

Addiction and the Treatment of Pain

PENELOPE P. ZIEGLER

Williamsburg Place and the William J. Farley Center, Williamsburg,
Virginia, USA

Persons experiencing pain, whether acute or chronic, seek and deserve relief from their discomfort and loss of function. However, opioid analgesics have the capacity to induce tolerance, physical dependence, and addiction. Furthermore, persons with a history of opioid use disorders or other substance misuse problems are at “high risk” when they acquire painful conditions requiring aggressive treatment. Prescription of opioids could trigger a relapse to the original drug of choice or could initiate a new bout of addiction with the prescribed drug. This article explores the relationship between addiction and pain, including signs of developing addiction and approaches to managing pain in those with addiction.

Keywords pain; addiction; opioids; relapse; tolerance

Introduction

Patients experiencing physical pain, whether acute or chronic, are entitled to the most effective and rapid relief from discomfort possible. This principle is now so widely recognized that pain has come to be referred to as the “fifth vital sign” in hospitals and doctors offices, and treatment planning always takes into consideration the patient’s level of physical discomfort and how it is to be relieved (Campbell, 1995). However, it is also recognized that many of the medications used for relief of pain, primarily the opioids and certain sedatives, have the potential to cause problems regarding the development or exacerbation of addictive disorders. This article reviews two aspects of the problem: (1) treatment of pain in the patient with a preexisting alcohol or other drug dependency and (2) recognizing when the patient being treated for pain has developed a substance use disorder that requires additional treatment. Opioids and sedatives do have the potential to trigger relapse in recovering persons. The following case studies will illustrate how this occurs in a variety of ways.

Case One: Bruce is a 56-year-old recovering alcoholic who has been sober for 3 years. He used to go to Alcoholics Anonymous (AA) meetings several times weekly, but now goes only rarely. His sponsor moved away and he never got around to getting a new one. His dentist prescribed hydrocodone following a dental procedure. After the third dose, he began “craving” a drink. That night he dreamed about going to his favorite bar and enjoying a good time with his old drinking buddies. The next day he stopped by the bar for a few drinks. He had no trouble stopping and began thinking that perhaps he could return to “social drinking” after all. However, within 2 weeks Bruce was drinking in an out-of-control pattern again. He had stopped taking the hydrocodone as soon as his tooth pain resolved.

Address correspondence to Penelope P. Ziegler, Williamsburg Place and the William J. Farley Center, 5477 Mooretown Rd., Williamsburg, Virginia 23188, USA. E-mail: penzig@aol.com

Bruce's wife contacted his sponsor, who came to the house to talk with him and took him to an AA meeting. His wife and sponsor encouraged him to see his addiction psychiatrist for assistance in dealing with the relapse. Bruce's doctor encouraged daily attendance at AA and, because cravings were clearly involved in the return to active drinking, started him on a trial of both naltrexone 50 mg daily and disulfiram 250 mg daily. Bruce's wife agreed to supervise him taking his daily dose of these medications and to keep a chart of the dose, along with any adverse effects, cravings, and drinking dreams. Within 2 weeks, all cravings and dreams had stopped.

Bruce and his sponsor were able to discuss the relapse and Bruce's shame and guilt over returning to drinking. Bruce was also able to contact his dentist, describe his reaction to the opioid medication, and how this was not an unusual response in a recovering alcoholic and request that the dentist make a note in his chart not to prescribe opioid medications in the future without consulting with Bruce's addiction psychiatrist. In fact, because dental pain is usually related to inflammation and swelling, it can in most cases be managed with anti-inflammatory medications.

Case Two: Louise, a 40-year-old abstinent heroin addict who has attended Narcotics Anonymous (NA) for 10 years, underwent abdominal surgery following an automobile crash. The pain medications administered following surgery did not fully control her pain because of her preexisting tolerance. The nursing staff misinterpreted her legitimate complaints of pain and overuse of the patient-controlled analgesia unit as "drug-seeking behavior." The nurses "reported" her to the doctor, who lectured her about the dangers of drug use and discharged her from the hospital early with no pain medication prescription. She left the hospital with significant abdominal pain and major emotional distress over the way she was treated. On the way home, she visited her old drug dealer and began using heroin again.

