

PRESIDENT'S MESSAGE

Lorena Pettet Payne, PT, OCS

Thank you to Margot Miller, PT, our OHSIG Past President. Margot Miller retired from her position as OHSIG President during the 2013 Combined Sections Meeting. During her 6-year term, members have benefited from her journalistic talents and deep knowledge of occupational health physical therapy. Margot has been instrumental in providing greater access to informative, educational articles, serving to advance knowledge and skills in occupational health. She facilitated communication with federal agencies and trade organizations, increasing the visibility of occupational health physical therapy. Her guidance has been invaluable to our specialty practice. We would like to publicly thank her for her hard work and look forward to her continued involvement as an active, contributing member of the special interest group.

The OHSIG will continue to serve as a resource to members and the world of work, advocating for partnerships that lead to productive, healthy, work environments. The OHSIG Board of Directors and members carry on the work to define the unique body of knowledge that we bring to the table. A simple survey will be in your mail box soon to assess the depth of interest for physical therapists in advancing occupational health physical therapy practice as a specialty. You are urged to respond as this will give needed information to continue the SIG's mission.

It is with some trepidation that I assume the position of Occupational Health Special Interest Group President. There is much to be done! Our single, most important goal is to be a resource for all things related to a healthy work force. You are always welcome to contact officers as listed on the Orthopaedic Section Web site under Special Interest Groups.

HOLISTIC EMPHASIS Part 2: Pain Management Epidemic

Chris Juneau PT, DPT, ATC, EMBA

Holistic Emphasis was printed in Orthopaedic Physical Therapy Practice 2012;24(1):37-38.

Since last year's publication of *Holistic Emphasis Part 1* much has changed in health care and workers' compensation. In 2012, the Affordable Health Care Act was passed (often referred to as Obama Care and/or Health Care Reform). In addition the legalization of medicinal cannabis in Colorado and Washington, with other states following closely behind occurred. The industry of occupational medicine and the very nature of workers' compensation continue to evolve and reform. Many states are adopting Official Disability Guidelines, and are becoming more focused on outcomes. Identifying and addressing the sources of dysfunction, with the intentions of achieving overall functional improvement are a priority. We are moving away from patient pain management, although it is a component to

address in fostering positive patient experiences and improving overall medical outcomes. Too often patients that experience an injury at work say their pain is improved, but they show no remarkable improvement in performing the activities of daily living or returning to work with pain management alone. More often than not, they are being prescribed medications, prescription after prescription, without notable functional improvement. If opioids aren't providing functional improvement, then they are providing more harm than good.

Pain management is common to physical therapy and specifically in the workers' compensation sector of occupational medicine. As clinicians, we strive to primarily address the source of pain and ultimately the dysfunction it creates. Pain subsequently needs to be managed. Pharmacology and pain management are addressed in physical therapy programs in order to prepare clinicians for the health care field. Although prescribing medications is outside of our scope of practice, an understanding of the effects of medication on the patient is essential for complete patient care. Like many of Occupational Health Special Interest Group's (OHSIG) subscribers and readers, I have personally experienced workers' compensation patients that have become dependent on opioids, and I failed to recognize the triggers and black flags at the time. Following the inspiring presentation by Scott Goold during the Workers' Compensation Association of New Mexico meeting this fall, I felt obliged to research this topic. We have a dual advocacy to holistically influence our patients and providers, improving the quality of life through patient education, therapeutic exercise, palliative and corrective care, as well as appropriately addressing medication and nutrition. Dorland's Medical Dictionary defines Holistic as pertaining to totality, or to the whole. Holistic health includes the physical, mental, social and spiritual aspect of a person's life as an integrated whole.¹

