

Empirical View of Opioid Dependence

Charles Ruetsch, PhD

ABSTRACT

BACKGROUND: The impact of opioid dependence on employers, managed care, and society is significant. Inappropriate use of narcotic analgesics leads to uncontrolled pain management, dependence, and may lead to patient deaths, creating a tremendous cost burden to the health care system.

OBJECTIVE: To provide an overview of the clinical and economic impact of treating opioid dependence on managed care, employers, and society.

SUMMARY: An estimated 6% to 15% of people in the United States abuse drugs, and approximately 20% of Americans report using prescription opioids for nonmedical use. This is associated with an annual cost of nearly half a trillion dollars, taking into account the medical, economic, social, and criminal impact of this abuse. A recent study showed that patients who abuse opioids generate mean annual direct health care costs 8.7 times higher than nonabusers. The National Survey on Drug Use and Health (NSDUH), conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA), found that patients who report opioid abuse miss more than 2.2 days of work monthly, compared with the 0.83 days per month reported for the average person. Presenteeism and productivity are also affected by misuse and dependence on opioids.

CONCLUSION: The costs associated with opioid dependence are significant. Physicians, employers, and managed care organizations must be proactive in appropriately diagnosing and treating patients who suffer from substance abuse disorders in order to lessen this economic burden.

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Authors

CHARLES RUETSCH, PhD, is President and Chief Science Officer of Health Analytics, Columbia, Maryland.

AUTHOR CORRESPONDENCE: Charles Ruetsch, PhD, President and Chief Scientific Officer, Health Analytics, LLC, 9250 Bendix Rd. N., Ste. 240, Columbia, MD 21045. Tel.: 410.997.3314; Fax: 410.997.4545; E-mail: Charles.Ruetsch@healthanalytic.com.

DISCLOSURES

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Chronic pain is typically defined as pain that lasts longer than the usual course of an acute disease, or beyond the time for an injury to heal when the injury is associated with a chronic pathological process causing chronic discomfort. It may also be defined as pain that is persistent and not responsive to routine pain control modalities.¹ There is a role for the use of opioids in treating chronic pain. Due to changes in treatment philosophies, there has been a pendulum-like swing from underprescribing opioids to overprescribing opioids. Over the past 20 years, there has been an increase in the use of opioids to treat both cancer-related and noncancer pain.²

It is estimated that 6% to 15% of the U.S. population abuses drugs, and the abuse of illicit drugs and alcohol contributes to more than 100,000 deaths per year in the United States.^{2,3} Because of this, clinicians may be afraid to prescribe opioids to patients who truly need them for adequate pain control. This “opiophobia” may be due to the lack of training and education in pain management by physicians. Clinicians should be able to differentiate between natural physiological and pathological psychological dependence (addiction). Patients may be mislabeled as addicts and thus have their pain inappropriately managed.^{2,4} While this is beyond the scope of this supplement, it is an important topic and should be considered by managed care professionals when addressing the obstacles a pain management clinician faces.

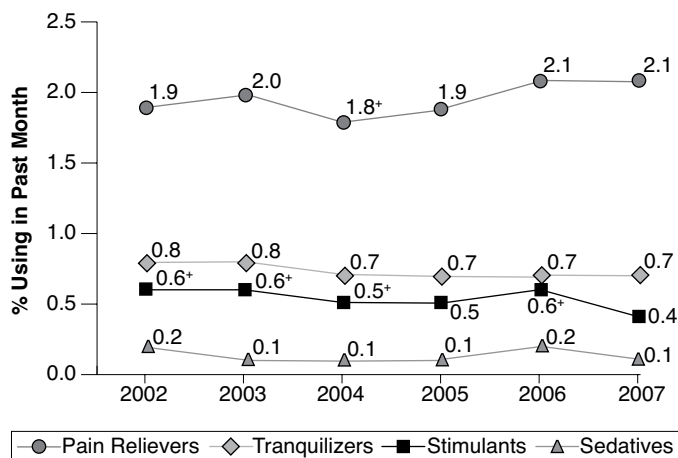
Effect on Employers

Approximately 20% of Americans have used prescription analgesics for nonmedical purposes.^{5,6} Abuse and dependence on opioids adds an economic burden to employers and managed care providers. Policymakers, health professionals, and leaders in business are often unaware of the high costs associated with substance use disorders. Growing awareness of the issues surrounding substance abuse will benefit patients as well as employers and insurance providers.⁵ According to the National Survey on Drug Use and Health (NSDUH) survey, conducted annually by the Substance Abuse and Mental Health Services Administration (SAMHSA), patients who report opioid abuse miss more than 2.2 days of work monthly, compared with the 0.83 days per month missed by the average employee.^{5,7} Employers are starting to realize that patients often start on opioids for legitimate medical reasons but develop dependence due to mismanagement or other risks.⁵