Over the next 3 weeks, Louise's drug use escalated until she was using several bags of heroin daily and had developed a small ulceration at the site of one injection site on her arm. She became very depressed and hopeless as she realized she was again trapped in the cycle of active addiction. As her tolerance increased, she knew she would have to return to prostitution to obtain enough drugs, and she desperately wanted to avoid this. She went to the hospital emergency room requesting help and was seen by the crisis mental health worker, who determined she was dangerous to herself and qualified for admission to the inpatient psychiatric service. There she was started on a buprenorphine medical withdrawal protocol and evaluated by an addiction psychiatrist, who felt she had an adjustment disorder with depressed mood and a substance induced depression. After completing medical withdrawal and receiving treatment for her skin infection, she was referred to an extended residential program which includes Twelve Step meetings, group therapy, job training, and anger management training.

Case Three: Georgia, a 25-year-old woman with a history of cocaine and methamphetamine dependence, saw her doctor about headaches and was prescribed a butalbital/acetaminophen combination tablet. Within 2 weeks she was taking 10 tablets daily and "doctor shopping" for multiple prescriptions. She tried to stop taking the pills, but she had a grand mal seizure. She then resumed taking the pills and was arrested for trying to pass forged prescriptions. She had no prior history of "abusing" sedative drugs. One of the three pharmacists who had filled prescriptions for her for butalbital/acetaminophen became suspicious when she came in for the second time in 1 week with a prescription from a second doctor. He contacted the physician and asked if he was aware that Georgia had another doctor who was also prescribing butalbital/acetaminophen. The physician then contacted Georgia and recommended that she enter a rehabilitation program.

She required a medical withdrawal procedure with phenobarbital due to her history of seizures. After completing the medical withdrawal, she participated in 2 weeks of residential intensive rehabilitation which included group therapy centered on addiction recovery as well as acupuncture treatments and massage therapy for her tension headaches, daily exercise program with stretching, strength training and cardiovascular activities, and weekly pain management process group. On discharge from the residential program, she continued to see the acupuncture therapist weekly, to attend Narcotics Anonymous, to attend a weekly addiction relapse prevention group, and to attend a weekly pain management group.

These cases illustrate how pain medications can precipitate craving for and relapse to the original substance of choice, can reactivate the original addiction, or can set off an addiction to a previously unknown substance; also discussed are various approaches to managing these reactivations of addictive disease.

Safe Treatment of Pain for the Recovering Addict

Recovering alcoholics and addicts in pain can, however, be treated safely. For acute pain syndromes, such as postoperative pain, following trauma, after dental work, etc., use of opioids may be indicated to control severe pain and achieve optimal relief. However, many recovering persons have increased tolerance to the effects of the opioid drugs and may require higher than average doses for appropriate effect (Savage, 2003). It is best to administer the drugs on a timed schedule rather than as needed or "prn." This removes the decision about when the next dose is needed from the patient, along with the tendency to escalate the dosage. Patient-controlled analgesia is generally not recommended for persons recovering from addictive disorders. Whenever possible, opioid medications should be held and administered by a trusted other person to remove the potential for dosage escalation.

As soon as possible, the patient should be converted to a non-opioid regimen such as an NSAID, combined with heat, ice, physical therapy, and/or other complementary interventions. Injectable ketorolac is a potent pain reliever, but its use is time-limited by potential renal, hepatic, and gastrointestinal side effects.

During a bout with acute pain, the recovering alcoholic/addict will need increased support from his or her ongoing recovery program. If possible, daily contact with sponsor and other members of the recovery fellowship can assist the patient to talk about drug cravings, feelings of sadness, anger, grief and loss, or fears about the future. Spiritual support can be provided in many ways, whether through the patient's own religious affiliation, the hospital chaplain, recovery-oriented reading materials, or opportunities to attend meeting held at the hospital. Twelve Step and other mutual help meetings can be brought into the patient's hospital room or home. Strengthening the support system may make all the difference in preventing a relapse. The abstinent addict or alcoholic who does not have an ongoing program of recovery is at high risk of relapse when exposed to opioid pain medications, sedative muscle relaxants, etc.

