Pain Physician 2013; 16:E1-E13 • ISSN 2150-1149

Prospective Evaluation

A Prospective Evaluation of Psychotherapeutic and Illicit Drug Use in Patients Presenting with Chronic Pain at the Time of Initial Evaluation

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Disclaimer: There was no external funding in the preparation of this manuscript.
Conflict of interest: None.

Manuscript received: 1-3-2013
Accepted for publication: 1-10-2013

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Background: Reports of chronic pain and associated opioid use, abuse, and fatalities continue to increase at an alarming rate, not only in the United States but also across the globe. In light of the many resultant fatalities, multiple authors and authorities have cautioned against the excessive use of opioids. Consequently, the Food and Drug Administration, Drug Enforcement Administration, and multiple state authorities have been proposing and implementing a plethora of regulations to curb opioid overuse and abuse. In the majority of cases, pain physicians have been portrayed as the perpetrators responsible for escalating use and abuse and resultant fatalities.

Objectives: To assess the patterns of psychotherapeutic drug use and illicit drug use at the time of initial evaluation.

Study Design: A prospective evaluation.

Setting: A private, specialty referral interventional pain management clinic in the United States.

Methods: Participants were all new patients presenting to interventional pain management evaluated by one physician. Inclusion criteria was patients over 18 years of age with chronic spinal pain of at least one year duration.

Results: The results of this evaluation indicate that 94% of patients were on long-term opioids prior to presenting to interventional pain management. Illicit drug use is also common, although it has declined significantly. While a large proportion of individuals (45.7%) have used illicit drugs at some point in the past, current illicit drug use is present in only 7.9% of patients, both past and current use are similar to that of the general population. More importantly, a significant proportion of patients have been on opioids (high doses of more than 40 mg equivalents of morphine 48.8%) on a long-term basis, initiated and maintained by primary care physicians, prior to presenting to interventional pain management. Further, 35% were on benzodiazepines, and 9.2% on carisoprodol prior to presenting to interventional pain management.

Limitations: The limitations of this evaluation include that it is a prospective, single center evaluation by one physician that is partially dependent on subjective recall of the patient.

Conclusion: This study shows an overwhelming majority of patients were initiated and maintained with opioids in managing chronic noncancer pain. They were frequently on high doses over a long period of time with multiple drug combinations prescribed by primary care physicians.

Key Words: Chronic pain, persistent pain, noncancer pain, controlled substances, substance abuse, prescription drug abuse, opioids, prescriptions, urine drug testing, fatalities, regulations

Pain Physician 2013; 16:-E1-E13

Reports of escalating chronic pain in the United States and globally continue to emerge (1-6). Similar to the prevalence of chronic pain, the financial costs, health care costs, and disability secondary to chronic pain continue to escalate in conjunction with numerous diagnostic and treatment modalities with related complications in epidemic proportions (4-47). Even though there is an escalation in the utilization of all types of interventions, opioids have taken a central role (31-35,48-86). The Institute of Medicine (IOM) committee reported that when opioids are used as prescribed; they will most likely be safe and effective for acute postoperative pain, procedural pain, and in patients nearing the end of life who desire more pain relief (1).

However, in contrast, the IOM committee has acknowledged the existence of a serious crisis in the diversion and abuse of opioids and a lack of evidence for the long-term usefulness of opioids in treating chronic pain. Increases in the prevalence of chronic pain, health care costs, and adverse consequences due to opioid use have caused the opioid crisis to escalate across the globe (1-6,31-35,48-87). The results of the 2010 National Survey on Drug Use and Health (NSDUH) (80), an annual survey sponsored by the Substance Abuse and Mental Health Services Administration, showed that an estimated 22.6 million, or 8.9% of Americans, aged 12 or older, were current (past month) illicit drug users. Illicit drugs include marijuana, cocaine, heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics (defined in this survey as prescription-type pain relievers, tranquilizers, stimulants, and sedatives) used nonmedically. Marijuana was the most commonly used illicit drug, with 17.4 million current past month users, constituting 6.9% of the United States population. Overall, from 2002 to 2010 there has been a decrease in cocaine use, but an increase in the current use of all other illicit drugs and marijuana, without any change for psychotherapeutics or hallucinogens.