Impact on Society

Data from the NSDUH are collected yearly and include questions to assess the pervasiveness of substance abuse disorders over the previous 12 months. Each year, approximately 67,500 people are surveyed; questions are designed to examine the use of alcohol and illicit drugs, including the nonmedical use of prescription pain relievers. Criteria from the *Diagnostic and Statistical Manual*

FIGURE 1 Nonmedical Use of Psychotherapeutic Drugs Within the Past Month Among Persons Aged 12 or Older: 2002-2007



+ denotes that the difference between this estimate and the 2007 estimate is statistically significant at the 0.05 level.

Source: Substance Abuse and Mental Health Services Administration, Office of Applied Studies (2008). Results from the 2007 National Survey on Drug Use and Health: national findings. NSDUH Series H-34. DHHS publication no. SMA 08-4343.7

of Mental Disorders, 4th edition (DSM-IV) are used to classify patients as physically dependent upon or abusing certain substances.^{7,8} The survey also assesses health and emotional disorders among patients who may be abusing or misusing drugs or alcohol. Patients are surveyed on substance use and abuse, tolerance, withdrawal, attempts to reduce use that were unsuccessful, problems at work, home, school, or within their family, or dealings with others, physical danger, and legal trouble resulting from substance use.⁷

In 2007, 13.3% of respondents (equivalent to 33 million people) to the NSDUH survey reported having used prescription pain relievers nonmedically (i.e., without a prescription, more often or in greater amounts than prescribed, or using for a reason other than prescribed by the physician) in their lifetime.^{7,9} About 8% of respondents aged 12 and older (equivalent to 19.9 million people) reported being current illicit drug users (defined as use during the month prior to the survey). Illicit drugs include non-medically used psychotherapeutics (including opioid analgesics), cocaine, heroin, hallucinogens, and inhalants. Of the 19.9 million Americans estimated to use illicit substances, 5.2 million (approximately 1 in 4) used prescription pain relievers nonmedically within the past month. The report states “this was higher than the estimated 4.4 million in 2002, but the difference between the rates in 2002 and 2007 (1.9% and 2.1% of the U.S. population, respectively) was not statistically significant. However, the rate was higher in 2007 (2.1%) than in 2004 (1.8%).⁷ In contrast, the

number of current heroin users decreased from 0.14% to 0.06% of the population (338,000 to 153,000 people) between 2006 and 2007.^{7,7} (Figure 1).

The prevalence of current (past month) nonmedical use of prescription pain relievers is similar for males (2.5%) and females (2.8%). Illicit drug use is seen in all racial groups. The group with the lowest prevalence is Asians (7.2%), and the group with the highest prevalence are multiracial individuals (22.1%).⁷