Chronic pain presents different and perhaps more challenging management situations. In developing a plan for pain management, the first step is a thorough assessment of all aspects of the patient's physical and emotional health and his or her recovery. This usually involves in-depth discussion and examination of the patient; a review of records from previous care providers; collateral contacts with significant persons in the patient's life, such as spouse or significant other, parents, children, or other relatives, friends, coworkers and current health care providers; urine toxicology with broad range of testing for substances including synthetic opioids, agonist/antagonist opioids, short-acting benzodiazepines and barbiturates, and over-the-counter substances such as diphenhydramine, ephedrine,

phenylpropanolamine, etc. The drug use history needs to explore alcohol use patterns, use of illicit drugs, prescription drugs and over-the-counter drugs, and use of herbal preparations and food supplements including “energy drinks,” “natural sleep aids” and other tonics.

Three medications that deserve special mention are carisoprodol, butalbital, and tramadol. These are prescription drugs that are not scheduled (i.e., do not require a DEA license for prescription). However, despite this fact, each is risky for addicted persons in recovery and, in fact, has been associated with de novo addiction. Carisoprodol is a muscle relaxant which is metabolized to meprobamate, a tranquilizer similar to diazepam. Butalbital is a short-acting barbiturate. Tramadol is a mu-receptor agonist opioid, which also appears to inhibit reuptake of serotonin and norepinephrine.

For the recovering person suffering from a chronic or recurring pain syndrome who is not currently taking opioids or sedatives, every effort should be made to develop a pain management plan which effectively controls the pain without these substances. A structured, written protocol (see sample protocol) provides a framework which decreases anxiety, increases the patient’s sense of active participation in and control of his or her own care, and gives the family and other caregivers a map to follow. Using a protocol greatly decreases the likelihood that the patient will seek treatment in the Emergency Department from providers unfamiliar with the clinical situation and inexperienced in treating recovering addicts.

In addition to standard pain medications, such as nonsteroidal anti-inflammatory agents (NSAIDS), acetaminophen, and migraine-specific drugs, such as triptans, a variety of novel approaches to pain management can be of particular benefit to the recovering individual (Table 1). Anticonvulsants, such as gabapentin or lamotrigine, have been shown to be helpful with neuropathic and musculoskeletal pain (McQuay et al., 1995). The use of low-dose tricyclics such as amitriptyline as adjuncts to pain management has been well documented (Fields, 1994). Complementary approaches, in particular acupuncture, biofeedback and hypnosis, are also very important pieces of the comprehensive pain management plan (Andersson and Lundeborg, 1995). For many patients, especially those who have already had positive experiences with group therapy, an outpatient group therapy approach with others living with chronic pain, led by a therapist trained in working with patients who have pain issues, can combine cognitive behavioral techniques and supportive interventions to help restore function and improve outlook and overall attitude toward physical disability (Flor et al., 1992).

Many chronic pain patients recovering from addiction have additional psychiatric disorders which also require treatment if the pain management strategy is to be successful.

Table 1

Complementary and/or alternative pain management modalities

-
- Acupuncture
 - Biofeedback
 - Neurofeedback
 - Massage therapy
 - Advanced physical therapy techniques
 - Chiropractic therapy
 - Energy work-reiki, therapeutic touch, etc.
 - Yoga
 - Meditation
 - Hypnosis
-

Some common comorbid illnesses include depression, anxiety disorders including post-traumatic stress disorder, other somatoform disorders, personality disorders and adjustment disorders, which may or may not be directly related to the pain syndrome. Commonly the pain is found to have both physical and psychological components, and aggressive treatment of co-morbid psychiatric illness can decrease the severity of the pain, improve the patient's adherence to the pain management strategy, and improve the patient's participation in and benefit from his or her addiction recovery program (Grinstead and Gorski, 1999; Ciccone et al., 2000; Rosenblum et al., 2003; Toomey et al., 1995).

