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Focused Review

National All Schedules Prescription Electronic Reporting Act (NASPER): Balancing Substance Abuse and Medical Necessity

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The National All Schedules Prescription Electronic Reporting Act, or NASPER, is a bill proposed by the American Society of Interventional Pain Physicians to provide and improve patient access with quality care, and protect patients and physicians from deleterious effects of controlled substance misuse, abuse and trafficking. Controlled prescription drugs, including narcotic analgesics, anxiolytics, anti-depressants, stimulants, and sedative-hypnotics play a significant and legitimate role in interventional pain management practices in managing chronic pain and related disorders.

Based on the 1997 household survey on drug abuse it is estimated that 76.9 million Americans had used an illicit drug at least once in their life. In 1997, 4.2 million people used analgesics, 2.1 million used tranquillizers, and an additional 2.3 million people used various other drugs, including sedatives, tranquillizers, etc. The non-medical use of prescription drugs exceeds that of all illicit substances except for marijuana and hashish. The report on epidemiology trends in drug abuse, based on community epidemiology work group analysis showed continued increase of abuse of prescription drugs in urban, suburban, and rural areas. The most commonly abused drugs include oxycodone, hydrocodone, hydromorphone, morphine, codeine, clonazepam, alprazolam, lorazepam, diazepam and carisoprodol.

The diversion of prescription controlled substances to illicit channels is a public health and safety issue. This review describes the role of controlled substances in chronic pain management, prevalence and economic impact of controlled substance abuse, prescription accountability, effectiveness of prescription monitoring programs, and rationale for national controlled substance electronic reporting system.

Keywords: Chronic pain, controlled substances, substance abuse, dependency, addiction, NASPER, prescription accountability, prescription monitoring

Controlled prescription drugs, including narcotic analgesics, anxiolytics, anti-depressants, stimulants, and sedative-hypnotics play a significant and legitimate role in managing chronic pain, anxiety, depression, insomnia and muscle spasm. However, considerable controversy exists about the use of not only opioids but also other controlled substances for management of chronic pain of noncancer origin. The abuse of prescription controlled drugs is one facet of America's drug problem that is particularly complex because access to prescription drugs must be maintained for legitimate medical purposes. McLellan et al (1) described that many expensive and disturbing social problems can be traced directly to drug dependence. Due to their abuse potential, opioids, benzodiazepines, and other controlled substances are extensively regulated and become an issue for interventional pain physicians and their patients.

Based on the 1997 Household Survey on Drug Abuse, it is estimated that 76.9 million Americans, age 12 and older, had used an illicit drug at least once in their lives (2). This represents 36.6% of the nation's household population age 12 and older. Further, over 24 million or 30% of this population reported they used an illicit drug at least once in the year prior to the interview and approximately 14 million or 17% of the population reported using an illicit drug in the month prior to interview. Based on the 1997 survey, 4.2 million people used analgesics, 2.1 million people used tranquilizers, and an additional 2.3 million people used various other drugs, including sedatives, tranquilizers, etc. In addition, the survey also indicated that the non-medical use of prescription drugs exceeds that of all illicit substances except for marijuana and

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hashish (3-9). The National Institute of Health-National Institute on Drug Abuse (NIH-NIDA) reported that in 1999, about 14.8 million Americans were current users of illicit drugs (2-6). In a report to the the White House Office of National Drug Control Policy – Drug Control Strategy about the costs to society in 1995, NIH-NIDA reported that the total economic cost of drug abuse was $97.7 billion (2-6). While the true extent of prescription drug abuse is unknown, estimates from a national survey indicate the principle drug of abuse for nearly 10% of US patients in treatment is a prescription drug (7). The report on epidemiologic trends in drug abuse, based on community epidemiology work group (CEWG), showed continued increase of abuse of prescription drugs in urban, suburban, and rural areas (3, 6). The most commonly abused drugs include oxycodone, hydrocodone, hydromorphone, morphine, codeine, clonazepam, alprazolam, lorazepam, diazepam and carisoprodol. Based on this evidence, it also has been alleged that a significant percentage of chronic pain patients abuse controlled substances (10-26).

Proponents of opioids in chronic pain of non-cancer origin continue to profess that undertreatment of pain is a major public health issue in the United States (27-35). Many of the authors contend that drug therapy with opioid analgesics plays an important role in pain management and should be available when needed for the treatment of acute pain and chronic cancer, as well as non-cancer pain (30, 33, 36-41). A 1990 informational outline of the Controlled Substance Act of 1970 published by the Drug Enforcement Administration states that clinicians should be knowledgeable about using opioids to treat pain, and should not hesitate to prescribe them when opioids are the best clinical choice of treatment (33, 42).

The diversion of prescription controlled substances to illicit channels is a public health and safety issue. The controlled substances are diverted in numerous ways, including theft, forgery and counterfeiting of prescriptions; illegal sales of prescriptions and drugs; fraudulent activities that victimize physicians, pharmacies and patients; and by a small percentage of physicians who write prescriptions indiscriminately because they are dishonest, disabled, deceived, or dated in their practices (33, 43-46). Misuse and abuse of prescription controlled substances can and does lead to serious health consequences, including drug dependence, overdose and deaths (43).

The evidence for controlled substance abuse in chronic pain patients, as well as in the general population is overwhelming not only in the United States but also in other countries. Fishbain et al (47) and Ready et al (18) reported that patients with chronic pain not only underestimate controlled substance usage, but provide incorrect information on current illicit drug usage. Numerous reports also have shown significant opioid and other controlled substance abuse, along with illicit drug usage in chronic pain (10-26, 48-82).

In order to control prescription drug abuse, state and federal governments have implemented a number of systems to monitor the prescribing and distribution of legal drugs. Similarly, approximately half of the state medical boards also have released controlled substance guidelines based on a model document from the federation of state medical boards. Thus, interventional pain physicians, along with other physicians managing chronic pain are under the microscope, along with their patients. Some argue that numerous regulations impose high administrative, as well cost burdens on providers (83). The proponents of the regulations argue on the positive side with reduced use of potent controlled substance abuse, misuse and dependency problems. Yet others argue that this could impede access to medical needs of the patients due to increased sensitization of the providers and heightened concern on their part about prescribing under regulatory microscope (84-86). It is essential to strike a balance between the medical necessity and control of abuse. Due to the diversity and limited availability of the drug monitoring programs in multiple states, and also limited use of these programs in each state, state drug control programs though they have been effective, have not reached their maximum potential and also have not been helpful in determining the medical needs of patients and reducing the regulatory burden on physicians. Thus, in the context of a national policy strongly committed to eradicating drug abuse, efforts to deal with prescription drug abuse are both inevitable and appropriate (5). A diversion control program that cannot effectively access and process data on prescribing and dispensing patterns cannot hope to be effective in controlling diversion (5). On the same token, a program that seriously impacts legitimate medical practices as an unintended side effect of diversion control imposes a very high social cost (5). Thus, the challenge is to strike a balance that allows the identification and reduction of inappropriate prescribing and dispensing and leaves undisturbed the activities of legitimate and conscientious prescribers, dispensers and patients. We believe that National All Schedules Prescription Electronic Reporting Act (NASPER) will balance both aspects by reducing substance abuse, at the same time providing appropriate prescriptions for medically necessary patients.

NASPER will provide tools for appropriate national monitoring of drug profiles of patients, which in turn improves the access to the patients by reducing fear of regulations to the providers.

HISTORY

Controlled substances not only include opioids but a multitude of other drugs utilized in managing chronic pain and associated pain conditions. Thus, interventional pain physicians are exposed to many of the controlled substances, their abuse, their control and resulting consequences. Controlled substances based on Food and Drug Administration (FDA) fall mainly into five categories encompassing Schedule I, Schedule II, Schedule III, Schedule IV and Schedule V substances. Tables 1 and 2 illustrate the list of controlled substances used in managing chronic pain and related conditions.

Opioid use and abuse date back to antiquity (87). The pain relieving and euphoric effects of opioids were known to Sumerians (4000 BC) and Egyptians (2000 BC) (87). International awareness of opioid abuse was stimulated early in the 20th century when President Theodore Roosevelt convened the Shanghai Opium Commission in 1909 to aid the Chinese empire in stamping out opioid addiction, es-

Table 1. *Common prescription controlled substances-Federal Schedule II, III, and IV drugs*

Category	Pharmaceutical Name	Commercial Name(s)
Schedule II		
Opioids	Opium	Dover's Powder Opium Tincture
	Levorphanol	Levo-Dromoran
	Morphine	Oramorph, Morphine, MS Contin, MSIR, Roxanol, Roxanol-SR
	Codeine	Codeine Injection, Codeine tablets
	Hydromorphone	Dilaudid Tablets, Suppository or Injection
	Meperidine	Demerol Tablets and Injection, Mepergan
	Oxycodone	OxyContin, OxyIR, OxyFast, Percocet, Percodan Roxicodone, Tylox
	Methadone	Dolophine, Methadose
	Fentanyl	Duragesic System, Sublimaze, Oralet, Actiq
	Alfentanil	Alfenta
	Cocaine	Cocaine topical solution
Barbiturates	Secobarbital	Seconal
	Pentobarbital	Nembutal
Amphetamines	Dextroamphetamine	Dexadrine, Dextrostat, Adderal
Anorectics	Phenmetrazine	Preludin
Other	Methylphenidate	Ritalin, Ritalin-SR, Metadate, Concerta
Schedule III		
Opiods	Propoxyphene	Darvon, Darvocet
	Codeine	Tylenol w/Codeine, Empirin w/Codeine, Fiorinal w/Codeine
	Hydrocodone	Anexsia, Lorcet, Lortab, Norco, Vicodin, Vicoprofen, Zydone
Schedule IV		
Opiods	Buprenorphine	Buprenex
	Butorphanol	Stadol
	Pentazocine	Talwin
Barbiturates	Phenobarbital	Phenobarbital Injection, Tablets
Benzodiazepines (Short-acting)	Alprazolam	Xanax
	Triazolam	Halcion
	Oxazepam	Serax
Benzodiazepines (Medium-acting)	Estozolam	ProSom
	Lorazepam	Ativan
	Temazepam	Restoril
Benzodiazepines (Long-acting)	Chlordiazepoxide	Librium
	Chloazepam	Klonopin
	Clorazepate	Tranxene
	Diazepam	Valium
	Flurazepam	Dalmane
Other	Chloral Hydrate	Noctec