José Ortega, a prolific and distinguished philosopher once quoted, "An unemployed existence is a worse negation of life than death itself. Because to live means to have something definite to do, a mission to fulfill, and in the measure in which we avoid setting our life to something, we make it empty... Human life, by its very nature, has to be dedicated to something."² This quote summarizes the perceptions, psychosomatic issues, and social experiences encountered by many individuals who experience a musculoskeletal injury at work. Prior to the injury, this person was often the "bread winner" and "go to" person in his/her family. Now the individual is experiencing dependency or need for others to help. More-than-likely, this patient is earning significantly less than prior to the injury, yet their bills and responsibilities remain. Top this scenario off with pain, which influences behavior, potentially leading to the need to "take the edge off." Lower back pain is the most frequent condition for patients seeking care from Physical Therapists in occupational medicine and/or urgent care outpatient settings.² According to the American Medical Association, 80% of all people will experience back pain during their life.

According to the American Medical Association, “There presently is a DISABILITY epidemic in the United States.” Disability is so rampant and the psychosocial implications so pervasive, that disability has been termed a disease in and of itself. The number of workers on disability or “light duty” is growing faster than the population. Despite MILLIONS of dollars spent on research and ergonomic improvement in the work place, disability from back “injuries” has continued to increase, not decrease, as would be expected if bad ergonomics were simply the primary cause.² Here are some statistics and insights regarding the disability picture:

- US Social Security Data: 2008
 - Since 1978, America’s population increased 35%
 - American’s on government funded disability increased by 236%
- These “disabled” American’s are primarily middle-aged with common health conditions
- Primarily involve musculoskeletal dysfunction
- Thus the majority of this disability would seem to be preventable.³

Is this significant? Is there any correlation with disability, psychosocial aspects and pain management? At a glance, prescription medicines accounted for 1.3 million Emergency Room visits in 2010, whereas, ER admits concerning illegal drugs, accounted for 1.2 million in 2010.⁴ According to the U.S. Centers for Disease Control and Prevention, one person dies from a drug overdose every 19 minutes. About 37,000 Americans died after accidentally overdosing on legal or illegal drugs in 2009, according to the CDC; about half of those deaths involved prescription pain medication. Over 27,000 unintentional drug overdoses constituted death, including 12,000 opioid analgesics.^{4,5} These numbers are significant enough to make prescription drugs the leading cause of accidental death in this country. Substance abuse is a major health concern in the United States, with annual treatment costs in the billions of dollars. It also contributes to family problems, lost productivity, and crime.⁷ It is a statistic that has led some experts to call prescription drug abuse an epidemic.⁴

In occupational medicine and workers’ compensation, it’s not uncommon to meet someone or have a patient referred to you whom has suffered an injury or illness and then becomes dependent on the drugs prescribed to deal with the pain.⁴ As much attention as we dedicate to eradicating illicit drugs, such as cocaine or heroin, the truth is prescription medications kill more people in this country than all of these illicit drugs combined. Perhaps it is a perception issue: “It came from a pharmacy, therefore, it must be safe.” They certainly can be safe, but they can also be incredibly addictive, with more than 1.9 million Americans hooked on prescription pain medications alone.^{4,5} Opioids and other prescription pain medications are particularly dangerous because they depress the central nervous system, slowing down breathing and the brain stem’s responsiveness to CO₂ to the point where someone abusing these medications can simply stop breathing, leading to morbidity.⁵

I would suggest that most physical therapists acknowledge the importance of psychosocial factors and many would assert that they recognize them as part of their clinical practice. However, common knowledge of such factors does not lead to a change in focus or style of patient management. Yet, there

is persuasive evidence for the influence of a patient’s beliefs, emotional responses, and pain behavior on response to pain, treatment participation, and outcome. We refer primarily to the inclusion of a specific focus on psychological factors (both clinical and occupational), as these factors are used for determining risk and potential focal points for intervention by the clinician. The broader spectrum of social factors are considered “black flags,” which, although possibly amenable to change by public health or workplace interventions, and to that extent could fall within the definition, are not a focus for Intervention at the level of physical therapist practice.⁶