When the pain is not responsive to such approaches, and opioids are required to control the patient's pain, it is essential that a structured plan be in place and a clear written agreement be developed, reviewed by all parties, and signed by the patient, the physician or physicians involved in the treatment, participating family members and other providers such as counselors, physical therapists, acupuncturists, etc. (Table 2). All controlled drugs should be prescribed by one physician, and all prescriptions filled at one pharmacy.

Table 2

Developing a pain management plan for the patient with a history of addiction

Step 1. Obtain a complete history of the patient's pain issues and addiction, including indepth interview with patient, review of all treatment records, contact with all current pain and addiction treatment providers, and, when appropriate, collateral contacts with family members, friends, business/ work associates, etc.

Step 2. Work with the patient to develop goals and objectives for treatment, which would include, but not be limited to:

- a. Decreased intensity of pain
- b. Improved mobility and ability to function in activities of daily living
- c. Improved ability to function in family and social groups
- d. Plan for returning to employment if feasible
- e. Stabilized abstinence and recovery program

Step 3. Identify persons who will participate in the treatment program (network).

This might include, but not be limited to:

- a. Pain specialist physician
- b. Addiction psychiatrist
- c. Pain therapist for group and individual therapy
- d. Addictions counselor
- e. Chiropractor
- f. Acupuncturist
- g. Physical therapist
- h. Massage therapist
- i. Family members
- j. Twelve Step sponsor
- k. Friends

Step 4. Prepare the written treatment agreement, and hold a group meeting with all members of the treatment plan network to review the Agreement, review participants' roles in the plan, and provide reassurance and support to the patient. Patient and primary treatment providers will sign the Agreement.

Step 5. Hold periodic group meeting to review progress or discuss problems with the Treatment Plan, make revisions to the Agreement as needed, and bring in new network members when indicated.

In general, the drug treatment regimen involves use of a long-acting opioid such as sustained release oxycodone or methadone, administered on a fixed dosage schedule, with someone else holding the medication. In addition, a “rescue” dosage of a short acting opioid such as oxycodone or hydrocodone may be available, again held by the participating family member, with clear guidelines for when it is to be used. Emergency Department visits are prohibited unless approved by the prescribing physician, with coverage arrangements clearly spelled out. Short-acting sedative drugs, such as butalbital and carisopridol, as discussed above, are not prescribed for addicted persons.

Other aspects of the protocol include only a single prescriber is involved, and prescriptions are written weekly at first with no refills, until there is demonstration of the patient’s ability to adhere safely to the protocol; all prescriptions are filled at the same pharmacy, and no prescriptions are called in by phone; lost, stolen, or damaged prescriptions or pills are not replaced. Throughout the development of the protocol, it is emphasized repeatedly that the purpose of the plan is to provide maximal pain relief while protecting the recovering person’s sobriety against the insidious reactivation of his or her disease.

Recognizing Addictive Disease in the Chronic Pain Patient

The patient who is receiving treatment for pain and who appears to be developing a substance use disorder may present in a number of ways in the primary care practice, hospital, or pain clinic (Table 3). The most common symptom of concern is escalating tolerance for the opioid and/or sedative medication accompanied by efforts to obtain more of the medication. This may begin as requests for increased doses or early refills, but often develops into other concerning behaviors:

When such behaviors appear in a patient with no prior history of chemical dependency, a reevaluation of the pain management approach is in order. Because *de novo* addiction to prescribed opioids in the absence of prior history of substance abuse is unusual (Fernandez and Turk, 1995), the patient may be displaying “addictive behavior” because his or her pain is not being relieved adequately by the current medication regimen, a phenomenon that has been called “pseudoaddiction” (Kouyanou et al., 1997). However, these behaviors should not be dismissed or minimized, because they may signal the early stages of a developing addiction.