Of primary concern, however, is the fact that the use of therapeutic opioids is escalating (33), specifically in high doses over long periods of times or even lifetime use, and that these long-acting drugs. and a combination of long and short-acting drugs continue to have serious consequences including fatalities, increased health care costs and economic stability. The data overwhelmingly suggests that the increased supply of opioids, high medical users, doctor shoppers, and patients with multiple comorbid factors contribute to the majority of fatalities (33,81). 60% of fatalities are among individuals receiving prescription drugs (33,81).

The quadrupled sales of opioid analgesics between 1999 and 2010 are a perfect example of the therapeutic opioid explosion. The data on sales and distribution of opioids show an increase from 96 mg morphine equivalents per person in the United States in 1997 to 710 mg per person in 2010 (81,82). This has been estimated to be the equivalent of 7.1 kg of opioid medication per 10,000 persons, or enough to supply every adult American with 5 mg of hydrocodone every 8 hours for 47 days. Sales of hydrocodone have increased by 280% from 1997 to 2007, whereas methadone usage has increased 1,293% and oxycodone usage by 866% (33). In addition, the estimated number of prescriptions filled for opioids exceeded 256 million in the United States in 2009, with 234 million prescriptions for immediate release (IR) opioids and 22.9 million for extended release (ER) opioids with a significant increase from 21.3 million for ER opioids and from 223.9 million for IR opioids from 2007 (83-85). Among these drugs, from 2006 through 2011 hydrocodone was still the number one prescription (86).

Unfortunately, gram per gram, people in the United States consumed more opioid medication than any other nation worldwide. Public opinion rests on the belief that pain physicians are responsible for the escalating use of opioids, and this belief has resulted in the implementation of multiple regulations (88). The data (84), however, shows that pain physicians are responsible for only 6% of prescriptions for IR opioids and 44% of prescriptions for long acting opioids. The majority of prescriptions are from medical providers including nonphysician providers. Numerous studies have illustrated that opioid prescriptions in patients outside pain management clinics and 90% of the patients in pain management clinics to be on opioids (31-33,67-86,89).

It has also been shown that the majority of patients prior to presenting to pain clinics are already on opioids. It is well known that opioids also function as a gateway to abuse patterns and that they are extremely difficult to be taken off or weaned off of. In fact, Manchikanti et al (89), in 2004 in assessing patterns of illicit drug use and opioid abuse in patients with chronic pain at initial evaluation showed that of the 90% of patients who were already taking opioids, 23% were using illicit drugs, and 12% were using nonprescription opioids. In addition, in 2011 Deyo et al (77) reported the results of an analysis of electronic data from over 25,000 eligible patients, with 61% receiving a course of opioids, and with 19% of patients being long-term us-

ers. Among the long-term opioid users, 59% received only short-acting drugs; 39% received both long and short acting drugs; and 44% received a sedative hypnotic. Of those with any opioid use, 36% had visited a hospital emergency department. They concluded that prescription opioids were common among primary care patients with back pain. Moreover, the prevalence of psychologic distress, unhealthy lifestyles, and health care utilization increased incrementally with the duration of use. Multiple issues have been described in reference to long-term opioid use in primary care and other settings (31-33,69-86). In the past decade or so, the epidemic of opioid abuse has been brought to the forefront, resulting in numerous policies affecting opioid prescriptions (33,81).

We have undertaken a prospective evaluation to assess the patterns of psychotherapeutic drug use and illicit drug use at the time of initial evaluation at a private, specialty referral interventional pain management clinic in the United States.

Methods

This study was undertaken in a private, specialty referral interventional pain management clinic in the United States. The protocol was approved by the Institutional Review Board. This study was conducted with the internal resources of the practice; there was no external funding, either from industry or from elsewhere.

Patients

Those assessed were all new patients presenting to interventional pain management and were evaluated by one physician. There was no specific pattern followed to decide which patients were to be seen by any of the clinic's physicians. All patients aged 18 years and older were evaluated with a history, physical examination, psychological evaluation, review of records, and urine drug testing. These evaluations are a normal component of the comprehensive evaluation provided to patients at this clinic. No incentive, financial or otherwise, was provided to patients.

While all patients were given an explanation of the initial evaluation and the information collection process. Assessment by drug monitoring programs and urine drug testing is mandatory at this organization. Informed consent was obtained from all patients prior to assessment. Appropriate precautions were taken to protect the privacy and anonymity of all patients included in the study.