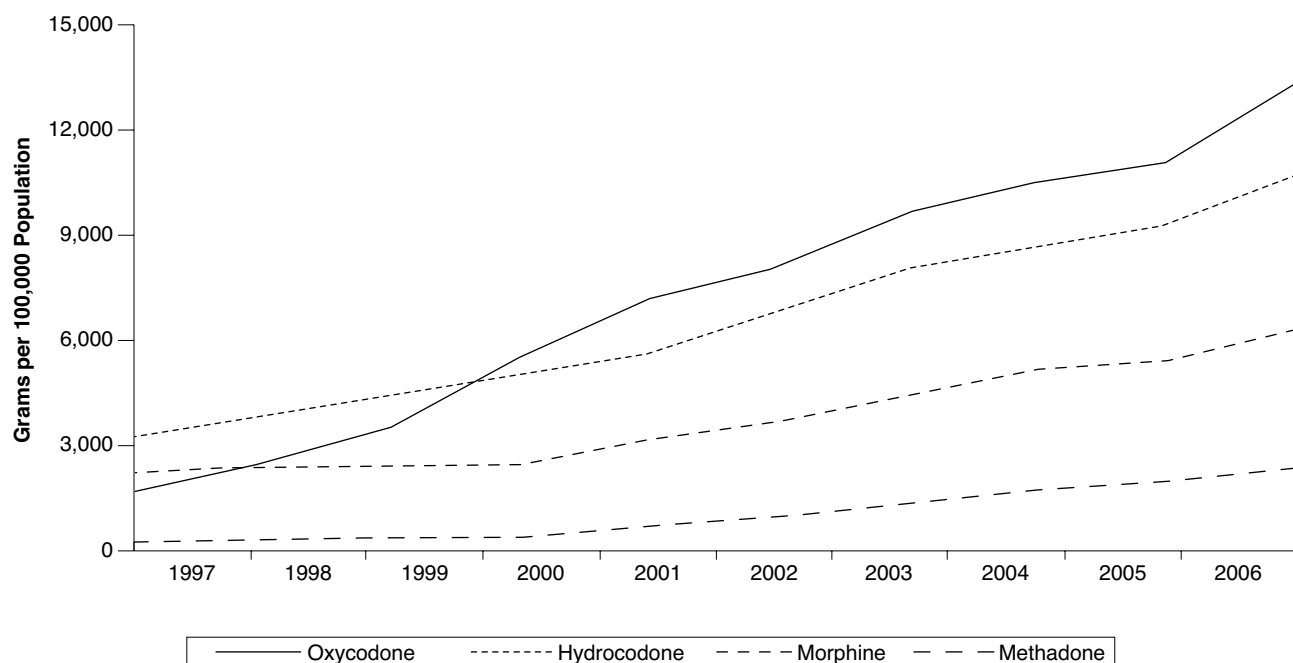
Large numbers of people misuse prescription opioids, or purchase them illegally on the street; the most commonly misused prescription opioids are oxycodone and codeine. While representing only 4.6% of the world’s population, Americans consume 80% of the worldwide opioid supply, including 99% of the hydrocodone supply and 66% of illegal drugs.¹⁰ Among patients who reported using prescription analgesics nonmedically within the past 12 months, 56.5% said they received the drug from a friend or relative for free, and 81% of these friends or relatives obtained the prescription analgesic from a single doctor. In addition, 18% of patients using nonmedically reported obtaining a prescription directly from a single doctor, 4.1% reported buying the substance from a stranger or drug dealer, and 0.5% bought the drug over the Internet.⁷

The NSDUH survey also assesses initiation of, or first-time, substance use. In 2007, approximately 2.7 million people aged 12 or older used an illicit drug for the first time. The categories of illicit drug use with largest number of past year initiates were marijuana and nonmedically used pain relievers, at 2.1 million reported in each category.⁷ Information on first-time use is valuable to researchers and policy makers, as these measures are often indicators of patterns of substance use, and can be used to assess the effectiveness of prevention programs currently in place. The mean age when patients initiated illicit drug use was 18 years old, with 60.1% of patients younger than 18 years old. The average age of first-time users of nonmedical use of pain medications was 21.2 years old.⁷ Another study done by the Partnership for a Drug-Free America found nearly 1 in 5 teens (19% or 4.5 million) reported abusing prescription medications to get high; 1 in 10 teens (10% or 2.4 million) reported abusing cough medicine to get high.¹¹

The substance abuse treatment profile is equally complicated. Of those people who were treated for substance abuse during 2007, 17.3% reported that they were being treated for prescription pain reliever abuse. More than half of those treated utilized two or more sources of payment.¹² Private insurance contributed to part of the payment for 34.9% of those patients. Medicare paid for 19.7%; Medicaid 18.2%; self-pay as part of payment 53.3%; funds from family 19.6%, and 26.3% reported using public assistance other than Medicaid.⁷

The Centers for Disease Control and Prevention recently reported that the inappropriate use of the opioid fentanyl led to the deaths of more than 1,000 people between April 2005 and March 2007.^{5,13,14} Further, between 1999 and 2005, deaths from

FIGURE 2 Increase in Use of Therapeutic Opioids in the United States (mg per person) from 1997 to 2006



Source: Based on data from U.S. Drug Enforcement Administration. Automation of Reports and Consolidated Orders System (ARCOS).¹⁶

unintentional drug poisonings (including prescription opioid analgesics) doubled to 22,448.¹³ Absenteeism, presenteeism, and productivity are all affected by abuse of opioids. Patients who abuse opioids tend to miss work more frequently and are less productive while at work.^{5,15}

Diagnosing Dependence

In addition to the 6 criteria listed in the DSM-IV for determining dependence, a seventh criterion of withdrawal (defined by the patient experiencing withdrawal symptoms such as difficulty sleeping, cramps, tremor) was added for the purpose of the NSDUH survey for patients on pain relievers, cocaine, heroin, sedatives, stimulants, and alcohol.⁷