Table 3
Warning signs of developing addiction in pain patients

-
- Escalating tolerance in absence of objective signs of uncontrolled pain
 - Requests for early refills
 - Reports of lost or damaged prescriptions
 - Reports of lost or stolen pills
 - Visits to multiple doctors
 - Visits to emergency departments
 - Stealing drugs or prescription pads from doctor’s office
 - Stealing drugs from relatives,’ friends’ medicine cabinets
 - Calling in or forging prescriptions
 - Buying controlled drugs over the Internet
 - “Abuse” of illicit substances or alcohol
-

An additional possibility is that the patient is behaving in this manner because of an unidentified psychological issue or psychiatric disorder. For example, a patient with a mixed anxiety disorder which includes a pattern of “catastrophizing” and obsessing might not be consuming the excess medication, but rather hoarding it just in case the pain gets worse, the drug store goes out of business, the doctor leaves town, etc. A depressed patient might be planning a suicide attempt, or a patient with insomnia might be storing up extra pills to take at night to help with sleep.

Patient: Jane Doe Physician: Dr. Smith Therapist: Susan Jones Acupuncturist: Dr. G.
Daily Activities for Pain Management:

1. Take following prescribed medications:
 - a. Methadone 50 mg twice daily
 - b. Vioxx 25 mg daily
 - c. Wellbutrin SR 150 mg twice daily at 8 AM and 1 PM
 - d. Neurontin 400 mg at 8 AM and 1 PM and 1200 mg at bedtime.
2. Keep a journal, recording level of physical pain, emotional distress, connection with support system and spiritual wellbeing every morning and every evening.
3. Stretching and relaxation exercises every AM and PM as prescribed.
4. Read meditation literature and try to meditate once daily.

Special Activities for Pain Management:

1. Acupuncture sessions three times weekly with Dr. G.
2. Weekly Living with Pain group with Susan Jones.
3. Individual therapy session weekly with Susan Jones.
4. Medication management session every 2 weeks with Dr. Smith.

Response to Intensified Pain:

1. With significant increase in pain, apply ice pack and take oxycodone 5mg.
2. Move around and stretch to relieve muscle cramping.
3. Contact Dr. Smith’s answering service at 444-555-6666 if pain is not improved in one hour.

Important Agreement Provisions:

1. All prescriptions are to be filled at Towne Pharmacy, 15 N. Main, 444-556-3456.
2. No replacements will be provided for lost pills or prescriptions.
3. Dr. Smith must prescribe all pain medications and must approve of all prescribed medications prior to you starting on them.
4. The Emergency Department of a hospital is not an appropriate place to seek help for an emergency related to your chronic pain. Contact the answering service for emergency assistance. If you should be taken to the Emergency Department for another reason, please request that the attending physician contact Dr. Smith prior to administering medications.

Jane Doe

Dr. Smith

Susan Jones

Dr. G.

Date

Figure 1. Sample treatment agreement.

The possibility that the patient is diverting the drug for another purpose, such as selling it or giving it to an addicted significant other, also must be considered. Persons with no prior history of antisocial or criminal behavior, and who are otherwise upstanding citizens, will engage in such behavior to obtain what they perceive as needed medications for those they love or money to help the family to survive hard times.

There is a controversy in pain medicine today about the issue of whether chronic administration of high-dose opioids leads not only to the development of tolerance to the pain relieving effects of the drug but also to the development of hyperalgesia. Animal models and some clinical studies suggest that this occurs as a result of a shutdown of the body's usual mechanisms for dealing with pain in response to the exogenous opioid administration and development of new pathways for pain perception which are not responsive to opioids or other intrinsic neurotransmitters (Weissman and Haddox, 1989). However, other researchers and clinicians dispute these findings and believe that high-dose opioid therapy is generally highly effective with a low risk of addiction or other complications. The primary concern of this group is undertreatment of pain, which has been shown to lead to behavioral variances, psychological difficulties, and deterioration of function (Doverly et al., 2001).

One approach to working with the pain patient who is seeking increased amounts of medication, but whose pain appears to be adequately controlled, is to use a written treatment agreement (Figure 1). This sets limits on the inappropriate dosage escalation, engages the patient as a monitor of his or her own behavior, and relieves anxiety, which can accompany the fear that the current medication might not be sufficient to control the pain. However, if the patient is unable or unwilling to comply with the treatment agreement, and the manipulative, noncompliant behavior persists, referral to an addiction specialist for evaluation of possible substance use disorder and treatment recommendations is indicated (Andersson and Lundeberg, 1995).