Inclusion criteria were that patients be over 18 years of age had been referred to a pain management center with at least a one-year duration of spinal pain. In addition, patients were willing to undergo the appropriate assessment and were also able to provide voluntary return informed consent for the evaluation. Exclusion criteria included an inability to understand the process, pain of less than a one-year duration, non-spinal pain, and patients unwilling to participate in the evaluation process.

A complete history was obtained from patients in reference to the duration of psychotherapeutic drug therapy, as well as the nature of the psychotherapeutic drugs, dosage, and duration. A drug profile history was assessed from the history, drug monitoring program reports and previous medical records.

Rapid drug screening was performed on all patients evaluated. Rapid drug screening is a one-step, lateral flow immunoassay for the simultaneous detection of up to 8 drugs by urine analysis.

A positive drug screen for an illicit drug was considered as illicit drug use. Any test result where the rapid drug screen did not correlate with patient history was sent for confirmation to the lab with liquid chromatography-tandem mass spectrometry (LC/MS/MS). This drug testing process has been described in the past (90,91).

The American Psychiatric Association's DSM-IV criteria were utilized for the assessment of major depression, generalized anxiety disorder, and somatization disorder. Other psychologically confirmed diagnoses were also included, and are reported herewith if they constituted more than 5% of the population.

Opioid intake was evaluated based on the dosage frequency and schedule of the drug, with conversion to morphine equivalents (92,93).

Long-term opioid therapy was defined by opioid use episodes lasting longer than 90 days with at least 10 prescriptions (92). Any opioid therapy for less than 90 days or for postoperative pain or other indications were considered as acute opioid therapy. Long-term episodes were considered a higher dose if the average daily dose was 41 mg morphine equivalence or greater, whereas episodes of 40 mg of morphine equivalence or lower were considered as a lower dose.

The average daily dose is the total morphine equivalence for an episode divided by the episode's duration in days.

Statistical Methods

In this manuscript we present data on the most

frequently prescribed types of opioids, as well as the percentage of patients receiving opioids alone and in combinations. Also analyzed were the maximum number of opioids utilized, the number of years on opioids, total opioid intake based on morphine equivalency in grams, daily average dose, and data related to doctor shopping and illicit drug use.

Differences were tested using the chi-squared test. Results were considered statistically significant if the *P* value was less than 0.05. The prevalence and 95% confidence intervals were calculated.

Results

Participant Flow

From January 2008 through November 2012, 1,350 patients who met the inclusion criterion of over the age of 18 with chronic spinal pain lasting at least one year were included and given a comprehensive evaluation by one physician.

Demographic Characteristics

Table 1 shows the demographic characteristics of the 1,350 consecutive patients assessed. There was sig-

Table 1. Demographics characteristics.

		Men	Women	Total
% (Number)		41.0% (554)	59.0% (796)	1350
Age (years)	Mean ± SD	47.4 ± 14.3	46.7 ± 14.3	47.0 ± 14.3
	< 65	88.1% (288)	89.1% (709)	0.575
	≥ 65	11.9% (66)	10.9% (87)	
Height	Mean ± SD	70.2 ± 3.2	64.4* ± 2.8	66.8 ± 4.1
Weight	Mean ± SD	204.2 ± 47.3	176.9* ± 49.2	188.1 ± 50.3
Body Mass Index	Mean ± SD	29.1 ± 6.4	29.9* ± 7.8	29.6 ± 7.3
Body Mass Index Distribution	Underweight	0.9% (5)	2.8% (22)	2.0% (27)
	Normal weight	24.9% (138)	27.3% (217)	26.3% (355)
	Overweight	37.0% (205)	27.4% (218)	31.3% (423)
	Obesity	37.2% (206)	42.6%* (339)	40.4% (545)
Race	White	92.6% (513)	93.0% (741)	93.0% (1254)
	African American and Others	7.4% (41)	7.0% (55)	7.0% (96)
Referral	MD	83.2% (461)	88.3%* (703)	86.2 (1164)
	Self	16.8% (93)	11.7% (93)	13.8% (186)
Smoking	No	31.4% (174)	36.1% (287)	34.1% (461)
	Past	8.8% (49)	6.2% (49)	7.3% (98)
	Presently	59.7% (331)	57.8% (460)	58.6% (791)
Any Psychological Disorder		57.9% (321)	75.0%* (598)	68.0% (919)
Major Depression		45.5% (252)	66.2%* (527)	57.7% (779)
Generalized Anxiety Disorder		50.4% (279)	63.3%* (504)	58.0% (783)
Somatization		5.1% (28)	10.6%* (84)	8.3% (112)
Panic Disorder		8.3% (46)	16.9%* (135)	13.4 % (181)
Bipolar Disorder		3.4% (19)	8.2%* (65)	6.2% (84)
Number of Regions Involved				
One Region		44.8% (248)	33.3%* (265)	38.0% (513)
2 Regions		36.8% (204)	36.2% (288)	36.4% (492)
3 Regions		18.4% (102)	30.5%* (243)	25.6% (345)
Lumbar		88.0% (487)	89.0% (712)	89.0% (1199)
Cervical		54.0% (301)	67.0%* (534)	62.0% (835)
Thoracic		26.0% (143)	37.0%* (298)	33.0% (441)
Other		6.0% (33)	3.4*% (27)	4.4% (60)