Patients were defined as abusing substances (as opposed to being dependent upon them) if they met 1 or more of the following criteria:

1. serious problems at work, home, or school due to using the substance
2. regularly using the substance and then performing a task that may put the patient in physical danger
3. repeatedly getting into trouble with the law after using the substance
4. use of the substance led to problems with friends or family, though continuing to use the substance knowing that it caused those problems⁷

According to the NSDUH survey, 9% of respondents (equivalent to 22.3 million Americans) were classified with substance abuse or dependence based on DSM-IV criteria in 2007. Of those, 1.7 million were abusing or dependent on prescription analgesics (opioids).⁷ The survey also identified treatment need as receiving treatment at a facility (such as rehabilitation or mental health center), inpatient hospitalization, or having a substance use disorder. The survey estimated a need for treatment for alcohol or illicit drug use in 23.3 million Americans aged 12 or older. Of these 23.3 million Americans, 20.8 million did not receive treatment. Of those 20.8 million, 1.3 million said they felt they needed treatment for their illicit drug or alcohol use, with 28.5% saying they made an effort to get treatment and 71.5% reporting they made no effort.⁷

Data from the Drug Enforcement Administration (DEA) illustrates the staggering increase in use of opioids from 1997.¹⁶ Figure 2 is derived from the DEA's Automation of Reports and Consolidated Orders System (ARCOS), which monitors the flow of Controlled Substances from their point of manufacture through commercial distribution channels to point of sale or distribution at the dispensing/retail level—hospitals, retail pharmacies, practitioners, mid-level practitioners, and teaching institutions.¹⁶ For example, total oxycodone use in grams per 100,000 U.S. population increased from 1,668 grams in 1997 to 13,333 grams in

2006.¹⁷ In addition to the increased use of opioids, the Centers for Disease Control and Prevention also reported a 62.5% increase in opioid deaths between 1999 to 2004.^{18,19,20}

Burden and Cost

The presence of chronic pain is prevalent in 2% to 40% (median 15%) of the adult population, with 48% reporting back pain as the source of their chronic pain.¹ While the duration and chronicity of chronic pain is controversial, some studies show that chronic low-back pain and neck pain lasting 5 years or longer after the initial occurrence is seen in up to 60% of adult and pediatric patients.^{1,21} It has been estimated that patients with back pain cost health care approximately 60% more than patients without back pain (\$3,498 vs. \$2,178).¹ The American Society of Interventional Pain Physicians (ASIPP) further estimates that the cost of treatment for patient with chronic noncancer pain is higher than the costs to treat cancer, AIDS, and coronary artery disease combined in the United States, citing failed back surgeries and continued care (including prescription pain relievers) leading to increased cost.¹

Nearly half a trillion dollars are spent in the United States yearly on expenses associated with medical, economic, social, and criminal impact caused by of the use and abuse of addictive substances (including opioid pain medications, illicit drugs, alcohol, and nicotine).³ A 2005 study by White et al. found that opioid abusers are associated with 8.7 times higher mean annual direct health care cost than nonabusers (\$15,884 vs. \$1,830, respectively, $P < 0.01$).²² The study also found that hospital inpatient and physician-outpatient costs accounted for 46% (\$7,239) and 31% (\$5,000) of opioid abusers' health care costs compared with 17% (\$310) and 50% (\$906), respectively, for non-abusers. Opioid abusers generated drug costs that were more than 5 times higher than costs for non-abusers (\$2,034 versus \$386, respectively, $P < 0.01$). Costs are significantly higher when the comorbidity of depression is taken into account. Even when the study used a matched control of depressed patients, the average health care costs of opioid abusers were 1.8 times higher than the average health care costs of depressed patients.²² It has been observed that 39% to 47% of patients who seek treatment for opioid dependence have documented psychiatric comorbidities.²³ Opioid users also have a higher rate of depression compared with nonusers (16% vs. 6%).^{24,25,26}

Several barriers to treatment exist. A 2005 Drug Abuse Warning Network (DAWN) report examined emergency room admissions for nonmedical use of prescription drugs and found that 33% of these admissions were due to opioids or opioid combinations.²⁷ This figure may be underestimated due to the stigma attached to opioid dependence, a stigma that can be so overwhelming that every year thousands of patients choose to continue using opioids rather than risk possible exposure by receiving treatment. In addition to stigma, other reasons for not receiving treatment were found in the NSDUH report, including

the patient was not ready to stop using (38.7%), the patient had no health coverage and could not afford cost (31.1%), a possible negative effect on employment (11.6%), patient not knowing where to go for treatment (11.6%), and patient concern that receiving treatment might cause neighbors/community to have negative opinion (11.1%).²⁸