Summary

Medications used for the relief of pain, especially opioids, have the potential to exacerbate or reactivate preexisting addictive disorders. In some cases, their use can be associated with the development of de novo addictive disease. Alcoholics and addicts, though at higher risk than the general public, can be offered safe and effective relief for both acute and chronic pain if proper precautions and safeguards are used. This requires a familiarity with the phenomena of cross-addiction, substitution, craving and tolerance. In most cases, involvement of a specialist such as an addiction psychiatrist or other physician specializing in the treatment of addiction medicine can prevent complications. When the patient with pain begins to demonstrate warning signs of a developing substance use disorder (Table 1), early intervention, evaluation, use of appropriate pain management strategies and, when indicated, referral for addiction treatment can prevent severe negative outcomes.

RÉSUMÉ

Personnes éprouvant la douleur, si aigue ou chronique, cherchez et méritez le soulagement de leur malaise et perte de fonction. Cependant, les analgésiques d'opioïde ont la capacité d'induire la tolérance, la dépendance physique et l'addiction. En outre, personnes avec une histoire des désordres d'utilisation d'opioïde ou d'autres problèmes d'abus de substance sont au gros risque quand ils acquièrent des conditions douloureuses que exigent le traitement agressif. Prescription de les opioïdes ont pu déclencher une rechute à la drogue originale du choix, ou ont pu lancer un nouvel penchant avec le médicament prescrit. Cet article explore

rapport entre le penchant et la douleur, y compris des signes de se développer penchant, et il décrit approches de gestion à la douleur dans ceux avec le penchant.

RESUMEN

Las personas que sufren dolor, ya sea agudo o crónico, buscan y merecen alivio de su malestar y pérdida de su función. Sin embargo, los analgésicos que contienen sustancias derivadas del opio, tienen la capacidad de inducir tolerancia, dependencia física y adicción. Por consiguiente, las personas con historial de dependencia a esta sustancia se encuentran en alto riesgo cuando adquieren condiciones dolorosas que requieren tratamiento intenso. La prescripción de sustancias derivadas del opio podría provocar un recaimiento en el uso de la droga de su acostumbrada, o podría iniciar un nuevo ataque de adicción con la droga prescrita. Este artículo explora la relación entre la adicción y el dolor, incluyendo señales del desarrollo adictivo y acercamientos a controlar el dolor en aquellos con adicción.

THE AUTHOR



Penelope P. Ziegler, M.D., FASAM, is Medical Director of Williamsburg Place and The William J. Farley Center in Williamsburg, VA. She is a board-certified addiction psychiatrist and is also certified by and a Fellow of The American Society of Addiction Medicine. She is an Associate Clinical Professor of Psychiatry at Virginia Commonwealth University in Richmond, VA. Dr. Ziegler has worked in the addiction field since 1985. She is on the Board of Directors of the American Society of Addiction Medicine and the American Academy of Addiction Psychiatry. Her special interests include addictive disease in healthcare professionals, needs of women with addiction, the relationship of addiction and sexual trauma, and the

relationship of addiction and chronic pain.

Glossary

Addiction. A primary, chronic progressive disease, with genetic, psychological, and social factors contributing to its development, characterized by loss of control over use of substance(s), unsuccessful attempts to cut down or stop using, impaired function due to using, and distorted thinking, primarily denial.

Acute pain. Pain that has a duration of less than 6 months.

Alcoholics Anonymous. A fellowship of men and women who share their experience, strength and hope with each other to help themselves and others recover from alcoholism by using the 12 Steps.

Chronic pain. Pain that has a duration of 6 months or longer.

Craving. A desire or hunger for a substance, intense or subtle, but which diminishes or overrides the person's memory of negative consequences caused by using the substance.

De novo addiction. A new addictive disorder with no prior substance abuse or dependence in the patient's history.

