a useful adjunct because it teaches the patient that he or she can gain control over various bodily functions. The emphasis is on improving strength, endurance, and flexibility through the patient's physical activities. The therapist provides instruction, guidance, safety, and encouragement.

Medications

Medication is given on a time-contingent basis to uncouple the reinforcement of pain behavior medication. In general, patients in an MPC program do not derive adequate pain relief from analgesic medication, and thus they are usually tapered. This technique is simply a method of converting all opioids to an equivalent dose of sustained acting opioids or methadone. The dose is then tapered over the period of treatment, always with the full knowledge of the patient. Most medications may be discontinued; the common exceptions are antidepressants, which often help chronic pain patients. Pain clinics may also discourage long-term use of other medications both because of their potential side effects and because their use undermines the philosophical concept that the patient must learn to control his or her pain and not depend on health care providers or their prescriptions.

Psychological Strategies

Generally, the aim is to alter behavior rather than change the patient's personality. Patients learn coping skills because this is frequently a deficiency that has led to the patients many difficulties.

Another important aspect of multidisciplinary pain management is education. This is an activity shared by physicians, psychologists, and nurses. Topics cover a wide array of the problems facing those who suffer from chronic pain. Subject selection and content can be tailored to the needs of each group of patients, but a core set of issues to be discussed includes:

- Stress treatment
- Relaxation training
- Coping skills
- Anger treatment
- Pain behavior
- Sleep disorder
- Physiology of stress
- Assertion training
- Cognitive strategy
- Communication skills
- Dealing with depression
- Crisis management
- Cost/meaning of pain

Outcomes

Several epidemiologic studies have examined the characteristics of patients treated at MPC as compared to patients with chronic pain not treated at MPC facilities (Crook et al. 1986, Crook et al. 1989). The patients treated at MPCs had reports of constant pain, high levels of emotional distress, work-related injuries, significantly lower levels of education, high levels of health care utilization, high levels of opioid use, high levels of functional impairment, and negative attitudes about the future.

Criteria for Treatment Success

The evaluation of treatment success must include several considerations listed below:

1. *Pain reduction*: The most common criterion measure of outcome in various treatment approaches for pain problem. Dvorak and colleagues studied 575 patients who were operated on lumbar disk herniation and concluded that 70% continued to complain of back pain 4–17 years after surgery (Dvorak et al. 1988). Pain reduction following treatment at MPCs ranged from 20 to 40% (Flor et al. 1992). Studies investigating the long-term maintenance of pain reduction observed at discharge tend to be maintained at follow up of up to 2 years. In a direct comparison, Gallon showed that only 17% of the surgical patients viewed themselves as improved as compared to 38% of non-surgical-treated patients.
2. *Iatrogenic complications*: Surgical procedures themselves sometimes may cause additional problem that may require repeat surgery. In a series of 78 surgical patients, Long et al.

observed that 11.6% developed serious complications from the procedure. In contrast to surgery, MPCs rarely report any significant iatrogenic problems following treatment.

3. *Elimination or reduction of opioid medication:* Flor et al. found that over 50% of patients treated at MPCs were taking opioid medication on admission (Flor et al. 1992). Because of potentially detrimental effects of opioids and attempts to encourage self-initiated pain treatment elimination or reduction of opioids intake is an important part of most multidisciplinary treatment programs.

In general, MPCs appear to be effective in eliminating or greatly reducing opioid intake in chronic pain patients. Studies report that up to 100% of patients decrease opioid use by the time of treatment terminations at MPCs. Over 65% of treated patients remain opioid-free at 1-year follow up.

4. *Utilization of health care system:* MPCs effectively reduce utilization of the health care system following treatment. About 60–90% of patients did not seek any additional treatment for their pain during a 3–12-month post-treatment period. Compared to conventionally treated patients (i.e., medication and/or surgery), MPCs consistently show superior rate of reduced health care utilization (Fig. 2.1).
5. *Increase in activity:* According to quantitative review of outcome studies (Flor et al. 1992), substantially greater increase in activity level occurred in patients treated at MPCs (65%) compared to conventionally treated patients (35%).
6. *Return to work:* Although return to work is an important outcome as it has significant socioeconomic implications, several factors impede patient's return to work aside from their pain. Return to gainful employment for chronic pain patients depends on factors such as local economy, job availability, and the aggressiveness of care managers. The average time off from work is 7 years. Skills that were useful prior to the pain onset may be outdated making patients less marketable. The results of 11 studies with 259