The goal of the “flag” method and classification is to draw clinical attention to the psychosocial and workplace factors contributing to back disability after pain onset.⁷ While medical red flags (eg, fever, widespread neurological symptoms, violent trauma, caudal equina syndrome, structural deformity) are familiar to clinicians as possible signs of more serious spinal pathology (eg, spinal tumor and infection, inflammatory disease), yellow flags were conceived as important prognostic factors among patients with typical, nonspecific episodes of lower back pain. The original list of yellow flags encompassed many domains, including attitudes and beliefs about back pain, behaviors, compensation issues, diagnosis and treatment, emotions, family, and work.⁷

In recent years, this system has been refined in scope and concept, and workplace factors that were previously included as yellow flags now occupy two separate categories: “black flags,” actual workplace conditions that can affect disability; and ‘blue flags,’ individual perceptions about work, whether accurate or inaccurate, that can affect disability. As noted in the research by Shaw et al, blue flags have been conceptualized as worker perceptions of a stressful, unsupportive, unfulfilling, or highly demanding work environment. Black flags include employer and insurance system characteristics (Category I), as well as objective measures of physical demands and job characteristics (Category II).⁷

Transitioning from flags to medications, the latest research demonstrates how the dependence on drugs or alcohol can change the brain chemistry, altering pain and reward centers. As a result of this latest science, the idea of therapy alone to treat addiction is waning. Dr. Sanjay Gupta states that millions of patients use prescription pain medications, such as opioids, every year safely without becoming addicted, and certainly without dying. For nearly 30,000 people a year though, they pay the price with their lives, either by overdosing with an individual prescription or overmedicating with multiple prescriptions as the prescribed dosages.⁵

Common Opiate Medications include⁴:

- Buprenorphine
- Codeine (1: 0.15 ME*)
- Fentanyl (1:100)
- Hydrocodone (1:1)
- Lortab (hydrocodone)
- Methadone (1:9)
- Morphine (1:1)
- OxyContin (1: 1.5)
- Percocet (oxycodone)
- Tramadol (Ultram)
- Vicodin (hydrocodone)
 - ME: Morphine Equivalence

Cross reference and avoid benzodiazepines (in conjunction with Opiates) during medical history and medications review.⁴

- Alprazolam (Xanax, Paxal)
- Diazepam (Valium, Paxal)
- Flurazepam (Dalmadorm)
- Lorazepam (Temesra)
- Prazepam (Centrax)

Unhappy Triad or deadly combination of opiate and/or benzodiazepine medications⁴:

- Hydrocodone, Alprazolam, Soma
- Oxycodone, Xanibar, Soma

Opioids are any synthetic narcotic not derived from opium, indicating substances such as enkephalins or endorphins that occur naturally in the body, which act on the brain to decrease the sensation of pain. Morphine is derived from Morpheus (god of dreams or sleep), which is the principal alkaloid found in opium, an analgesic and sedative.⁶ Addiction of opiates can occur in as little as two weeks. Side effects or symptoms of withdrawal include tachycardia, hypertension, abdominal cramps, non-volitional tremors, vomiting, diarrhea, insomnia, depression, muscle aches, and/or bone pain.⁴ Opiate poisoning, also referred to as overdose, is the toxic reaction to an opium-derived drug with symptoms including euphoria, flushing, itching of the skin, drowsiness, bradycardia, decreased respiratory depth and rate, hypotension, and a decrease in body temperature. If the condition is untreated, death may be the outcome.⁷ As physical therapists and clinicians, it is important to recognize these side effects and/or withdrawal symptoms, early.