Doctor-shopping. Obtaining prescriptions from multiple physicians and/or dentists for same or similar controlled substances.

- Drug-seeking behavior.* Derogatory term for patient's apparent efforts to manipulate staff into giving him/her more medication.
- Narcotics Anonymous.* A fellowship of men and women learning to live without drugs, a goal made possible through the Twelve Steps.
- Patient-controlled analgesia (PCA).* A system in which the patient regulates the amount of opioid delivered through an intravenous line by pressing a button when pain level increases.
- Preexisting tolerance.* The existence of a high level of tolerance to the effect of pain medication or anesthesia often seen in persons with a prior history of addiction to opiates or alcohol, even when these individuals have been abstinent for extended periods; it is now known that some persons have this tolerance prior to any use of substances.
- PRN.* "as needed," use of a medication, medication that is not used on a regular schedule.
- Somatoform.* A symptom experienced by the patient as a physical complaint, but which, cannot be fully accounted for by a known general medical condition.

References

- Andersson, S., Lundeberg, T. (1995). Acupuncture—from empiricism to science: functional background to acupuncture effects in pain and disease. *Medical Hypotheses* 45:271–281.
- Campbell, J. (1995). Pain: the fifth vital sign. Los Angeles, CA: Presidential address, American Pain Society.
- Ciccone, D. S., Just, N., Bandilla, E. B., Reimer, E., Ilbeigi, M. S., Wu, W. (2000). Psychological correlates of opioid use in patients with chronic nonmalignant pain: a preliminary test of the downhill spiral hypothesis. Departments of Psychiatry, UMD-New Jersey Medical School, Newark, NJ, USA. *Journal of Pain and Symptom Management* 20(3):180–192.
- Doverty, M., White, J. M., Somogyi, A. A., Bochner, F., Ali, R., Ling, W. (2001). Hyperalgesic responses in methadone maintenance patients. *Pain* 90:91–96.
- Fernandez, E., Turk, D. C. (1995). The scope and significance of anger in the experience of chronic pain. *Pain* 61:165–175.
- Fields, H. (1994). Pain modulation and the action of analgesic medications. *Annals of Neurology* 35(Suppl): S42–S45.
- Flor, H., Fidrych, T., Turk, D. C. (1992). Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain* 49:221–230.
- Grinstead, S. F., Gorski T. T. (1999). *Addiction-Free Pain Management*. Independence, MO: Herald House/Independence Press.
- Kouyanou, K., Pither, C., Wessely, S. (1997). Medication misuse, abuse and dependence in chronic pain patients. *Journal of Psychosomatic Research* 43:497–504.
- McQuay, H., Carroll, D., Jadad, A. R. (1995). Anticonvulsant drugs for management of pain: a systematic review. *British Medical Journal* 311:1047–1052.
- Portnoy, R. K. (1996). Opioid therapy for chronic nonmalignant pain: a review of critical issues. *Journal of Pain Management* 11:203–217.
- Rosenblum, A., Joseph, H., Fong, C., Kipnis, S., Cleland, C., Portenoy, R. K. (2003). Prevalence and characteristics of chronic pain among chemically dependent patients in methadone maintenance and residential treatment facilities. *JAMA* 2003 May 14; 289(18):2370–2378.
- Savage, S. R. (2003). Principles of pain management in the addicted patient. in *Principles of Addiction Medicine*. (3rd ed.) Chevy Chase, MD: American Society of Addiction Medicine, pp. 1405–1419.
- Schnoll, S. H., Weaver, M. F. (2003). Addiction and pain. *Am J Addict* 12(Suppl.):527–535.
- Toomey, T. C., Seville, J. L., Mann, J. D., Abashian, S. W., Grant, J. R. (1995). Relationship of sexual and physical abuse to pain description, coping, psychological distress, and health-care utilization in a chronic pain sample. *Clinical Journal of Pain* 11:307–315.
- Weissman, D. E., Haddox, J. D. (1989). Opioid pseudoaddiction: an iatrogenic syndrome. *Pain* 36:363–366.