Table 2. *Controlled substances - Uses and effects - Classification based on CNS effects*

DRUGS CSA SCHEDULES	COMMERCIAL OR OTHER NAMES	MEDICAL USES	DEPENDENCE		DURATION (Hours)	USUAL METHODS OF ADMINISTRATION
			Physical	Psychological		
NARCOTICS						
Opium II III V	Dover's Powder, Paregoric, Parepectolin	Analgesic, antidiarrheal	High	High	3-6	Oral, smoked
Morphine II	Morphine, MS-Contin, Roxanol, Roxanol-SR	Analgesic, antitussive	High	High	3-6	Oral, smoke, injected
Codeine II III V	Tylenol w/Codeine, Empirin w/Codeine, Robitussin A-C, Fiorinal w/Codeine	Analgesic, antitussive	Moderate	Moderate	3-6	Oral, injected
Hydromorphone II	Dilaudid	Analgesic	High	High	3-6	Oral, injected
Meperidine (Pethidine) II	Demerol, Mepergan	Analgesic	High	High	3-6	Oral, injected
Methadone II	Dolophine, Methadone, Methadose	Analgesic	High	High-Low	12-24	Oral, injected
Other Narcotics I II III IV V	Numorphan, Percodan, Percocet, Tylox, Tussionex, Fentanyl, Darvon, Lomotil, Talwin	Analgesic, antidiarrheal, antitussive	High-Low	High-Low	Variable	Oral, injected
DEPRESSANTS						
Chloral Hydrate IV	Noctec	Hypnotic	Moderate	Moderate	5-8	Oral
Barbiturates II III IV	Amytal, Butisol, Fiorinal, Lotusate, Nembutal, Seconal, Tuinal, Phenobarbital	Anesthetic, anticonvulsant, sedative, hypnotic, veterinary euthanasia agent	High-Mod.	High-Mod.	1-16	Oral
Benzodiazepines IV	Ativan, Dalmane, Diazepam, Librium, Xanax, Serax, Tranxene, Verstran, Versed, Halcion, Paxipam, Restoril	Antianxiety, anticonvulsant, sedative, hypnotic	Low	Low	4-8	Oral
Glutethimide III	Doriden	Sedative, hypnotic	High	Moderate	4-8	Oral
Other Depressants III IV	Equanil, Miltown, Noludar, Placidyl, Valmid	Antianxiety, sedative, hypnotic	Moderate	Moderate	4-8	Oral
STIMULANTS						
Cocaine II	Coke, Flake, Snow Crack	Local anesthetic	Possible	High	1-2	Sniffed, smoked, injected
Amphetamines II	Biphetamine, Delcobese, Desoxyn, Dexedrine, Obetrol	Attention deficit disorders, narcolepsy, weight control	Possible	High	2-4	Oral, injected
Phenmetrazine II	Preludin	Weight control	Possible	High	2-4	Oral, injected
Methylphenidate II	Ritalin	Attention deficit disorders, narcolepsy	Possible	Moderate	2-4	Oral, injected
Other Stimulants III IV	Adipex, Cylert, Didrex, Ionamin, Mellita, Plegine, Sanorex, Tenuate, Tepanil, Prelu-2	Weight control	Possible	High	2-4	Oral, injected

pecially opium smoking (87).

In 1913, President Woodrow Wilson's administration drafted legislation to limit the use of narcotics, requiring prescription in good faith; it became effective in 1915 (88). Legitimate providers of narcotics and cocaine preparations were required to register with the Bureau of Internal Revenue and were mandated to keep record of most of the transactions (87). According to the act, legal possession by the consumer was dependent on the physician's or dentist's prescription. Legal actions were taken against the "dope doctors." However, only after many years of zealous campaign, the Harrison Narcotics Act was fully enforced (87).

By 1918, opiate maintenance was seriously questioned. The Treasury Department's special committee on Narcotic Traffic persuaded Congress to pass legislation against prescribing narcotics to people who were addicted and have no other problem (87). The Narcotic Drug Import and Export Act of 1922 only permitted import of crude narcotics to be manufactured into purse substances by American drug companies (87). From the 1880s to immediately after World War I, many outside the medical profession, and several within the medical profession, held physicians largely responsible for the serious addiction problems sweeping the United States, not only with opioids, but also various other substances. By the end of the 1920s, these heavy-handed tactics had taken their toll and physicians became extremely leery of prescribing narcotics. They were also fearful of addiction.

The widespread use of methadone for opiate maintenance in the early 1960s was the major development that brought moderation in the narcotic control policy. Beginning in the 1990s, rigid attitudes toward the use of narcotics to control pain began to relax, both within the medical community and outside it. However, the trend, experts say, has reversed again in the late 1990s and early 2000s. In favor of liberal use of narcotics, there has been a growing body of literature showing that contrary to a long-standing myth, intractable pain patients who have been properly treated with opioids rarely become addicted; however, this only applied to acute and cancer pain.

Benzodiazepines were introduced in the 1960s. They have largely replaced old sedative-hypnotic agents in most countries. The first marketed benzodiazepines were chlordiazepoxide and diazepam. Since then, a number of new drugs have been developed with similar spectra of action, which include midazolam, alprazolam, triazolam and others. At the time of their introduction, these drugs were heralded as a safe alternative to the widely prescribed and addictive barbiturates, and were greeted warmly by the medical profession and by patients. However, the addictive potential of benzodiazepines has been increasingly recognized placing growing controls on prescribers and patients to limit their use, especially in the long term.

Since antiquity, sedatives have been used to induce sleep. The first agent to be specifically introduced as a sedative and soon thereafter as hypnotic, was bromide in 1853 and 1864. Before the 1900s, chloral hydrate, paraldehyde, urethan, and sulfanil were introduced. Barbital was introduced in 1903 and phenobarbital in 1912.

In general, physicians and pain specialists have been blamed for under treating pain, whether it is acute pain, chronic pain or cancer pain (30, 33, 36-41). The fear of opioid use has been described as opiophobia, which by the proponents has been described as resulting from lack of information among physicians about the value and use of opioids as pain relievers and the true nature of addiction. The literature also shows that narcotic prescription usage, along with abuse, has increased substantially in the 1990s. Lurie and Lee (89) identified the elements of prescription drug abuse, which included inappropriate physician prescribing, patient non-compliance and poor doctor-patient communication. The American Medical Association has sponsored two national conferences to grapple with the confluence of the medical access to prescription drugs and a national drug abuse control policy. Wesson and Smith (90) in describing prescription drug abuse; noted that the conceptualization and public policy response to prescription drug abuse have been largely shaped by the emotional response to the epidemic of crack cocaine and other non-prescription drug abuse.

CHRONIC PAIN AND CONTROLLED SUBSTANCES

Chronic pain is recognized as a multidimensional problem with both sensory and affective components, and is viewed as a biopsychosocial phenomenon in which biological, psychological and social factors dynamically interact with each other (91). A significant proportion of patients with chronic pain are diagnosed with reactive disorders, including depression, anxiety, somatization, personality disorders and various non-specific issues, such as emotion, anger, and loss of self-esteem (91-107). The association between chronic pain, depression, generalized anxiety disorders and somatization disorders have been explored vigorously even

though it remains to be a complex issue.

Manchikanti et al (92, 106, 108, 109) in multiple publications showed presence of major depressive disorder variable from 22% to 58% of the population with chronic pain in interventional pain management settings compared to 4% to 5% in patients without any psychiatric disorders. Multiple other authors also have shown (11, 107) major depression to be present from 25% to 54% of the population with chronic pain. Generalized anxiety disorders also have been shown to be prevalent in patients with chronic pain. Manchikanti et al (92, 106, 108, 109) in multiple publications have shown generalized anxiety disorder to be present in 20% to 54% of the patients with chronic pain, whereas it was present only in 0% to 14% in the psychologically healthy population without chronic pain. Others also have confirmed these results with increased prevalence of anxiety in patients with chronic pain (110, 111). In addition to depression and generalized anxiety disorder, somatization disorder also has been studied well in chronic pain population, which has been shown to be present in a substantial proportion of the patients. Manchikanti et al (92, 106, 108, 109) have shown somatization to range from 26% to 54% in patients with chronic pain compared to 0% in the normal population. Further, Manchikanti et al (109) also have shown with increasing number of pain conditions, depression, generalized anxiety disorder, and somatization disorder also increased significantly.