Taber's Dictionary defines pains as an unpleasant sensory and emotional experience arising from actual or potential tissue damage or described in terms of damage.⁸ Because pain is a subjective, multifactorial experience, and not an objective finding, clinicians must establish a tangible past medical history that includes past and current medications. Opiates elicit their powerful effects by activating opiate receptors that are widely distributed throughout the brain and body. Once an opiate reaches the brain, it quickly activates the opiate receptors that are found in many brain regions and produces an effect that correlates with the area of the brain involved. Two important effects produced by opiates, such as morphine, are pleasure (or reward) and pain relief. The brain itself also produces substances known as endorphins that activate the opiate receptors. Research indicates that endorphins are involved in many things, including respiration, nausea, vomiting, pain modulation, and hormonal regulation.⁹

Feelings of pain are produced when specialized nerves are activated by trauma to some part of the body, either through injury or illness, located throughout the body; carry the pain message to the spinal cord. After reaching the spinal cord, the message is relayed to other neurons, some of which carry it to the brain. Opiates help to relieve pain by acting in both the spinal cord and brain. At the level of the spinal cord, opiates interfere with the transmission of the pain messages between neurons and therefore prevent them from reaching the brain. This blockade of pain messages protects a person from experiencing too much pain. This is known as analgesia. Opiates also act in the brain to help relieve pain, but the way in which they accomplish this is different than in the spinal cord.⁹

There are several areas in the brain that are involved in interpreting pain messages and subjective responses to pain. These

brain regions are what allow a person to know he is experiencing pain and that it is unpleasant. Opiates also act in these brain regions, but they don't block the pain messages themselves. Rather, they change the subjective experience of the pain. This is why a person receiving morphine for pain may say that they still feel the pain but that it doesn't bother them anymore.⁹

Patients are not "addicts" in the stereotypical sense, but people with real medical conditions who find themselves in the same situation as drug addicts. The re-education of patients and of society as a whole is critical since an effective treatment is now available. Recognizing signs of opiate addiction and/or dependency and understanding the consequences will hopefully motivate patients to seek early treatment before the downward spiraling takes away their jobs, their families, their self-esteem, and ultimately, their lives.⁹

The relief of pain has been described as a universal human right and often considered an entitlement, but pain relief is not always easily achieved. Opioid analgesics are effective, but have troublesome and potentially dangerous side-effects, and their potential for abuse may lead to regulatory and logistical difficulties. Nonsteroidal anti-inflammatory drugs (NSAIDs) have fewer regulatory restrictions, but they too have important adverse effects that are more likely at higher dose or with longer courses. Acetaminophen is widely used and is very safe at the recommended dose of 4 g per day, but does not always provide adequate pain relief on its own. Combining analgesics offers the possibility of increasing effectiveness without increasing dose (and therefore risk). The NSAIDs are often combined with acetaminophen, particularly for treating postoperative pain. There has been a recent prescription strength formulation of acetaminophen 500 mg and ibuprofen 150 mg that can be a better alternative to assist with postoperative pain management.¹⁰

An article published in the *British Journal of Anesthesia*, found that patients using the combination of acetaminophen and ibuprofen experienced less pain during the first 48 hours after oral surgery than those using the same daily dosage of either agent alone and believe the difference was clinically relevant. "There was no evidence of any pharmacokinetic interaction between acetaminophen and ibuprofen."¹⁰ Patients receiving ibuprofen alone reported the lowest frequency of adverse events, but the numbers are too small for meaningful comparisons between the groups, and we saw no cause for concern in any group. The data is consistent with previous evidence showing that a combination of ibuprofen and acetaminophen provides better analgesia than acetaminophen alone.¹⁰

There are limitations to this study. The results are limited to adults, and to the doses and models of pain studied. The authors state "We think our conclusions are likely to apply to other age groups and other types of pain, but this will require confirmation. We have not explored the optimal dosage of the combination drug, but the dosage used is consistent with current clinical practice. The inclusion of patients who underwent both general and local anesthesia implies that our findings are likely to apply in either case. It is not possible to draw firm conclusions on the safety of any drug from a study of only 40 participants per group, but acetaminophen and ibuprofen are well established, widely used, and considered very safe in appropriate doses."¹⁰