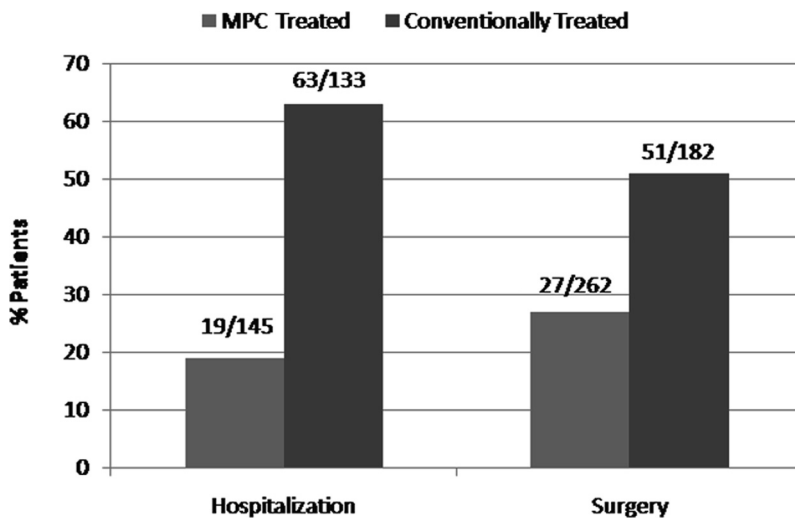


Figure 2.1 Frequency of patients receiving additional surgery and hospitalization following treatment: comparisons between multidisciplinary pain center (MPC) and conventional treatments. Modified from Loeser and Turk (2001, p. 2075).

conventionally treated and 435 MPC-treated patients indicate the rate of returning to work among treated patients is substantially higher (67%) when compared to the rate among the untreated patients (24%).

7. *Closure of disability claims:* Chronic pain is costly for society due to loss of productivity and disability payments to patients. Painter et al. followed patients for a longer period and reported that the proportion of patients receiving compensation declined from 70 at admission to 45% at 2-year follow up.

Cost-Effectiveness of MPCs

Treatment at MPCs results in impressive reduction on health care utilization. Simon and colleagues reported a 62% reduction of medical costs as a result of treatment at MPCs. Using the figure of 176,000 patients treated at MPCs annually, the estimated medical cost saving during the first year following treatment at MPCs well over 1.87 billion dollars. The average age of patients treated at MPCs is 45 years and assuming a mean life expectancy of 75, the estimated saving in 30 years would be 45 billion dollars (Flor et al. 1992). As a result of treatment at MPCs there is a significant decline in the proportion of patients receiving disability compensation which translates to savings of billions of dollars.

Systematic comparison of cost-effectiveness across different modalities needs a common index. The index of cost-effectiveness can be defined as:

$$\text{Cost-effectiveness} = \frac{\text{improvement}}{\text{cost of treatment}} \times 100$$

Using the return to work rate as the improvement score, the cost-effectiveness index score for each treatment modality is shown in Fig. 2.2.

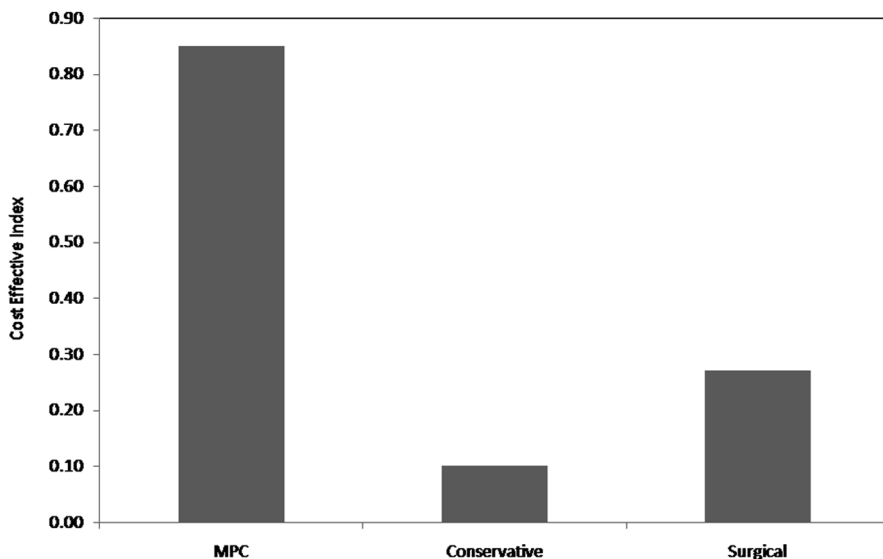


Figure 2.2 Cost-effective index by treatment modalities; MPC = multidisciplinary pain center. Modified from Turk and Okifuji (1998).

The cost-effectiveness index score of MPCs treatment far exceeds medical and surgical treatment. In fact, based on the index scores, multidisciplinary treatment can be considered nine times as cost-effective as conservative treatment and three to six times as cost-effective as surgical treatment in helping patients return to work.

Flor et al. concluded that “overall MPCs are efficacious. Even at long-term period, patients who are treated in such a setting are functioning better than 75% of a sample that is either untreated or that has been treated by conventional unimodal treatment approach.”