* Significantly differ with men.

* Significantly differ with men.

nificant difference in the ratio of men to women (41% versus 59%). There were no differences in the age groups. Men as expected, were taller and heavier, however body mass index was higher in women than men. Only 2% of the patients were underweight; and 26.3% were of normal weight. The percentage of overweight patients was 31.3% while those considered obese were 40.4% for a total of over 70% in the overweight and obese category. Overall, 86.2% of patients were referred by another health care provider. Of these, a significantly higher percentage, 88.3% women versus 83.2% men, were referred by health care providers.

Patients who smoked at the time of evaluation was 58.6%, with no significant differences in men and women. Past smoking was reported in 7.3% of the patients; 34.1% were nonsmokers.

At least one of the psychological disorders was present in 68% of the patients. Major depression and generalized anxiety disorder were present in almost 58% of the patients, with women constituting a higher proportion than men. Somatization was also higher in women with 10.6% versus 5.1% in men, with an overall prevalence of 8.3%. Panic disorder and bipolar disorder were also higher in women with an overall prevalence of 13.4% for panic disorder and 6.2% for bipolar disorder.

The pain characteristics showed the majority of the patients with involvement of the lumbar region (89%), followed by cervical (62%), thoracic (33%), and other regions (4.4%). In addition, only one region was involved in 38% of patients, whereas 2 regions were involved in 36.4% of patients, and 3 regions were involved in 25.6% of patients.

Psychotherapeutic Drug Use

Table 2 illustrates psychotherapeutic drug use with opioids, benzodiazepines, carisoprodol, and various combinations. Ninety-four percent of patients were on opioids, 35% were on benzodiazepines, and 9.2% on carisoprodol. In reference to the combinations, 55.8 were taking only opioids, 29.3% were taking a combination of opioids and benzodiazepines, 4% were taking opioids and carisoprodol, and 5% were taking a combination of all 3 drugs.

Table 3 shows the number of opioids taken during the course of treatment. As shown in Table 3, only 6.1% of the patients were not on chronic opioid therapy. The majority (55.7%) were administered only one opioid, whereas 24.7% were administered 2 opioids, 8.8% were administered 3 opioids, and 4.7% were administered 4 or more opioids over the course of treatment.

Table 4 illustrates the number of years on opioids. The majority of patients were on opioids for greater than one year. Only 23.3% of patients were on chronic opioid therapy for less than one year. At least 35% of patients were on opioids for more than 5 years.

Table 2. *Illustration of psychotherapeutic drugs use with opioids, benzodiazepines, carisoprodol, and various combinations.*

	Men	Women	Total
None	4.2% (23)	5.8% (46)	5.1% (69)
Opioids	95.3% (528)	93.2% (742)	94.0% (1270)
Benzodiazepines	29.2% (162)	38.9%* (310)	35.0% (472)
Carisoprodol	7.2% (40)	10.6% (84)	9.2% (124)
COMBINATIONS			
Opioids	63.0% (349)	50.8%* (404)	55.8% (753)
Benzodiazepines	0.7% (4)	0.6% (5)	0.7% (9)
Carisoprodol	0.0% (0)	0.3% (2)	0.1% (2)
Opioids & Benzodiazepines	24.9% (138)	32.3%* (257)	29.3% (395)
Opioids & Carisoprodol	3.6% (20)	4.3% (34)	4.0% (54)
Opioids, Benzodiazepines & Carisoprodol	3.6% (20)	6.0% (48)	5.0% (68)
Total	554	796	1350

* Significantly differ with men.