Conventional nonsteroidal anti-inflammatory drugs (relatively nonselective in their inhibition of cyclo-oxygenase [COX]-1 and COX-2) are widely used for the treatment of

pain and inflammation. However, the gastrointestinal effects potentially associated with their use can be a cause for concern, accounting for approximately 21% of adverse drug reactions reported in the United States.¹¹ In clinical practice, patients who require NSAID or COX-2 inhibitor therapy most frequently are those at the highest risk for cardiovascular events and are also likely to be taking prophylactic low dose aspirin. Balancing the potential risks and side effects of prescribed medications such as NSAIDs, COX-2 inhibitors, and aspirin, can be challenging. Sound judgement is warranted with regards to treatment decisions, specifically with patients that have been prescribed NSAIDs, COX-2 inhibitors, and aspirin due to the potential risks that involve the GI tract and cardiovascular system.

It is important to note that in comparative trials, no differences in efficacy were observed between the COX-2 selective agents and the NSAID comparators. These data indicate that COX-2 inhibitors should not be viewed as more efficacious replacements for traditional NSAIDs; instead, following a careful risk/benefit analysis they should be considered appropriate in some patients at high risk for gastrointestinal adverse effects or in patients who require anti-inflammatory therapy for arthritis who do not tolerate the gastrointestinal effects of nonselective NSAIDs.¹¹

Research by Borer and Simon concludes that the data summarized here suggest that the risks and benefits of conventional NSAIDs and COX-2 inhibitors must be carefully weighed before making therapeutic decisions. In clinical practice, the majority of patients with moderate to severe arthritis who might benefit from NSAID or COX-2 inhibitor therapy is likely to be elderly, and therefore is at a relatively higher risk for gastrointestinal and cardiovascular adverse events than would younger individuals. These patients are also more likely to be taking low-dose aspirin and using over-the-counter NSAIDs for pain relief.¹¹

Nearly one in 12 injured workers who were prescribed narcotic painkillers still were on the drugs 3 to 6 months later, according to a new report on worker's compensation claims. Too often workers say their pain is improved, but they show no improvement in performing the activities of daily living or returning to work. "A lot of times we see opioid script after opioid script after opioid script without function improvement. We want people getting better. If opioids aren't providing functional improvement, then they are providing more harm than good."¹¹

Workers' compensation claims that include prescriptions for certain opioid painkillers are nearly 4 times more likely to develop into catastrophic claims, according to a recent report in the *Journal of Occupational & Environmental Medicine*. The study titled, "The Effect of Opioid Use on Workers' Compensation Claim Cost in the State of Michigan," was published in the journal's August 2012 edition. The research was based on data from more than 12,000 workers' compensation claims processed by a Lansing, Michigan-based Accident Fund Holdings Inc. between January 2006 and February 2010. The study noted that claims involving long-acting opioids were 3.94 times as likely to have a total cost of \$100,000 or more compared with claims without any prescriptions. Claims with short-acting opioids were 1.76 times as likely to have a cost of \$100,000 or more. Claims that included long-acting opioids were 9.3 times more costly than claims that did not have such prescriptions,

while claims with short-acting opioids were 2.8 times more expensive.¹³ In addition; injured workers with chronic pain often suffer from comorbid health conditions, such as anxiety, that can make them more prone to abusing opioid prescriptions. While injury severity, attorney representation, and other factors contributed to higher medical and indemnity payments, the study said that opioid use was an "independent predictor" of whether a compensation claim would generate catastrophic costs.¹³

In an in-depth European research project of 46,394 respondents, Breivik and colleagues explored the prevalence, severity, treatment, and impact of chronic pain in 15 European countries and Israel. They determined that chronic pain sufferers' opinion of the impact of chronic pain on quality of life, that approximately one-third of the persons with chronic pain are in severe pain and approximately half had constant pain. Many people with chronic pain are less able or unable to do a range of daily activities.