Effect on Managed Care

Mean annual direct health care costs for opioid abusers can be more than 8 times higher than for nonabusers (\$15,884 versus \$1,830, respectively, $P < 0.01$),²⁹ highlighting the importance of finding cost-effective medications for the treatment of opioid dependence. The real-world direct drug cost of buprenorphine/naloxone in 2010 is about \$250 per prescription, more than 10 times the direct drug cost of methadone.³⁰ However, it is possible that buprenorphine is cost-effective compared with methadone for the treatment of opioid dependence when all of the cost factors are considered including the costs of dispensing, counseling, toxicology screens, and administrative and capital costs.³¹ Cost savings may be derived from treatment adherence, and lower utilization of health care services/counseling that are realized in subsequent years may contribute enough to offset the direct drug cost of buprenorphine/naloxone.

Conclusion

Abuse and dependence upon opioids, including prescription analgesics and heroin, affect not only the individual's health, but also add to the financial burden of their families, employers, and health insurance carrier. For both health reasons and financial burden, it is imperative that opioid dependent people get the treatment that they need.^{1,17,19} Physicians and payers can help opioid dependent individuals, their families, and the health of their practices and managed care organizations by appropriate screening and treatment of opioid dependency.

REFERENCES

1. Trescot AM, Boswell MV, Atluri SL, et al. Opioid guidelines in the management of chronic noncancer pain. *Pain Physician*. 2006;9(1):1-39. Available at: <http://www.painphysicianjournal.com/2006/january/2006;9;1-40.pdf>. Accessed January 24, 2010.
2. Bell K, Salmon A. Pain, physical dependence and pseudoaddiction: redefining addiction for "nice" people. *Int J Drug Policy*. 2009;20(2):170-78.
3. National Institute on Drug Abuse. Pain, opioids, and addiction: physician concerns regarding prescribing opiates for chronic pain. Available at: <http://www.nida.nih.gov/newsroom/07/NS-3.html>. Accessed January 23, 2010.
4. Scott E, Borate U, Heitner S, et al. Pain management practices by internal medicine residents—a comparison before and after educational and institutional interventions. *Am J Hosp Palliat Care*. 2009;25(6):431-39.
5. Sipkoff M. Opioid dependence affects society on many levels. *Manag Care*. 2009;1(1):4-10.