Thus, prevalence of psychological disorders is significant in interventional pain management settings. Hence, it is essential for interventional pain physicians to manage not only their pain, but also psychological conditions leading to prescription of various other controlled substances other than opioids.

SUBSTANCE ABUSE ISSUES

Concerns about drug abuse complicate every aspect of pain treatment because it not only disrupts a crucial aspect of the practitioner-patient relationship, but also the trust. Continued compulsive overuse of controlled substances by patients, despite harmful consequences, is one of the most potentially destructive behaviors and outcomes. Thus, healthcare professionals disagree on the use of controlled substances in managing chronic pain, specifically opioids. Physicians are understandably reluctant to prescribe opioids and other controlled substances to patients who are at risk for abusing the medication and frequently find themselves balancing the patient's need for pain relief with prevention of opioid abuse and self-protection from sanctions by state and federal regulatory agencies (112). Further, there has been patient-initiated litigation against physicians for allegedly causing opioid addiction. The laws regarding opioid use in medical patients present issues that are difficult to balance.

Many clinicians recognize the place for opioids and other controlled substances in management of chronic pain. Proponents of opioids for chronic pain state that multiple barriers exist to more broad acceptance and use of these efficacious analgesics which continue to impede their use in the care of patients who could benefit greatly from these drugs. The described barriers are not limited to any one group, nor are they due simply due to a lack of knowledge. Proponents indicate that failure to use indicated opioid results from faulty knowledge, attitudes and practices. The proponents argue that the most common misconceptions among clinicians and the public relate to dependence, addiction and tolerance (113).

There is no agreement between researchers for terms such as drug abuse, psychological dependence, drug dependence and drug addiction. Often these terms are used interchangeably. Addiction initially meant a habit (10). In fact, in 1957, the World Health Organization defined addiction as a state or period of chronic intoxication characterized by an overpowering desire or need (compulsion to continue taking the drug) and to obtain it by any means; tendency to increase the dose; a psychological and generally a physical dependence on the effects of the drug and detrimental effect on the individual and/or society (114). However, later on, the World Health Organization decided to use "dependence" as its crucial variable as some individuals could be physically dependent on a drug without compulsive use and vice versa. In fact, in 1964, the World Health Organization defined drug dependence as a state of psychological or physical dependence, or both, on a drug arising in a person following administration of that drug on a periodic or continuous basis (114).

The Diagnostic and Statistical Manual-IV (DSM-IV) (115) characterizes substance abuse as a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances.

However, neither the World Health Organization nor DSM-IV mentioned addiction as one of the disorders. Many have argued that traditional definitions of DSM-IV have been to be somewhat inappropriate for pain patients

taking opioids (112, 116). Robinson et al (112) stated that most patients on opioids developed tolerance to their medication and undermedicated for their pain, thus they demonstrate drug-seeking behaviors. They also stated that these patients may not be diagnosable according to the same criteria based on non-pain populations (117).

Dependence

Dependence is a physical or pharmacological phenomenon characterized by an abstinence syndrome upon abrupt drug discontinuation, substantial dose reduction or administration of an antagonist. Dependence is believed to be nearly universal among patients receiving continual opioid therapy for a week or more. Dependence occurs not only with opioids, benzodiazepines, sedative-hypnotics, but also with many common medications such as glucocorticoids and some common anti-hypertensives. Just as with latter drugs, opioids and other controlled substances can be discontinued in dependent patients without withdrawal if difficulties by simply tapering them over about a week (113). However, proponents believe that while chronic pain patients often are dependent on their medications, it is not a clinical problem (113). Hare and Lipman (118) described that more often than not, patients can be tapered off of drugs used randomly or when only a few tablets are taken per day in 3 to 5 days.

Addiction

Addiction is a very different psychological phenomenon that is characterized by loss of control over drug use and compulsive use of the drug despite harm from that use. However, numerous definitions of addiction exist and occasionally dependence and addiction are interchanged. Proponents also argue that many of the published conclusions about risk of addiction to opioids are based on studies of addicts (113). Thus, their response to drugs is not relevant to patients in pain who are not apt to be dependent, not addicted. Proponents also state that addicts normally exhibit profound drug-seeking behavior. However, the drug-seeking behavior is not necessarily indicative of abuse (113). The term pseudoaddiction; has been intended to describe the behavior which is considered as appropriate by some (113). Weisman and Haddox (119) described pseudoaddiction as a condition in which the patient is a candidate for an opioid and the drug is not available in sufficient dose to allow the patient to function and maintain a reasonable lifestyle, and the patient is exhibiting a profound drug-seeking behavior. Thus, pseudoaddiction is a legitimate condition and also appropriate drug-seeking behavior for the purpose of comfort, not abuse (113, 119). In 1997, the American Society of Addiction Medicine published a public policy statement recognizing the phenomenon of pseudoaddiction (120). However, validity of the definition and its legitimate existence has been questioned. McLellan et al (1) examined evidence showing that drug dependence is a chronic medical illness. A literature review comparing the diagnosis, heritability, etiology, pathophysiology and response to treatments of drug dependence versus Type II diabetes mellitus, hypertension, and asthma, showed that genetic heritability, personal choice, and environmental factors are comparably involved in the etiology and course of all these disorders (1). McLellan et al (1) described that drug dependence produces significant and lasting changes in brain chemistry and function.

Tolerance

Tolerance to multiple effects of opioids is variable. These are three-fold and distinct with tolerance to centrally mediated effects of respiratory and CNS depression, tolerance to impairment of judgment and psychomotor function, and tolerance to constipation which does not occur (121,122).

PREVALENCE OF CONTROLLED SUBSTANCE ABUSE

Even though the proponents of opioids claim that addiction is extremely rare, there is no data available in the literature about the addiction or abuse of the opioids or other controlled substances, specifically in chronic pain management. Use of illicit substances and alcohol is highly prevalent in the United States. Groer and Brodsky (123) reported that from 1962 to 1989, approximately 33% of the population of the United States reported having sampled illicit drugs. Regier et al (124) in 1984 in the NIMH Epidemiologic Catchment Area Survey Program, reported that an estimated 6% to 15% have a substance use disorder of some type. Based on the 1997 National Household Survey on Drug Abuse, it is estimated that 76.9 million Americans, age 12 and older, had used an illicit drug at least once in their lives or 36.6% of the population (2). Thirty percent of these persons (24.2 million) reported they used an illicit drug at least once in the year prior to interview and 17% (13.9 million) reported using an illicit drug in the month prior to interview. Based on the 1997 survey, 4.2 million people used analgesics, 2.1 million people used tranquilizers, and an additional 2.3 million people used various other drugs including sedatives, tranquilizers, etc.

Table 3. *1997 illicit drug use in US*

Drug	Percent	1997 estimated number of people in millions
Marijuana and/or Hashish	9.0	19.4
Cocaine (powder)	1.9	4.2
Analgesics*	1.9	4.2
Hallucinogens	1.9	4.1
Inhalants	1.1	2.3
Tranquilizers*	1.0	2.1
Lysergic acid diethylamide (LSD)	0.9	1.9
Stimulants*	0.8	1.7
Crack/cocaine	0.6	1.4
Heroin	0.3	0.6
Sedatives*	0.3	0.6
Phencyclidine (PCP)	0.2	0.4

*Adapted and modified from National Household Survey on Drug Abuse (2)

This represents a significant proportion of the patients. In addition, the survey also indicated that the non-medical use of prescription drugs exceeds that of all illicit substances except for marijuana and hashish. Table 3 shows the estimated percentage and number of people age 12 and older using illicit drugs in the prior year in the United States based on the National Household Survey on drug abuse of 1997. Multiple other drugs discussed at CEWG meeting of December 1998 were benzodiazepines (alprazolam, clonazepam, diazepam, lorazepam) and codeine (2). CEWG report of June 2001 (3) also showed that semi-synthetic prescription narcotic drug indicators continue to increase in urban, suburban, and rural areas. This report indicated that purchased on the street, pharmaceutical narcotics such as hydrocodone and oxycodone, including OxyContin are being used as a substitute for heroine. These drugs are also being abused by other population, including long-term prescription drug users, youth and young adults.