Conclusion

A substantial body of literature supports the assertion that multidisciplinary pain treatment is effective in reducing pain, the use of opioid medications and health care services. Multidisciplinary pain management also increases activity, improves activity of daily living, returns people to work, aids in the closing of disability claims. Eventhough treatment at MPC targets patients with the most recalcitrant problem, the benefits appear to exceed those for conventional treatments such as surgery. Moreover in contrast to surgery there are no known iatrogenic complications of treatment at MPCs. Not only do MPCs appear to be clinically effective, but they also appear to be cost-effective, with the potential to provide substantial savings in health care costs and disability payments.

The treatment principles developed in MPCs should be applied much earlier in the management of chronic pain patients. It is also important to remember that prevention is always better than remediation. Even for patients who have been disabled for prolonged periods, multidisciplinary pain management can offer restoration to normal life.

Case Scenario

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Vincent is a 54-year-old artist who has made significant contributions to the world of art in the recent past. About 9 months ago, he was involved in a fight at a local bar and an assailant stabbed him in the left shoulder. Although the injury was deep, he underwent immediate surgery and his shoulder injury was repaired without much problem. He had an uneventful recovery. However, after discharge from the hospital, he continued to suffer from pain in the left shoulder, which slowly started to involve his left arm. He was under the care of his primary care physician who prescribed him various analgesics, physiotherapy, TENS, and even suggested acupuncture. Unfortunately, he failed to respond to all these therapeutic measures. He was then referred to the pain physician who found that Vincent's initial injury had healed well, and noted a few trigger points over his left shoulder which he treated with injections. He yet again failed to respond. He was then started on gabapentin without any improvement; in fact, he became depressed. His misery was compounded by the fact that he used his left hand to hold the brush while he painted. Now he has opted to undergo the pain management program and is here to consult you as a pain specialist.

Do you think this referral is appropriate?

Vincent's pain is persisting long after the resolution of the primary injury, and there is nothing in the history suggesting any ongoing complications of the injury (which you

may have to rule out). The conventional treatment strategies have obviously failed. Hence, this referral is justified at this point.

Q. How will you assess the suitability of Vincent for the pain management program?

Initial screening evaluation consists of medical and psychological evaluation and review of patient's diaries, referral letter, and medical records.

Vincent's clinical examination reveals a long scar on his left shoulder (which looks well healed) and a small patch of skin with sensory loss over the shoulder. There are no signs of complex regional pain syndrome (CRPS). He tells you that the pain is a constant ache with sharp shooting episodes during the night which is "worrying him a lot" and "keeps him awake." The pain score varies from 5 to 8 out of a maximum of 10. He is worried about moving his neck for fear of worsening of the pain. His medications include acetaminophen, codeine, oral morphine, tramadol, and gabapentin. He mentions that he feels sleepy during the day ever since he has started taking gabapentin. His appetite has increased and he has "put on a several pounds." Vincent feels that the medications are harming his creativity.

The pain center psychologist further assesses Vincent. The interview reveals that Vincent is suffering from depression which was present even before the injury. He is upset that the pain is preventing him from going out and painting outdoors. At the end of the evaluation and in consultation with your team, you conclude that Vincent is a suitable candidate for the multidisciplinary pain management program.

Describe your multidisciplinary pain management process for Vincent?

The emphasis of the strategies would be on physical conditioning, medication management, acquisition of coping and vocational skills, and gaining knowledge about pain and how the body functions. Vincent needs counseling addressing his needs. The most important aim is to change Vincent's pain from uncontrollable to manageable.

It is advisable to have realistic expectations regarding the outcome from the program. Vincent tells you that he is really upset that he cannot use his left hand effectively to paint and he would be happy if he could do so for at least an hour a day.

As a physician, you are responsible for implementation of medication management. How are you going to achieve this?

Pain medications should be given on a contingent basis to uncouple the reinforcement of pain behavior and medication. Patients in the MPC program do not derive adequate pain relief from analgesics. An attempt to taper the pain medications by means of the pain cocktail technique should be made. Instead of multiple opioids, generally a single long-acting medication should be prescribed.

It is worth considering stopping gabapentin altogether. Gabapentin is not currently indicated and furthermore can cause side effects such as increased appetite and disturbed sleep patterns which can further aggravate his symptoms. He might benefit from an antidepressant to help with depression and pain symptoms.

Vincent undergoes the MPC program whole-heartedly and cooperates with the multidisciplinary team, which includes physical therapists, pain nurses, and vocational counselors. He learns more about his body and the basic mechanism of chronic pain, which helps him to get over the fear of losing his livelihood. He learns to paint with his right hand with the help of the occupational therapist, and at the end of the program he is able to go out into the open and paint landscapes. Though he still has pain, it no longer bothers him. The MPC program has been a great success for him.

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