Table 3. *Exposure to total number of opioids during course of treatments.*

Number of opioids	Frequency	Percent	Cumulative Percent
None	83	6.1	6.1
1	752	55.7	61.8
2	333	24.7	86.5
3	119	8.8	95.3
≥4	63	4.7	100.0
Total	**1350**	**100.0**	

Table 4. *Number of years on opioids.*

Years	Frequency	Percent	Cumulative Percent
< 1	295	23.3	23.3
1 - 2	173	13.7	36.9
2 - 5	355	28.0	65.0
5 - 10	242	19.1	84.1
10 - 15	109	8.6	92.7
>15	93	7.3	100.0
Total	1267	100.0	

Table 5 illustrates the total dosage or intake of opioids in grams of morphine equivalents. The majority of the patients used more than 10 grams of opioids in their lifetime with over 20% using greater than 200 grams of opioid during the course of treatment. The mean morphine equivalent dosage of opioids per patient was 164 ± 388.2 grams. This translates into 164,000 mgs of morphine equivalents per patient during the course of treatment.

Table 6 shows the daily average dose, with 51.2% of patients taking 40 mg or less per day of morphine equivalents. Over 28% of patients, however, were taking opioid dosages greater than 100 mg.

The most commonly used drug was hydrocodone (86%) followed by oxycodone (28%) (Table 7). Tramadol was used in only 10% of patients. Codeine was used in a small proportion of patients, 46 out of 1,350. Methadone was used in 5.6%. The most commonly used benzodiazepine was alprazolam, which was used in 263 patients, followed by diazepam and others.

Table 5. *Total intake opioids (morphine equivalents dose) in grams.*

Grams	Frequency	Percent	Cumulative %	Mean ± SD
< 10	241	19.0	19.0	4.0 ± 2.7
10 - 40	338	26.7	45.7	22.0 ± 8.0
41 - 100	234	18.5	64.2	67.0 ± 17.1
101 - 200	191	15.1	79.2	144.0 ± 29.0
201 - 300	95	7.5	86.7	240.0 ± 26.3
301 - 500	78	6.2	92.9	383.0 ± 53.3
≥ 501	90	7.1	100.0	1147.0 ± 969.7
Total	1267	100.0		164.0 ± 388.2

Table 6. *Daily average dose.*

Mg per Day	Frequency	Percent	Cumulative %	Mean ± SD(mg)
≤20	121	9.6	9.6	16.0 ± 4.3
21 - 30	287	22.8	32.4	28.0 ± 3.5
31 - 40	237	18.8	51.2	40.0 ±.08
41 - 50	74	5.9	57.1	49.0 ± 1.9
51 - 60	62	4.9	62.0	60.0 ± 1.1
61 - 70	30	2.4	64.4	69.0 ± 2.4
71 - 80	54	4.3	68.7	80.0 ± 1.6
81 - 90	14	1.1	69.8	88.0 ± 2.8
91 - 100	23	1.8	71.6	100.0 ± 1.1
101 - 200	154	12.2	83.9	152.0 ± 30.7
201 - 300	125	9.9	93.8	247.0 ± 26.1
> 301	78	6.2	100.0	446.0 ± 146.1
Total	1259			100.0 ± 119.4

Average daily intake of opioids 100 mg (morphine equivalents)

Psychotherapeutic Drug Abuse and Illicit Drug Use

Past and present drug abuse and illicit drug use patterns are shown in Table 8. Based on the available history, 1.1% of the patients were engaged in doctor shopping, whereas 45.7% had used illicit drugs in the past. The majority (601 patients) used marijuana followed by cocaine (99 patients) and methamphetamine (46 patients). Marijuana use was significantly higher in men than women (52.7% versus 38.8%).

With reference to current drug use (within 30 days), 1.3% of patients tested positive for prescription drug abuse by urine drug testing, however, 7.9% of patients tested positive for illicit drug use. Among these 106 patients, 99 tested positive for marijuana, 7 tested positive for cocaine, and only one was confirmed positive for methamphetamine.

Discussion

This prospective evaluation of the demographic characteristics, drug usage, and illicit drug use patterns of patients presenting to an interventional pain management practice who had chronic pain of at least one year and who had undergone a minimum of 3 months of opioid therapy, illustrates that a total of 45.7% of them had a history of past illicit drug use, including 7.9% who had used illicit drugs at the time of the evaluation and 1.3% who were abusing prescription drugs. Marijuana was the most common drug used in the past and also at the time of assessment.