The 1999 Arrested Drug Abuse monitoring (ADAM) data showed that a sizable percentage of adults arrested tested positive for opioids, i.e., morphine, codeine and/or semi-synthetic narcotic. Multiple areas across the country continue to report increases in indicators of abuse of prescription semi-synthetic narcotics (3, 6). These drugs included hydrocodone, hydromorphone, and oxycodone. Figure 1 illustrates the increase in oxycodone and hydrocodone DAWN emergency department mentions. Among diverted prescription medications, clonazepam (Klonopin), diazepam (Valium), alprazolam (Xanax), Dilaudid, codeine, and propoxyphene have been mentioned with increasing abuse. Total hydrocodone emergency department mentions increased 84% from 1996 to 2000. During the same period, oxycodone mentions increased 239%. Among the CEWG areas, oxycodone emergency department mentions were highest in Philadelphia, Boston, and Seattle. The percentages increased dramatically in these metropolitan areas between 1999 and 2000; 596% in Philadelphia, 270%

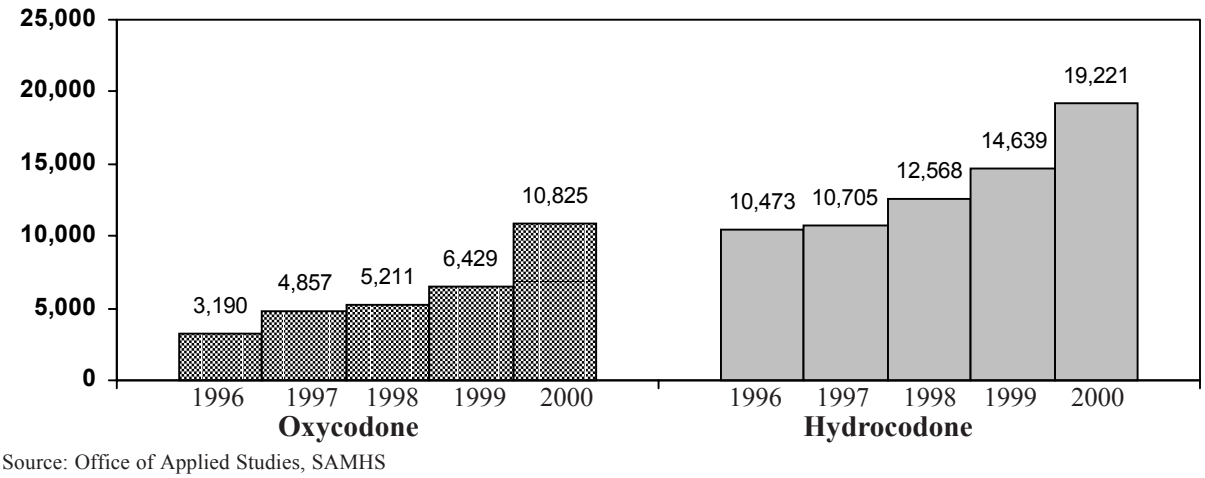

Fig. 1. Estimated number of Hydrocodone and Oxycodone DAWN ED mentions for total coterminous United States: 1996-2000

in Boston and 194% in Seattle (3, 6). The percent change between 1999 and 2000 in oxycodone emergency department mentions was also high in New York (667%), Miami (300%) and Chicago (275%).

Understandably, there is limited data available on the prevalence of illicit drug use, misuse of prescribed medications or more formal substance use disorders or addiction in chronic pain patients. The studies that do exist have had limited interpretability and generalizability due to dramatic differences in the criteria and definitions employed to describe substance abuse. However, it has been reported that the principle drug of abuse for nearly 10% of the US patients in the treatment is a prescription drug (7). It is further complicated by frequent abuse of controlled substances with alcohol and other illicit drugs (5). Most commonly, opioid abuse has been described. Other controlled substances, such as benzodiazepines (eg, diazepam, triazolam, chlordiazepoxide, alprazolam) sedative-hypnotics (eg, secobarbital) and central nervous system stimulants (eg, methylphenidate, amphetamine) though described to have less abuse potential than Schedule II counterparts (opioids, etc.), are also of major concern to interventional pain specialists as they appear to be widely used for non-medical purposes as well (5). It has been reported that 77.3% of suicide attempts involve benzodiazepines (125).

Fishbain et al (10), studying drug abuse and dependency in chronic pain patients, concluded that between 3.2% and 18.9% of patients have been diagnosed with a substance abuse disorder (49, 54, 55, 126-129). They also concluded that the diagnosis of abuse, drug dependency and drug addiction occur in a significant percentage of chronic pain patients.

Polatin et al (11) showed current substance abuse of 19% and lifetime prevalence of 36% in chronic low back pain. Manchikanti et al (12) in a randomized clinical evaluation showed prevalence of opioid abuse in interventional pain medicine practice settings as 24% with frequent abuse seen in 12% of the patients. These authors described frequent abuse as the occurrence of obtaining a prescription (of a minimum of at least 30 tablets) of a controlled substance of at least once a month from another physician without approval of the pain physician signing the controlled substance contract. Acquiring drugs for emergency purposes was not considered an abuse. Maruta et al (13) in an evaluation of 144 patients with chronic pain of non-malignant cause showed that 24% were drug dependent, 41% were drug abusers, whereas only 35% were non-abusers. They showed that codeine and oxycodone were most frequently abused. Hofmann et al (14) evaluated prevalence of abuse and dependency in chronic pain patients in a series of 414 patients in Sweden based on DSM-III-R criteria. A total of 12.6% met criteria for current analgesic dependency followed by 7% meeting criteria for sedative dependency, with 9.7% meeting criteria for alcohol dependency.

Chabal et al (15) designed criteria for opioid abuse and evaluated a group of chronic pain patients with correlation of risk of opioid abuse with the results of alcohol and drug testing. They showed that 34% met one and 27.6% of the patients met three or more of the abuse criteria. Jinks and Raschko (16) evaluated profiles of alcohol and prescription drug abusers in a high-risk community-based elderly population. They showed that approximately 5% of the patients were referred for prescription drug abuse, whereas 9.6% were referred for alcohol abuse. Diazepam, codeine, meprobamate, and flurazepam were the top four agents, and 92% of the subjects were found to have duration of prescription drug abuse in excess of five years. Robertson and Treasure (67) have reported that alarming new reports from several continents indicate a serious abuse problem, with major attendant risks in terms of mortality and morbidity in the future.

Lentner (68) described that except for cardiac glycosides, benzodiazepines are being the most frequently prescribed drugs all over the world, 4/5 out of all psychological drugs are benzodiazepines or hypnotics. Lentner (68) reports that benzodiazepines are the leading drugs of abuse, followed by analgesics, opioids and barbiturates in Austria. Miller and Gold (70) stated that the non-medical use in medical populations of benzodiazepines is underestimated and underdiagnosed. Further, they stated that the non-medical use is also misdiagnosed in non-medical populations as medical use. Gelkopf et al (71) described the prevalence patterns and course of benzodiazepine abuse in an Israeli methadone maintenance clinic using repeated random observed urine analysis, as well as self-report data. Lifetime and current prevalence of benzodiazepine abuse were found in 66.3% and 50.8% of the patients, respectively. Flunitrazepam was the most commonly abuse benzodiazepine (92.9%), followed by diazepam (54.3%) and oxazepam (38.6%). Ciraulo et al (73) suggested that the prevalence of benzodiazepine use among alcoholics is greater than in the general population, but comparable to the prevalence in psychiatric patients. Multiple other authors also have described benzodiazepine abuse, which is highly prevalent in multiple countries. Obafunwa and Busuttil (81) in a retrospectives analysis of 352 consecutive cases of fatal substance overdose that occurred in

Scotland between 1983 and 1992 showed that narcotic analgesics accounted for 32.4% of the deaths with dextropropoxyphene as the commonest (38.2%), followed by methadone. Anti-depressants accounted for 20.2% death with tricyclics representing 19.3%. Temazepam comprised of 65.4% of all benzodiazepine overdose deaths, 2/3 of fatal benzodiazepine abuse involving males.

Benzodiazepines are the most widely used psychotropic drugs in the medical practice and accounted for 7.1 million prescriptions in 1995 (62). Benzodiazepines are used as sleeping aids twice as frequently as they are used as tranquilizers (63). Benzodiazepines are also most commonly used on a long-term basis and women are twice as likely as men to use benzodiazepines. Use of benzodiazepines also sharply increases with age. Nearly one in four people, 75 years of age and older, report using benzodiazepines (63). Forty-five percent of all benzodiazepines prescriptions are written for people over 65 years of age and 50% to 70% of the patients in nursing homes are prescribed benzodiazepines over a long period of time (64). Injection of benzodiazepines is a common practice among opioid users. Benzodiazepines are prescribed not only for anxiety and also for insomnia, alcohol withdrawal, seizure control, muscle relaxation, and as an anesthetic. Benzodiazepines may be abused chronically or taken in overdose, either intentionally or accidentally. Benzodiazepines also have been used as "date rape" drug because they can markedly impair and even abolish functions that normally allow a person to resist or even want to resist sexual aggression or assault. In recent years, the detection and conviction of people involved in "date rape" has increased dramatically (66). Benzodiazepine abuse has been reported very frequently (67-82).

Joranson (58) evaluated the proportion of drug abuse related to opioid analgesics and the trends and medical use and abuse of five opioid analgesics used to treat severe pain. They showed that from 1990 to 1996, there were increases in medical use of morphine (59%), fentanyl (1,168%), oxycodone (23%), and hydromorphone (19%), and a decrease in the medical use of meperidine (35%). They also showed that during the same period, the total number of drug abuse mentions per year due to opioid analgesics increased 6.6%, even though the proportion of mentions for opioid abuse relative to total drug abuse mentions decreased from a total of 5.1% to 3.8%. They concluded that the trend of increasing medical use of opioid analgesics to treat pain does not appear to contribute to increases in health consequences of opioid analgesic abuse, even though this was a retrospective study performed by proponents of opioids for chronic pain, which essentially shows significant increase in usage, increase in opioid abuse, as well as other controlled substance abuse, even though conclusions reached are somewhat different.