Perhaps the most notable results were that around two-thirds of people were less able or unable to sleep because of their pain, and about half found walking and household chores difficult because of pain. Approximately two-fifths of people have difficulty with sexual relations, one-third said that they were less able or unable to maintain an independent lifestyle and two-fifths of people said that their pain made them feel helpless and they could not function normally. One-fifth felt inadequate as a spouse or partner and a similar proportion of people said that they had been diagnosed with depression as a result of their pain.¹⁴

Low self-esteem is engendered by the serious impact of chronic pain on peoples' lives. This was vividly documented by the chronic pain sufferers' opinion of the attitudes and beliefs of their doctors, colleagues, friends, and families about their pain. These findings illustrate important aspects of the immense burden of chronic pain on the individual sufferers. These aspects of long-lasting pain have not been well documented, prior to Breivik's published research.¹⁴

Implications for the economy of the individual and of society include approximately 60% of people who said that they were less able or unable to work outside of home and around one-fifth had lost their job because of pain. Around one-third of people who were not retired said that their current employment status or hours that they worked was affected by their pain. The effect of chronic pain on the ability to work has implications for the economy of society. As well as the cost related to the loss of productivity due to time off work and reduced work effectiveness, there is also the cost in loss of skills if people are forced to reduce their hours or stop working altogether. Moreover, it is well-known that social security compensations, retirement pensions, and other so-called indirect costs represent a burden to the economy that is much higher than direct health care costs.¹⁴

According to this study, 70% of the chronic pain sufferers were being treated with various non-drug treatments, most often physical therapy, massage (form of physical therapy), and acupuncture. Multidisciplinary and cognitive-behavioral approaches to management of chronic pain conditions are well documented to have significant and lasting effects. It is therefore an important finding that very few respondents in our survey reported having been exposed to these effective pain management strategies.¹⁴

Related to drug treatment of chronic pain, nearly 80% of chronic pain sufferers reported that they experience breakthrough pain from activity. Sixty four percent of those currently using prescription pain medications reported that their pain medications were inadequate at times to control their pain. The very marked differences in the use of nonprescription and prescription drugs of the weak and strong opioid classes of analgesics between the 16 countries clearly indicate that guidelines for appropriate use of these drugs in Europe are needed. The chronic pain sufferers' opinion in Breivik's research¹⁴ and adequacy of pain management did not seem to correlate to the drug usage-profiles of the countries surveyed. They stress that these analgesics should be used with the utmost care, but that appropriate and responsible use of strong opioids should be considered when NSAIDs, paracetamol and weak opioids, as well as available non-drug treatments, have failed to provide relief and improve quality of life.¹⁴

Related to the types of prescription medication currently used for chronic pain. The most common prescription medicines that were currently being taken by respondents were NSAIDs (44%), weak opioid analgesics (23%), and paracetamol (18%). Five percent were taking a strong opioid analgesic. When the data is categorized by country, it is clear that use of strong opioids varied widely from 0% in certain South-European countries to 12% to 13% in the UK and Ireland. Weak opioids varied even more: from 50% in UK and Norway, 36% in Sweden, 28% in Poland, between 18% and 22% in Switzerland, Ireland, France, Germany, and Finland to between 5% and 13% in Israel, Denmark, Italy, and Spain. The percentage of respondents taking COX-2 inhibitors ranged from 1% to 16%, except in Israel, where they were taken by 36% of respondents.¹⁴

All analgesics have side effects, including the recent focus on cardiovascular and gastrointestinal adverse effects of coxibs and traditional NSAIDs and the risks of hepatotoxicity of paracetamol in accidental or intentional overdose. All must be balanced against the well-known side effects of opioids. Most physical side effects of opioids decrease over time and those that do not can usually be managed. As Breivik illustrates,¹⁴ the risk of opioid drug abuse is a reality. The challenge is to find best practice, a sensible, middle ground, between opiophobia and opiophilia with appropriate and responsible use of potent as well as weak opioid analgesics when the non-opioid analgesics do not suffice and alternative pain management is not available or fail to help the patient to better quality of life.

From a physical therapy perspective and plan of care, physical therapy also varied from a high utilization of 55% in Sweden, 52% in the Netherlands, and 47% in Norway, to as little as 2% in France and 6% in Spain. Massage, may be a form of physical therapy: Austrians, Germans, and Poles try massage more often (47%, 46%, and 41%) than the British (15%) and the Irish (14%) pain sufferers.