This prospective evaluation of 1,350 patients shows that a large percentage of patients, almost 94%, were taking opioids, 35% were taking benzodiazepines, over 9% were taking carisoprodol, and over 29% were taking opioids in combination with benzodiazepines. In addition, a significant percentage (40.8%) had received over 40 mg of morphine equivalent doses of opioids over a long period of time (with 35% for longer than 5 years). There was a total dose of 164,000 mg morphine equivalents per patient over the course of treatment. More men were receiving only opioids compared to women. Furthermore, women were receiving benzodiazepines and combinations of opioids and benzodiazepines. Overall, there was no difference in patients receiving opi-

Table 7. *Frequency of prescribed opioids and benzodiazepines.*

Medication	Count	Percent
Hydrocodone	1165	86.3%
Oxycodone	380	28.1%
Tramadol	133	9.9%
Morphine	105	7.8%
Methadone	75	5.6%
Codeine	46	3.4%
Transdermal Fentanyl	40	3.0%
Hydromorphone	19	1.4%
Oxymorphone	12	0.9%
Diazepam	125	9.3%
Alprazolam	263	19.5%
Lorazepam	51	3.8%
Clonazepam	87	6.4%
Carisoprodol	123	9.1%

Table 8. *Drug abuse and illicit drug use patterns*

PAST				
		Men (554)	Women (796)	Total (1350)
Doctor Shopping		1.6% (9)	0.8% (6)	1.1% (15)
Past Illicit Drug Use		54.0% (299)	39.8%* (317)	45.7% (616)
Past Illicit Drug Use	Marijuana	52.7% (292)	38.8%* (309)	44.5% (601)
	Cocaine	8.6% (48)	6.4% (51)	7.3% (99)
	Methamphetamine	4.1% (23)	2.9% (23)	3.4% (46)
CURRENT				
Prescription Abuse		2.2% (12)	0.8%* (6)	1.3% (18)
Illicit Drug Use		9.4% (52)	6.8% (54)	7.9% (106)
Illicit Drug Use	Marijuana	49	50	7.3% (99)
	Cocaine	5	4	0.5% (7)
	Methamphetamine	1		0.07% (1)

oids based on gender, although the use of benzodiazepines was higher in women.

The results of this study are different from our previous evaluation (89), however, the previous evaluation included only 100 patients and the results showed 90% of them were taking opioids. This increased to 94% in this study. In contrast, the present assessment shows only 1.3% of the patients using nonprescribed psychotherapeutic agents. Illicit drug use was demonstrated in 7.9% of the patients compared to 23% in 2004. In this study it clearly shows that prior to presenting to pain management clinics, patients have tried multiple drugs, frequently in high doses. Their high use of opioids came from primary care providers rather than from pain clinics.

The epidemic of opioid abuse, overuse, and abuse continues despite multiple guidelines and regulations. In fact, the majority of fatalities (60%) reported (81) are related to prescription opioid use. These fatalities can be in patients taking small doses as well as high doses even though they are more common in patients taking high doses. Nevertheless, it has been shown that small doses are also responsible for significant fatalities (33,81,94-99). In addition, increased opioid sales have been attributed proportionately to treatment admissions and deaths (81).

Thus, interventional pain management physicians are faced with 94% of patients having been exposed to opioids and approximately 30% to a combination of opioids with other controlled substances. There has been a shift toward an increased reliance on opioids for treating chronic pain with or without other treatment (31-33).

The dramatic increases in the number of opioid prescriptions for noncancer pain over the past 2 decades coincides with the liberalization of laws governing opioid prescribing for the treatment of chronic noncancer pain by the state medical boards in the late 1990s. Other contributing factors include the introduction of new pain management standards for inpatient and outpatient medical care issued by the Joint Commission on Accreditation of Health Care Organizations (JCAHO) in 2000; multiple physicians and organizations advocating the increased use of opioids in the treatment of chronic noncancer pain; aggressive marketing by the pharmaceutical industry; the development of long-acting opioids; a growing awareness of the right to pain relief empowered by JCAHO standards; and with a media that sensationalizes anecdotal patient experiences by highlighting "heroic" physicians who have been victimized because of their heavy opioid prescribing patterns (31).