ECONOMIC IMPACT

Substance abuse has become a national problem that affects virtually every institution in our country. Further, connection is emerging between drug abuse and other human service systems that both are affected by substance use as well as abuse. These systems offer major opportunities for enhanced prevention effort among multiple systems including health, schools and education, criminal justice, workplace, and public housing. A variety of studies have been done about the cost of substance abuse. The Center on Addition and Substance Abuse (CASA), in 1995 in an extensive study of the costs of substance abuse to federal entitlement programs found that healthcare and disability costs alone were $77.6 billion. This represented nearly 20% of the $430 billion healthcare budget that the federal government spent on these programs. In this study, the costs to the Medicaid program resulting from substance abuse were enormous – an estimated $4 billion substance abuse-related hospital care, which, in 1994, accounted for almost $8 billion in Medicaid expenditures (130). The authors believed that their cost estimates were low (130). Feder et al (131) in a study completed by the Kaiser commission on the future of Medicaid confirmed the great and increasing costs of substance abuse to the Medicaid program. In 1991, Medicaid paid for approximately 40% of the total spent on care for persons with AIDS, representing the single largest source of coverage for this group (130). Thus, there is clear evidence that substance abuse has a major cost impact on the Medicaid programs. Rice et al (132) studied the costs to society and estimated a variety of direct and indirect costs associated with substance abuse to be around $114 billion in 1985. Finally, one study by the Office of Management and Budget estimated drug abuse costs to the United States at $300 billion a year, including government anti-drug programs and the costs of the crime, healthcare, accidents, and lost productivity (133).

Substance abuse also affects working conditions (134). Approximately 4.9% of female Aid to Families with Dependent Children recipients are estimated to have significant functional impairment due to drug abuse, and another 10.6% are estimated to be somewhat impaired by drug

abuse problems. In the AFDC, Medicaid and food stamp programs, a significant number of recipients have been shown to abuse drugs varying from 9.4% to 16.4% (134).

Drug abuse warning network reported opioid abuse has increased 85% from 1994 to 2000, 40% from 1998 to 2000 and 19% from 1999 to 2000. Among opioids, the most significant increases in abuse were seen in oxycodone (up 166% since 1994), methadone (up 140% since 1994) and hydrocodone (up 116% since 1994) (144). The Florida medical examiner's report indicated that, between January and June 2001, there were 217 deaths caused by lethal doses of either oxycodone or hydrocodone, which was higher in comparison to the 126 heroine and 183 cocaine related deaths (145). Further as per the Drug Enforcement Agency (DEA) sources, OxyContin was suspected in 282 overdose deaths during a 19-month period (145). The community epidemiology workgroup has identified hydrocodone, hydromorphone and oxycodone as emerging drugs of abuse in the year 1999.

MODEL GUIDELINES FOR THE USE OF CONTROLLED SUBSTANCES

The Federal of the State Medical Boards of the United States established model guidelines for the use of controlled substances for the treatment of pain, which has been followed by approximately 20 state medical boards or so. These documents provide a preamble, guidelines, and definitions. The guidelines section includes the following:

- Evaluation of the patient treatment plan
- Informed consent and agreement for treatment
- Periodic review
- Consultation
- Medical records
- Compliance with controlled substances laws and regulations

PRESCRIPTION ACCOUNTABILITY

The US Department of Justice Drug Enforcement Administration operates a diversion-control program. It published a prescription accountability resource guide. The DEA recognizes that diversion of controlled substances from legitimate sources into the illicit market is one of the major drug problems that confront our nation. The Controlled Substances Act (CSA), enacted in 1970, provided the legislative mandate for the Bureau of Narcotics and Dangerous Drugs (BNDD), and subsequently, the Drug Enforcement Administration (DEA). The DEA is charged with responsibility to control pharmaceutical drug diversion. The Office of Diversion Control (OD) is the principle enforcement and policy component that carries out the agency's mission. The DEA is the federal agency charged with preventing, identifying and reducing such diversion, while ensuring that controlled substances are readily available for legitimate medical need.

The CSA established a tight system of controls on pharmaceutical drug distribution from the manufacturer and distributed levels to the pharmacy level. The DEA issues a unique registration number to legitimate handlers of controlled substances - importers, exporters, manufacturers, wholesalers, hospitals, pharmacies, practitioners and researchers - and regulations require that Schedule II drugs be distributed only to a DEA-issued order form. All individuals and firms that are registered with DEA are required to maintain complete and accurate inventories and records of all transactions involving controlled substances, as well as security for the storage of these drugs. It is believed that these requirements greatly diminish the opportunity for diversion. The DEA describes that a highly effective component of an overall strategy to reduce diversion is the implementation of a prescription monitoring program. Several states have instituted multiple copy prescription programs. Several others have adapted electronic tracking systems, which can be used alone or with a single-serialized prescription form. Thus, both systems allow states to monitor these drugs and have had a significant impact on curtailing diversion. The differences between a multiple copy prescription monitoring program and an electronic data transmission system are shown in Table 4. To date, 17 states have implemented legislation or statutory regulations for prescription monitoring programs (Table 5).

Prescription monitoring programs continue to receive opposition from various special interest groups (5). These groups raise such issues as:

- The alleged "chilling effect" on the practitioners' prescribing habits and medical judgment;
- A shift in the diversion problem to lower schedule drugs;
- Possible violations of patient/practitioner confidentiality through use of monitoring program data; and
- Program costs exceeding the effectiveness of monitoring programs.

Table 4. *Differences between triplicate prescription programs and electronic monitoring programs*

MULTIPLE COPY PRESCRIPTION MONITORING PROGRAM	ELECTRONIC DATA TRANSMISSION SYSTEM
1. The prescriber writes a prescription for a Schedule II (and in a few states, certain Schedules III and IV) controlled substance on a state issued, preprinted, serialized duplicate or triplicate form	1. The prescriber writes an original prescription for a Schedule II (and in a few states, Schedules III, IV, or V) controlled substance on a prescription form
2. The prescriber writes and the dispenser maintains file copes of the prescription for a period of two to five years (for triplicate programs). Duplicate prescription programs do not require the prescriber to maintain copies	2. The dispenser maintains the original prescription for a period of two to five years
3. The dispenser forwards a copy of the prescription to the mandated state authority.	3. The dispenser transmits the prescription information either electronically (via modem, disk, tape, black box) or by universal claim form to the mandated state authority. This system allows prescription information to be submitted electronically. In most states, if the dispenser lacks the requisite computer equipment and/ or fills less than 20-25 Schedule II prescriptions per month, information is submitted on a Universal Claim Form.

Adapted and modified from Simoni-Wastila and Tompkins (5)

Multiple innovative techniques for the use of prescription monitoring data include:

- Intervention/education
- Monitoring usage
- Expanding the system to include additional schedules
- Investigative techniques

Of these, intervention/education and monitoring usage are crucial for pain practitioners. Expanding the system to include additional schedules and investigative techniques are also useful. Techniques of intervention/education include the following:

- Develop medical education programs to heighten professional awareness to prescription drug abuse and the importance of appropriate prescribing practices
- Equip practitioners and healthcare providers with a better understanding of the state and federal laws, rules and regulations pertaining to controlled substances

Prescription monitoring data can be used to evaluate patient drug usage profile, track the prescribing practices or patterns of medical practitioners by specialty, track the prescribing trends and patterns for certain drugs, track prescribing patterns by location, track prescription drug activity for long time users and for patients in long-term care facilities and hospices. Thus, monitoring usage is useful for appropriate care of the patients by providing proper treatment and time without delay or hesitency if the patient's usage is available.

Expansion of the system to include additional schedules is being considered crucial in many states, specifically in pain management settings as described earlier. Many of the pain physicians prescribe not only opioids, but also various other controlled substances. Thus, many states are considering expanding their programs from Schedule II to Schedule III and IV or even V.

CLINICAL EFFECTIVENESS OF CONTROLLED SUBSTANCES

Controversy over the prescription of opioids for chronic non-malignant pain continues, despite the growing acceptance of this practice. Moulin et al (146) in a randomized trial using oral morphine on chronic non-malignant pain patients, reported greater control of pain in this group of patients compared with the placebo group, with low risk of addiction. However, there was no improvement in psychological functioning. The study was of short-term with nine weeks of crossover. Arkinstall et al (147) also in a randomized placebo-controlled trial utilizing controlled-release codeine, reported significant reduction in both pain and pain-related disability. The study was conducted in 30 patients for 7 days with crossover design. Jamison et al (148) in a randomized but open trial, comparing two opioid regimens with either

set-dose oxycodone or titrated-dose oxycodone and sustained release morphine sulfate, reported significant pain relief but failed to show any differences in sleep patterns or activity status. They also showed that only one patient in the 36 patient sample demonstrated behavior consistent with abuse. Taub (149) in 313 patients with somatic and neuropathic pain, administered mean doses of 10 mg to 20 mg of oral methadone up to six years showing that patients showed generalized benefit. Taub (149) also showed that abuse was seen in 13 of 313 patients. Portenoy and Foley (49) in a study of 38 patients with mixed diagnosis with median treatment of three to four years reported adequate or partial relief in 24 patients with very little functional improvement and abuse in two patients. Tennant et al (150) evaluated 52 patients with mixed diagnosis with 10 mg to 240 mg of oral methadone with average treatment lasting over twelve years. They reported adequate or partial relief in all patients. Zenz et

Table 5. *States with prescription monitoring programs*[1]