In conclusion, this research has documented that complaints of chronic pain are prevalent in Europe, as well as in the United States. Pain is a personal, multifaceted experience or perspective that affects behavior and in many aspects, may negatively impact the quality of life. Patients with long lasting pain experience a multitude of negative attitudes and distrust from health care providers, colleagues, families, and acquaintances. Chronic pain of moderate to severe intensity, seriously affects their daily activities, social and working lives. This needs

to be taken more seriously by health care providers and those responsible for health care policies and allocations of resources. Furthermore, continued research needs to be done in respect to disability and pain management. As physical therapists we play a vital role in the plan of care, and have a responsibility to foster positive experiences and improved medical outcomes. According to Hippocrates, the father of physical therapy, the first rule of medicine is "Primum non nocere," above all, do no harm.¹⁵

ACKNOWLEDGEMENTS

The author would like to acknowledge other members of the Occupational Health Special Interest Group for their contributions in our organization. Special thanks to Scott Goold, facilitating an inspiring presentation at the WCA of NM Fall meeting, as well as his continued support in the publication of this article. Also, special appreciation for the guidance and contributions of our Concentra colleagues, and physical therapy program professors, that took the time to assist in the publication process of this article.

REFERENCES

1. Dorland's Illustrated Medical Dictionary. <http://www.dorlands.com/wsearch.jsp>. Accessed August 10, 2011.
2. Melhorn JM, Ackerman WE. *Guides to the Evaluation of Disease and Injury Causation*. American Medical Association; 2008.
3. Melhorn JM, Talamage JB, Hyman MH. *AMA Guides to the Evaluation of Work Ability and Return to Work Causation*. 2nd ed. American Medical Association; 2011.
4. Goold S. Workers' Compensation Association of New Mexico Breakfast Presentation. Opioid Pain Management and Dependency. November 9, 2012. www.wcasubmit.org/docs/wca_11.09.12.pdf
5. CNN. <http://www.cnn.com/2012/11/15/health/deadly-dose-jackson-rummler/index.html>. Accessed November 15, 2012.
6. Main CJ, George SZ. Psychosocial influences of low back pain: why should you care? *Phys Ther*. 2001;91:609-613.
7. Shaw WS, van der Windt DA, Main CJ, Linton SJ; "Decade for the Flags: Working Group. Early patient screening and intervention to address individual-level occupational factors ("blue flags") in back disability. *J Occup Rehabil*. 2009;19(1):64-80.
8. Taber's Cyclopedic Medical Dictionary. 18th ed. FA Davis; 1997.
9. Waismann Methos. <http://www.opiates.com/opiates/>. Accessed November 19, 2012.
10. Merry AF, Gibbs RD, Edwards J, et al. Combined acetaminophen and ibuprofen for pain relief after oral surgery in adults: a randomized controlled study. *Br J Anesth*. 2010;104(1):80-88.
11. Borer JS, Simon LS. Cardiovascular and gastrointestinal effects of COX-2 inhibitors and NSAIDs: achieving a balance. *Arthritis Res Ther*. 2005;7(4):S14-S22.
12. Journal Sentinel. <http://www.jsonline.com/features/health/many-injured-workers-remain-on-opioids-study-finds-km72v1g-172331511.html>. Accessed November 19, 2012.
13. Business Insurance. <http://www.businessinsurance.com/article/20120829/NEWS08/120829882#>. Accessed November 19, 2012.
14. Breivik H, Collett B, Ventafridda V, Cohen R, Gallacher D. Survey of chronic pain in Europe: prevalence, impact on daily life, and treatment. *Eur J Pain*. 2006;10:287-333.
15. Paris SV, Loubert P. *Foundations of Clinical Orthopaedics*. 4th ed. St. Augustine, FL: University of St. Augustine for Health Sciences; 2000.