6. NIH. National Institute on Drug Abuse. Research report series: prescription drug abuse and addiction. Revised August 2005. Available at: <http://www.drugabuse.gov/ResearchReports/Prescription/Prescription.html>. Accessed January 24, 2010.
7. DHHS. Substance Abuse and Mental Health Services Administration. Center for Substance Abuse Treatment. Office of Applied Studies. Results from the 2007 national survey on drug use and health: national findings. NSDUH Series H-34, DHHS publication no. SMA 08-4343. September 2008. Available at: <http://oas.samhsa.gov/nsduh/2k7nsduh/2k7Results.cfm#TOC>. Accessed January 24, 2010.
8. Diagnostic and Statistical Manual of Mental Disorders. 4th ed. Arlington, VA: American Psychiatric Association; 2000.
9. Huang B, Dawson DA, Stinson FS, et al. Prevalence, correlates, and comorbidity of nonmedical prescription drug use and drug use disorders in the United States: results of the national epidemiologic survey on alcohol and related conditions. *J Clin Psychiatry*. 2006;67(7):1062-73.
10. Manchikanti L, Singh A. Therapeutic opioids: a ten-year perspective on the complexities and complications of escalating use, abuse, and nonmedical use of opioids. *Pain Physician*. 2008;11(Suppl 2):S63-S88.
11. The Partnership for a Drug-Free America. Teens 2005 Report. Available at: http://www.drugfree.org/Portal/DrugIssue/Research/Teens_2005/Generation_Rx_Study_Confirms_Abuse_of_Prescription. Accessed January 19, 2010.
12. DHHS. Substance Abuse and Mental Health Services Administration. Center for Substance Abuse Treatment. Office of Applied Studies. Sources of payment for substance use treatment. NSDUH Report, Issue 10, 2006. Available at: <http://www.oas.samhsa.gov/2k6/pay/pay.htm>. Accessed January 24, 2010.
13. Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report. July 24, 2008. Non-pharmaceutical fentanyl-related deaths. Available at: <http://www.cdc.gov/media/mmwrnews/2008/n080724.htm#1>. Accessed January 24, 2010.
14. Fuhrman V. Illegal painkiller cited in overdose surge. *Wall Street J*. July 25, 2008. Available at: <http://online.wsj.com/article/SB1216925022145839.html>. Accessed January 24, 2010.
15. Birnbaum HG, White AG, Reynolds JL, et al. Estimated costs of prescription opioid analgesic abuse in the United States in 2001: a social perspective. *Clin J Pain*. 2006;22(8):667-76.
16. U.S. Drug Enforcement Administration. Office of Diversion Control. Automation of Reports and Consolidated Orders System (ARCOS). Available at: http://www.deadiversion.usdoj.gov/arcos/retail_drug_summary/index.html. Accessed January 26, 2010.
17. Department of Justice, Drug Enforcement Administration. Office of Diversion Control. Retail drug summary. 1997-2006. Available at: http://www.deadiversion.usdoj.gov/arcos/retail_drug_summary/index.html. Accessed February 2, 2010.
18. Paulozzi LJ, Budnitz DS, Yongli X. Increasing deaths from opioid analgesics in the United States. *Pharmacoepidemiol Drug Saf*. 2006;15(9):618-27.
19. Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report. February 9, 2007. Unintentional poisoning deaths—United States, 1999-2004. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5605a1.htm>. Accessed January 25, 2010.
20. Kuehn BM. Opioid prescriptions soar: increase in legitimate use as well as abuse. *JAMA*. 2007;297(3):249-51.
21. Centers for Disease Control and Prevention. National Institute for Occupational Safety and Health. Musculoskeletal disorders and workplace factors: low-back musculoskeletal disorders: evidence for work-relatedness. 1997. Available at: <http://www.cdc.gov/niosh/docs/97-141/pdfs/97-141f.pdf>. Accessed January 24, 2010.
22. White AG, Birnbaum HG, Mareva MN, et al. Direct costs of opioid abuse in an insured population in the United States. *J Manag Care Pharm*. 2005;11(6):469-79. Available at: <http://www.amcp.org/data/jmcp/3.pdf>.
23. Center for Substance Abuse Treatment. Clinical guidelines for the use of buprenorphine in the treatment of opioid addiction. Treatment Improvement Protocol (TIP) Series 40. DHHS Publication No. (SMA) 04-3939. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2004. Available at: <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat5.section.72303>. Accessed January 24, 2010.
24. Ciccone DS, Just N, Bandilla EB, et al. Psychological correlates of opioid use in patients with chronic nonmalignant pain: a preliminary test of the downhill spiral hypothesis. *J Pain Symptom Manage*. 2000;20(3):180-92.
25. Brooner RK, King VL, Kidorf M, Schmidt CW Jr, Bigelow GE. Psychiatric and substance use comorbidity among treatment-seeking opioid abusers. *Arch Gen Psychiatry*. 1997;54:71-80.
26. National Institute of Mental Health. Depression. Available at: <http://www.nimh.nih.gov/health/publications/depression/complete-index.shtml>. Accessed January 24, 2010.
27. DHHS. Substance Abuse and Mental Health Services Administration, Office of Applied Studies. Drug Abuse Warning Network, 2005: National Estimates of Drug-Related Emergency Department Visits. DAWN Series D-29; DHHS Publication no. (SMA) 07-4256. Available at: <http://dawninfo.samhsa.gov/pubs/edpubs/default.asp>. Accessed January 19, 2010.
28. American Pain Society. Advocacy & policy: definitions related to the use of opioids for the treatment of pain. American Pain Society website. Available at: <http://www.ampainsoc.org/advocacy/opioids2.htm>. Accessed January 24, 2010.
29. White AG, Birnbaum HG, Mareva MN, et al. Direct costs of opioid abuse in an insured population in the United States. *J Manag Care Pharm*. 2005;11(6):469-79. Available at: <http://www.amcp.org/data/jmcp/3.pdf>.
30. Average price per prescription based on the prescription price estimator at Regence Blue Cross-Blue Shield on January 26, 2010. Available at: <http://www.regencrx.com/learn/rxPriceGuide/index.html>. Accessed January 26, 2010.
31. Rosenheck R, Kosten T. Buprenorphine for opiate addiction: potential economic impact. *Drug Alcohol Depend*. 2001;63(3):253-62.