State	Year Enacted[2]	Monitoring System[3]	Drug Schedules and Groups Monitored	Managing Agency Type	Website[4]
1. California	1939	Triplicate+ Electronic	C-II	Justice Dept.	http://caag.state.ca.us
2. Hawaii	1943	Duplicate Electronic	C-II	Public Safety Dept.	http://www.state.hi.us/icsd/psd/psd.html
3. Idaho	1967	Duplicate Electronic	C-II, III, IV	Pharmacy Board	http://www.state.id.us/bop
4. Illinois	1961	Electronic	C-II	Human Services Dept.	http://www.state.il.us/
5. Indiana	1987	Single-copy + Electronic	C-II, III, IV, V	Public Safety Dept.	http://www.state.in.us/safetynet
6. Kentucky	1998	Electronic	C-II, III, IV, V	Health Dept.	http://publichealth.state.ky.us/drug_control.htm
7. Massachusetts	1992	Electronic	C-II	Health Dept.	http://www.stae.ma.us/dph/dcp/
8. Michigan	1988	Single-copy, serialized + Electronic	C-II	Consumer & Industry Services Dept.	http://www.cis.state.mi.us
9. Nevada	1995	Electronic	C-II, III, IV	Pharmacy Board	http://www.state.nv.us/pharmacy/frame.htm
10. New Mexico	1994	Electronic	C-II	Pharmacy Board	http://www.state.nm.us/pharmacy
11. New York	1972	Single-copy, serialized + Electronic	C-II and Benzodiazepines	Health Dept.	http://www.health.state.ny.us
12. Oklahoma	1990	Electronic	C-II	Narcotics & Dangerous Drugs Control Bureau	http://www.state.ok.us/~obndd
13. Rhode Island	1978	Electronic	C-II, III	Pharmacy Board	http://www.health.state.ri.us/hsr/pharmacy.htm
14. Texas	1981	Single-copy, serialized + Electronic	C-II	Public Safety Dept.	http://www.txdps.stae.tx.us
15. Utah	1995	Electronic	C-II, III, IV, V	Professional Licensure Division	http://www.commerce.state.ut.us/dopl/dopl1.htm
16. Washington	1984	Triplicate	C-II, III, IV, V	Pharmacy Board	http://www.doh.wa.gov/pharmacy
17. West Virginia	1995	Electronic	C-II	Pharmacy Board	http://www.state.wv.us/sos/corp/proflicense.htm

[1] Information current as of March 2001.
[2] Year original program enacted; does not reflect subsequent amendments.
[3] May be different than original system type at time of original program enactment.
[4] Listed state websites do not necessarily have information on prescription monitoring programs.

al (151) in evaluation of 100 patients with mixed pain problems with oral morphine ranging from 20 mg to 2000 mg with a mean duration of treatment of 224 days, reported good or partial pain relief in 79% of the patients with overall improvement in performance status with no abuse.

In contrast to the above reports, Maruta and Swanson (48) showed that in 42 patients with musculoskeletal pain in a one month study comparing low dose (30 mg) and high dose (greater than 30 mg) oxycodone in a one month follow up, significantly lower treatment success rate in opioid group than non-users of opioids. Turner et al (50) studied 92 patients with musculoskeletal pain reporting greater physical impairment and higher hypochondriasis and hysteria scores in opioid patients compared to 39 non-opioid patients.

Thus, considerable controversy continues to exist about the use of opioid analgesics for chronic non-cancer pain, specifically as a sole modality of management. Many interventional pain physicians and healthcare professionals are reluctant to support the use of opioid medication for patients with chronic pain as a sole or major treatment because of concerns about efficacy, adverse effects, tolerance and addiction. Further, studies performed in pain clinics suggest that some patients become psychologically dependent after long-term opioid use (148, 152). Some also believe that opioid analgesics contribute to psychological distress, poor treatment outcome, impaired cognition and a fostered reliance on the healthcare system (13, 48, 50, 152-154). Many physicians, specifically physicians in interventional pain management settings, prescribing opioids for chronic non-cancer pain, worry not only about possible abuse by patients but also about potential liability and censor by regulatory agencies (12, 148, 155-157). Even then, some clinicians and researchers continue to argue that there is a role for chronic opioid therapy in treating non-cancer pain (85, 149, 158-162). These proponents continue to site the relatively low incidence of abuse and addiction among the affected patients and report that tolerance apparently does not develop in patients with stable pain pathophysiology. According to these advocates, the potential for increased function and improved quality of life significantly outweighs the risk of abuse. Further, some have suggested that chronic opioid therapy may decrease the cost of rehabilitation programs for patients with pain while improving outcome (151, 163, 164). However, the need for studies that empirically address the controversial topic of opioid treatment for chronic non-cancer pain has been noted repeatedly in the pain literature.

A large number of placebo-controlled studies have demonstrated the efficacy of benzodiazepines in the treatment of anxiety disorders, including generalized anxiety disorder, panic disorder, behavioral treatment of phobias, and other symptoms of psychological distress associated with various medical disorders, including chronic pain (165). Benzodiazepines are effective in the treatment of disturbances of falling asleep and of maintaining sleep, which is a major issue in chronic pain patients. Further, alprazolam has been shown effective in treatment of major depressive disorder of mild or moderate severity. Clonazepam and lorazepam also have been shown to provide rapid control of manic episodes. Benzodiazepines have been shown to be effective by objective measures with rapid and dramatic resolution of symptoms of many convulsive and spastic disorders. The most common side effects of benzodiazepines in routine clinical use are short-term side effects, along with long-term side effects of abuse and dependency. Appropriate use of benzodiazepines has increased steadily from the time of their introduction until the mid to late 1970s. During this period, benzodiazepines have largely displaced the barbiturates. Some contend that despite the wide availability and extensive medical use of benzodiazepines, there has been very little misuse or recreational use of the drugs among adults or youths in the general population (166, 167). In contrast, a multitude of surveys have shown this to be contrary around the world, and specifically in the United States.

PRESCRIPTION MONITORING PROGRAMS

As shown in Table 5, 17 states have implemented legislation or statutory regulations for prescription monitoring programs (PMP's). The differences between electronic monitoring program and triplicate prescription program are also illustrated in Table 4. However, the effectiveness of these programs is highly variable in each state, so is accessibility of the information for practicing physicians.

California

California has the oldest continually operational multiple (triplicate) copy prescription program established in 1939. The legislation for a multiple copy prescription system applied to "selected narcotics:" opium, hashish, marijuana and cocaine. The physician was limited to issuing no more than 100 prescriptions for these drugs in a 90-day period and these restrictions were eliminated in 1945. In 1965, the California legislature added a list of restricted dangerous drugs to its felony charges. These drugs were

not, however, subjected to the requirements of the multiple copy program. In 1972, the legislature imposed the requirement that all prescriptions for Schedule II narcotics be issued on a multiple copy prescription form. In 1981, a law was passed imposing the requirement that any non-narcotic Schedule II controlled substance be prescribed on the triplicate prescription form as well.

The program is administered by the Bureau of Narcotic Enforcement (BNE), which is within the California Department of Justice, administering and enforcing the multiple copy prescription program and is responsible for all state controlled substance enforcement activities. The legislature enacted an assembly bill 3042 (AB3042) on February 23, 1996, the intent of which was to establish the necessary electronic monitoring system, the Controlled Substance Utilization Review and Evaluation System (CURES).

On-line reports are generated at special requests in virtually any format, such as by practitioner, patient or drug. These are most commonly provided to other state and federal law enforcement agencies in conjunction with an investigation. Reports produced on a regular basis include monthly batch reports for exclusive use of BNE agents and an exception report for the medical board.

The limitations of this program include non-inclusion of Schedule III and IV drugs, as well as lack of eduction of physicians to utilize these reports in patient management.

Hawaii

In 1943, the territory of Hawaii passed legislation which required that prescriptions for "narcotics" and "other habit forming drugs" be prepared by the prescriber in duplicate. In 1953, the territorial legislature of Hawaii, in response to a perceived drug epidemic, created the Territorial Section of Narcotics Control and located it in the Department of Health. This program later became known as the Investigations and Narcotics Control Section (INCS), Department of Health. In 1972, the state of Hawaii adopted the Uniform Controlled Substances Act and retained the duplicate prescription requirement but restricted it to Schedule II controlled substances. With numerous changes over the years, in June 1997, the Narcotics Enforcement Division (NED) passed legislation requiring the collection of prescription drug information for all hydrocodone products within the electronic prescription monitoring program.

The program is administered by NED; however, NED is divided into diversion and special investigations branches. The NED has been successful in identifying over 500 new cases of diversion of controlled substances. The NED's investigative staff work cases concerning both licit and illicit controlled substances involving practitioners and non-professionals.

However, information is not available with regards to how physicians can access the information to evaluate patient's drug usage.

Idaho

Idaho's Triplicate Prescription Program for all Schedule II drugs began in 1967 with incorporation of into the model state Controlled Substances Act in 1972. In 1997, triplicate prescription blanks were changed to duplicate blanks.

For Schedule II prescriptions, registered practitioners are issued prescription forms in serially numbered sets of 25, imprinted with the practitioner's name, address, professional license number, DEA number and state controlled substance registration number. The practitioner is limited to four sets of prescriptions per order, although there is no maximum number of orders for any time period. All out-of-state Schedule II, III and IV prescriptions filled by a pharmacy located in Idaho, must also be reported.

Reports are not easily available in Idaho at the present time. However, programs are being developed for routine reports. A request for a report must be approved by the executive director or the chief investigator of the Board of Pharmacy. Thus, the program does not provide access to physicians to evaluate drug profiles of their patients.