While proponents continue to advocate increased opioid therapy, responsible opioid prescribers and opponents have been conducting a postmortem analysis of the opioid epidemic and its consequences (31). Most agree that there have been gross miscalculations and misinformation behind providing therapy on such a wide scale in the absence of evidence and proven safety. In fact, Russell Portenoy, the author of the studies that falsely promoted effectiveness and safety has recently admitted to the devastating effects of opioid abuse and to the widespread miscalculation and misinformation that has led to such devastating abuse patterns (100).

Among all the illicit drugs used in the United States, marijuana has been the illicit substance most commonly used for several decades (80). However, in recent years, the medicalization of marijuana has increased and 2 states have approved it for recreational use (http://apps.leg.wa.gov/RCW/default.aspx?cite=69.51A&full=true). Proponents argue that it is a plant that is highly effective for various types of ailments and that the side effects are minimal or nonexistent. Consequently, marijuana is being decriminalized. However, marijuana use is associated with impaired educational attainment, reduced workplace productivity, and an increased risk for abuse of other substances. Marijuana use has been shown to play a major role in motor vehicle crashes and to cause adverse effects on cardiovascular and respiratory systems. The use of marijuana or hashish produces feelings of relaxation and well-being and impairs cognitive function and the performance of psychomotor tasks (89). Associations between early cannabis use and later drug use and abuse/dependence have been demonstrated, and may arise from the effects of the peer and social context within which cannabis is used and obtained (89). At least one-third of the US population has used marijuana sometime in their lives. The drug is considered a "gateway" to the world of illicit drug abuse. Various reasons attributed to its widespread use are: relaxed public perception of the harm; popularization by the media and by groups advocating legalization; the Internet; and the trend of smoking marijuana-filled cigars. In this study, current marijuana use was identified in 7.3% of patients, which is similar to 7.0% in the general population (80), even though lifetime exposure was lower in present patient population (44.5% versus 47.1%).

Our results are similar to the other published results (101). Zvolensky et al (101), in a representative sample of US adults examined the connections between chronic pain and marijuana after controlling for sociodemographic variables, lifetime history of depression, and alcohol abuse/dependence. Current chronic pain was significantly associated with lifetime marijuana use; however, there was no significant association between current chronic pain and current marijuana use, similar to the results of our study.

Cocaine and methamphetamine were detected in a very small percentage of patients: 0.5% for cocaine and 0.07% for methamphetamine. Based on NSDUH survey, however, lifetime exposure of cocaine was present in 7.3% of patients and methamphetamine in 3.4% of patients compared to 14.7% and 5.1%, in the general population (80).

This is the largest study assessing opioid exposure prior to presenting to interventional pain management settings in the United States. It is a prospective evaluation with assessment from various sources. It may be criticized for utilizing rapid drug screening instead of LC/MS/MS, or enzyme immunoassay. This issue has been debated. Some assert that each and every specimen must be sent to a lab and confirmed for a myriad of drugs; others state that immunoassay testing is reliable and that confirmation should only be requested if there are questions regarding results and patient history (32,90,91). There is a significant correlation between immunoassay and chromatography for the majority of drugs in pain medicine settings (90,91). However, on occasion, it should also be noted that even confirmatory testing requires expert assistance for interpretation (32). In this study we have taken appropriate caution to send all questionable specimens for confirmation.

Despite many advantages and the size of the assessment, this study may be criticized. Limitations include that patients were assessed by only one physician, it was conducted in a single interventional pain management setting in the United States, rapid drug screen testing was used, and to some extent there was a reliance on patient history. All of the disadvantages have been discussed above and the study is considered comprehensive, illustrating that the majority of patients initially receive their medications from primary care physicians.

Conclusion

The results of this evaluation show that 94% of patients are on long-term opioids prior to presenting to interventional pain management, which were initiated and maintained by primary care physicians, in rather high doses and on a long-term basis. Illicit drug use also is common even though it is declining significantly. A large percentage of individuals have used illicit drugs in the past, however, current illicit drug use is present in only 7.9% of patients, which is similar to its use in the general population.

Acknowledgments

The authors wish to thank Sekar Edem for assistance in the search of the literature, Tom Prigge, MA, Alvaro F. Gómez, MA, and Laurie Swick, BS for manuscript review, and Tonie M. Hatton and Diane E. Neihoff, transcriptionists, for their assistance in preparation of this manuscript. We would like to thank the editorial board of *Pain Physician* for review and criticism in improving the manuscript.

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