Illinois

The Illinois Triplicate Prescription Control Program has been in existence since 1961 and is one of the longest operating prescription monitoring programs in the country. This program is administered by the Division of Clinical Services. The purpose of the program is to prevent the misuse, abuse and diversion of Schedule II "designated product" controlled substances. Unlike other state multiple copy prescription programs, only those drugs in Schedule II of the Illinois Controlled Substances Act having "designated product" status require the multiple copy prescription. Those drugs with "designated product" include narcotics, amphetamines, methamphetamines, phenmetrazine,

glutethimide, and pentosazon. There are also "non-designated product" prescription drugs under the Illinois Schedule II classification, which include amobarbital, phenobarbital, secobarbital, and methylphenidate, which are exempt from triplicate prescription form.

A variety of standardized and specialized reports can be generated from the information collected from the forms. The data is used to more accurately identify and analyze patterns of prescription use and misuse. This information is provided to state and federal law enforcement and health regulatory agencies upon request. However, physicians desirous of evaluating a patient drug profile and utilization are at present unable to receive a report.

The major disadvantage of this program is lack of physician access to the patient profiles and limitation to only Schedule II drugs.

Indiana

In 1987, legislation was passed which gave power to the Indiana Controlled Substances Advisory Committee (CSAC) and the Health Professions Bureau to create a multiple copy prescription program through administrative rule. The program started in July 1989 and processed approximately 250,000 completed Schedule II prescriptions per year at an annual cost of around $150,000. There was an unexpected consequence of this law with increase of Schedule II drugs (e.g., price increase to as high as $70 from $20 per tablet before the program). A number of physicians also faced civil charges against their licenses because of information compiled by the program. A new program was established which became effective in November 1995. The CSAC administers the program and designates which controlled substances will be monitored.

At this time, Indiana is monitoring only Schedule II substances. Pharmacies have the choice of sending in prescription information electronically or by paper. The major disadvantage of this program is lack of physician access to the patient profiles and limitation to only Schedule II drugs.

Kentucky

Kentucky enacted its electronic monitoring program encompassing Schedules II to V, which became effective on July 15, 1998. This is also known as KASPER or Kentucky All Schedules Prescription Electronic Reporting Act. The program is administered by the Department of Human Services, Cabinet for Human Resources.

Kentucky Program or KASPER is the best of all the available state programs in the nation, which not only includes Schedule III and IV drugs, but also provides patient profiles to physicians at request at no cost.

Massachusetts

Regulations implementing a prescription monitoring program for Schedule II pharmaceuticals became effective April 1, 1992. The program is administered by the Massachusetts Department of Public Health (DPH). It is an electronic program limited to Schedule II prescription drugs.

Prescription reports are generated with various standard profiles including prescriber profile, pharmacy profile, drug profile, and sorted reports. While sorted reports have the ability to sort the reports by practitioner, by pharmacy, date or other criteria, the patient reports or profiles are not available to practitioners at the present time. Further, an additional disadvantage is that this includes only Schedule II drugs.

Michigan

The triplicate prescription program for Schedule II controlled substances was established in 1988 and became operational on August 1, 1989. The legislation was patterned after that of Texas. The legislation was revised in 1993, replacing the triplicate prescription with a single copy prescription as the state official prescription form effective January 1, 1995. The program is administered by consumer and industry services department in a paper, as well as electronic format; however, limited to only Schedule II drugs.

Similar to many other states, reports are not available for physicians to utilize in their treatment.

Nevada

The electronic prescription monitoring program for Schedule II, III and IV drugs in Nevada became effective in 1995. Data is analyzed by the staff of the Board of Pharmacy to identify potential cases of drug over utilization, misuse, or over-prescribing for referral to appropriate practitioners, professional licensing boards or agencies, under the direction of the controlled substance prevention task force. The

controlled substances abuse prevention task force produces many different types of reports, including when an individual patient/consumer is determined to be potentially engaged in drug abuse, as defined by the task force exception parameters. These reports are sent to each practitioner and pharmacy that has prescribed or dispensed controlled substances to that particular patient. This provides information regarding the total controlled substance prescriptions obtained by their patients so they can better treat the patient and, when appropriate in their professional judgment, modify prescribing. Patient profile reports are also produced each month.

The Nevada program has all the essentials, including multiple schedules and produces various types of reports which can be utilized in patient care.

New Mexico

Legislation was passed on July 1, 1994, by the state of New Mexico, which provides for the collection of information relating to controlled substances. This legislation allows for an electronic prescription monitoring program to be administered by the Board of Pharmacy. However, it appears that for a variety of reasons, prescription data has not been collected.

It is not known what types of reports are produced, what drugs are included in this monitoring program, and the accessibility of the profiles to physicians.

New York

New York's current program was implemented with the passage of the state's Controlled Substance Act in 1972, but it was not fully implemented until 1977 due to a court challenge. The program is administered by the health department. The program includes electronic, as well as paper version, which also includes Schedule II and benzodiazepines. Anabolic steroids are also included in Schedule II substances. The inclusion of the benzodiazepines under the multiple copy prescription program resulted in a six-fold increase in the number of triplicate prescriptions processed by the bureau.

A number of reports are routinely generated by the program, which include prescriber's profile, practitioner analysis, monthly/quarterly report which shows the number of prescriptions issued by practitioners and the average number issued per practitioner by a profession; number of prescriptions filled by pharmacies and institutions; number of prescriptions filled by county; and the number of prescriptions filled each month by drug and by patient.

However, it does not describe, the ease with which a physician is able to obtain patient profile of drug usage. In addition, the monitoring is limited to Schedule II drugs, anabolic steroids, and benzodiazepines, eliminating many other Schedule III and Schedule IV drugs.

Oklahoma

The Oklahoma Schedule II abuse reduction electronic monitoring system was instituted in 1991 by the Oklahoma Bureau of Narcotics. It is limited to only Schedule II controlled substances prescriptions information by electronic transmission. Apparently, now the Oklahoma Bureau of Narcotics (OBN) has the capacity to produce various types of reports. The reports are created in real time, meeting the specified requirements of the investigator or the agency. The self-contained reporting system will be used to assist in target identification, case preparation, prosecution and product reports to aid in program management.

The major disadvantages include monitoring of only Schedule II drugs and inability of providers to obtain patient profile.

Rhode Island

Rhode Island duplicate prescription program for Schedule II controlled substances started in 1997. The program includes Schedule II and III, as well as needles and syringes. The program is administered by the Board of Pharmacy. The Rhode Island Uniform Controlled Substances Act contains the following:

- Schedule II and Schedule III prescriptions become void unless dispensed within 7 days of the original date of the prescription.
- Schedule II prescriptions may be written for up to 30 day supply, with a maximum of 250 dosage units.
- Schedule III prescriptions cannot be written for more than 100 dosage units.
- Within 72 hours after authorizing a Schedule II emergency oral prescription, the prescribing practitioner must submit a written prescription to the dispensing pharmacy. The dispensed amount cannot be more than needed for the 72-hour period.

Reports include the top ten prescribed drugs and the top ten dispensaries.

Since this is a new program, it is not known if providers will be able to request patient profiles. However, another disadvantage is that this does not include Schedule IV drugs.

Texas

The Texas program was established in 1981 with a single copy serialized or electronic version. This includes only Schedule II drugs administered by the Public Safety Department.

Disadvantages of this program include a triplicate prescription program, inclusion of only Schedule II drugs and inability to obtain patient profiles by providers.

Utah

The electronic program was instituted in 1995 which included Schedule II, III, IV and V drugs. It is administered by the Professional Licensure Division. Advantages and disadvantages of this program are not known at the present time.

Washington

The program was established in 1984 with a triplicate prescription program, including Schedule II, III, IV and V drugs administered by the pharmacy board. The law states that "any healthcare practitioner with prescribing or dispensing authority shall, as a condition of licensure and as directed by the practitioner's disciplinary board consent to the requirement, if imposed, of complying with a triplicate prescription program as may be established by the Department of Health." Unlike other multiple copy programs, the responsibility of transmitting a copy of the prescription to the state was assigned to the practitioner rather than to the pharmacist. The licensing boards further require that the prescriber complete a triplicate "prescribed log sheet," which must be typed or clearly printed (whenever the prescriber returns his/her copy of the prescriptions to the board). The reasons for requiring practitioners to participate in the program range from inappropriate prescribing to personal use of drugs. A comparison of the number of drug related cases referred to disciplinary boards to the number of practitioners who have been placed in the program by their respective boards, appears to support the premise that the program is currently being underutilized as a disciplinary tool in Washington.

The program is of limited scope and is not useful to providers to obtain patient profiles and creates a significant burden to the providers.

West Virginia

West Virginia's Schedule II electronic monitoring program was started in 1995, which is administered by the pharmacy board. Law enforcement officials have found the program useful and a great resource in providing information to deter or prosecute doctors shopers.

Disadvantages of this program include its limitation to Schedule II drugs and inability of the providers to access patient profiles for therapeutic purposes.

EFFECTIVENESS OF PRESCRIPTION CONTROL PROGRAMS

Simoni-Wastila and Tompkins (5) reviewed the evidence of the effectiveness of multiple copy prescription programs (MCPP) and electronic data transfer (EDT) in reducing drug diversion and abuse. This continuum includes patent-intent, prescriber-intent, dispenser-intent, forgeries/alterations and thefts. However, in any given situation, this continuum may include multiple diversion activities simultaneously (eg, patients both forge prescriptions and steal prescription pads) or individuals working together to affect diversion (patient and physician knowingly diverting prescription drugs for profits (5). The Massachusetts Department of Public Health Medical Peer Review Group has reviewed 160 cases of questionable controlled substances used since 1994 (5). In over 85% of these cases, the peer review group released EDT data to law enforcement agencies, such as the Drug Enforcement Administration or the board of medicine, for further investigation (168). The New York Bureau of Controlled Substances initiated 85 civil and criminal prosecutions in 1989 for which triplicate prescription data were utilized in investigations (169). The second measure of diversion control effectiveness is reduction in drug utilization (5). It is believed that reductions in drug use indicates a reduction in all drug abuse or diversion also (169, 170). Thus, MCPPs appear to have a dramatic effect on decreasing diversion. MCPPs have been shown to reduce the utilization of prescription controlled drugs by 50% or more (170). EDT systems also have shown reduction in prescription drug volumes, however to a much lesser extent (168).

INFLUENCE OF PMP'S ON PRESCRIPTION AVAILABILITY

No doubt, medical practices influenced by patient abuse and regulations. The reduced use of controlled substances may have a positive or negative influence on interventional pain practices. On the positive side, reduced use of controlled substances not only limits abuse but also limits misuse and dependency problems. However, a negative side effect of these activities on medical practices could include that patients have less access to medically necessary and legitimate controlled substances. Access may be impeded due to increased sensitivity of the providers resulting in alteration of their prescribing and dispensing patterns in response to regulatory oversight, fear, administrative burden and increased overhead costs. The monetary costs for multiple copy prescription forms are generally negligible, but vary in each state, ranging from $7 to $50 per 100 forms (5). If the cost of forms is considered as negligible, inconvenience imposed on the staff and administrative burden is considered as enormous by some. With EDT, the major administrative burden, however, falls on the pharmacist. However, it is stated that after startup costs, which can be considerable, the pharmacists generally incur little or no expense for collecting or providing the data (5). Some state that the time and expense required for the pharmacists to go "online" may be considerable. However, many of these costs are subsidized by the states. Unless promoted or advertised heavily, the physician remains oblivious to the very presence of EDT and its availability. In a survey of Massachusetts physicians, 59.4% of the physicians remained unaware of the states EDT system six years after its implementation (171). In addition, many of the programs are not focused on managing patient profiles and providing the profiles to the patients. In some states, these profiles are not even accessible to the physicians. In many states, physicians are unaware of the existence and utilization of the programs.

Many of the programs are limited to Schedule II drugs. Many policy makers have shown that MCPPs have decreased their utilization of controlled substances (169, 170, 172-174). Sigler and Guernsey (172) found that multiple copy programs reduced outpatient prescribing of Schedule II narcotics by 60.4%. All others have also documented dramatic decreases of controlled substances when MCPPs are implemented (5). In New York, the number of benzodiazepine prescriptions filled per week decreased 65% and the number of drug units dispensed per week decreased 43%, suggesting that the decrease in the number of scripts was not offset by an increase in the quantity per prescription (170). Thus, New York MCPP provision dramatically reduced benzodiazepine utilization (172, 173). Massachusetts also reported that prescribing of Schedule II drugs increased 32% in 2 years since the EDT system was implemented, due in part to improved pharmacy report and compliance and to a doubling of methylphenidate prescriptions (168). However, appropriate reductions in prescribing under EDT systems occurs invariably when providers are notified. Oklahoma has reported a decline in Schedule II prescriptions after it has implemented its EDT system (175).

THE NATIONAL ALL SUBSTANCE PRESCRIPTION ELECTRONIC REPORTING ACT (NASPER)

The rationale for request for a National All Substances Prescription Electronic Reporting Act (NASPER) is as follows:

Public Health Issues

There is no doubt that prescription drug abuse is a major problem in the United States. Thus, healthcare practitioners and pharmacists desperately need a federal electronic monitoring system to ensure that they are prescribing and dispensing Schedule II, III and IV controlled substances that are medically necessary. Without such a databank, practitioners and pharmacists have no way of knowing whether a particular patient is receiving the same medication from other practitioners. Patients may be receiving Schedule II, III and IV prescriptions from multiple practitioners who are unaware of the potential for drug interactions or of the potential for abuse and trafficking of certain medications. All of these situations pose serious public health issues.

State Prescription Monitoring Programs

The need for monitoring systems is evident from the fact that a number of states, including California, Hawaii, Idaho, Illinois, Indiana, Kentucky, Massachusetts, Michigan, Nevada, New Mexico, New York, Oklahoma, Rhode Island, Texas, Utah, Washington and West Virginia have created such systems. The state programs vary with respect to the schedule of substances for which reporting is required. Some of these are not electronic. Of the 17 programs available and active, only 2 or 3 programs provide a mechanism for the physician to obtain a patient profile. Further, only 7 states include Schedule III and IV drugs. Florida and Virginia are actively considering such programs.

The Need for a National Program

Not all states have electronic monitoring systems in place. State programs that are in place are neither uniform nor integrated. Patients in close proximity of one jurisdiction to another, as in cases involving Virginia, the District of Columbia and Maryland; Illinois, Kentucky, Missouri, Indiana and Tennessee; Wisconsin, Michigan and Illinois; Ohio and West Virginia will typically be able to obtain multiple prescriptions by merely crossing the state lines. In addition, the conscious and more prevalent unconscious misuse of Schedule II, III and IV controlled substances is a national problem that cannot be effectively addressed on a state-by-state basis. A federal databank may obviate the need for state programs, which can only be of limited value as long as not all states have such program and the programs that are in place lack uniformity and integration. Seventeen states monitor Schedule II drugs, 7 states monitor Schedule III and IV drugs and only 4 states monitor Schedule V drugs.

Costs

Data from the various states suggests that cost would be modest and, in any event, outweighed by savings from the public health benefits of implementing such a system.

NASPER: THE ACT

The American Society of Interventional Pain Physicians, with its goal of improving patient access and providing quality care, at the same time, facilitating appropriate practice patterns, is requesting Congress to pass a bill to maintain a federal pain control substance database covering Schedule II, III and IV controlled substances. The language of this act is as follows:

(1) Schedule II, III, and IV controlled substances have a useful and legitimate medical purpose and are necessary to maintain the health and general welfare of the American people.
(2) Schedule II, III, and IV controlled substances have a moderate to high potential for misuse, abuse, improper use, and illegal distribution when the prescribing practitioner is unaware of all such prescriptions that a patient is receiving.
(3) Such misuse poses substantial and detrimental effects on the health and welfare of the American people.
(4) Currently there is no national databank that health care practitioners and pharmacists who, respectively, prescribe and dispense Schedule II, III, and IV controlled substances can access to determine whether a particular prescription is medically unnecessary.
(5) A national electronic databank would allow physicians to access the information necessary to ascertain that a particular prescription may be unnecessary or the subject of misuse.
(6) A major portion of the use and misuse of Schedule II, III, and IV controlled substances involves interstate and foreign commerce.
(7) Schedule II, III and IV controlled substances dispensed intrastate cannot be differentiated from Schedule II, III and IV controlled substances that are dispensed interstate, and have significant interstate effects.

The following amends 21 U.S.C. § 802.

Section 1 - Electronic Monitoring System for Dispensing of Controlled Substances

(a) The Administrator of the Food and Drug Agency shall establish an electronic system for practitioner monitoring of the dispensing of Schedule II, III, and IV controlled substances as described in 21 U.S.C. § 812 (b)(2), (b)(3), and (b)(4), respectively, involving patients under their care.
(b) A practitioner or pharmacist shall not have to pay a fee or tax in connection with the system.
(c) Every dispenser who is licensed under applicable state licensing laws shall report to the Administrator the data required by this section in a timely manner as prescribed by the Administrator, except that reporting shall not be required for:
    (1) a drug administered directly to a patient; or
    (2) a drug dispensed in a quantity limited to an amount adequate to treat the patient for forty-eight (48) hours or less.
(d) Data for each Schedule II, III and IV controlled substance that is dispensed shall be determined by the Administrator by regulation but shall include, at a minimum, the following:
    (1) patient identifier;
    (2) drug dispensed;
    (3) date of dispensing;
    (4) quantity dispensed;
    (5) practitioner who signed the prescription; and
    (6) dispenser.
(e) The data shall be provided in the electronic format specified by the Administrator unless a waiver has

been granted by the Administrator to an individual dispenser.

(f) The Administrator shall be authorized to provide data in response to a request by a practitioner or pharmacist who certifies that the requested information is for the purpose of providing medical or pharmaceutical treatment or to evaluate the need for such treatment to a bona fide current patient.

(g) A practitioner or pharmacist who receives data or any report of the system from the Administrator shall not provide it to any other person or entity except by order of a court of competent jurisdiction or other legal authority, with written patient consent, or written patient authorization as permitted by 42 U.S.C. § 1320d and regulations promulgated thereunder.

(h) Knowing failure by a dispenser to transmit data to the Administrator as required by this section shall subject the dispenser to a civil monetary penalty of $100 per incident subject to a maximum per patient of $25,000.

(k) Knowing disclosure of transmitted data to a person not authorized by subsection (f) of this Section or authorized under 42 U.S.C. § 1320d and regulations promulgated thereunder, or obtaining information under this section not relating to a bona fide specific current patient, shall be punishable by a civil monetary penalty of up to $25,000 per violation.

CONCLUSION

Prescription controlled substance abuse is a major issue in the United States. It is a public health issue affecting patient access to appropriate interventions due to fear of sanctions by the providers. Passage of National All Schedules Prescription Electronic Reporting Act (NASPER) will improve patient care and reduce abuse of prescription controlled substances.

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