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After studying this article, you should be able to:

- Use a prescription drug monitoring program database in behavioral health care to prevent and identify opioid dependence and addiction

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Prescription Drug Monitoring Program Inquiry in Psychiatric Assessment: Detection of High Rates of Opioid Prescribing to a Dual Diagnosis Population

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ABSTRACT

Objective: An epidemic of prescription drug abuse is disproportionately impacting the mentally ill. We examined the utility of a state prescription drug monitoring database for assessing recent controlled substance prescribing to patients presenting for dual diagnosis treatment.

Method: In a community mental health center that provides integrated dual diagnosis care, we queried the Indiana Scheduled Prescription Electronic Collection and Tracking (INSPECT) system for all cases that were open as of August 2, 2011, and had been practitioner-diagnosed (per *DSM-IV* criteria) by January 2, 2012. INSPECT provided a record of controlled substance dispensations to each patient; diagnostic evaluation was conducted blind from prescription data compilation covering the prior 12 months. Demographic data, insurance status, and *DSM-IV* diagnoses were compiled from the clinic's electronic medical record.

Results: The sample (N = 201) was 51% female, 56% white, and two-thirds uninsured. Over 80% were dually diagnosed with substance use disorders and psychotic, mood, or anxiety disorders. Nicotine and alcohol disorders were identified in most, with about a third diagnosed with cannabis, cocaine, or opioid disorders. A majority of patients (n = 115) had been prescribed opioids in the prior year, with nearly 1 in 5 prescribed an opioid and benzodiazepine simultaneously. Patients were dispensed a mean of 4 opioid prescriptions and 213 opioid pills. More opioid prescriptions correlated with opioid dependence (OR = 1.08; 95% CI, 1.016–1.145), and more prescribers correlated with personality disorder diagnoses (OR = 1.112; 95% CI, 1.001–1.235). Higher rates and riskier patterns of controlled substance prescribing were identified in patients with Medicaid/Medicare insurance compared to uninsured patients.

Conclusions: Prescription drug monitoring is a powerful tool for assessing addictions and high frequencies of patient exposures to prescribed opioids in a dual diagnosis clinic. Improved prevention and treatment strategies for addictions as facilitated by more research and clinical use of prescription drug monitoring in psychiatric care are warranted.

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Clinical Points

- Prescription drug monitoring programs (PDMPs) should be utilized routinely as assessment tools in behavioral health, especially in addictions and dual diagnosis care.
- Patterns of controlled substance prescribing detected by PDMPs may predict and/or support specific clinical diagnoses such as opioid dependence and personality disorders.
- Prescribing of single types or combinations of potentially dangerous and psychiatrically deleterious controlled substances by non–behavioral health professionals may be a significant and pervasive problem in mentally ill and addicted populations.

Prescribing of controlled substances, particularly opioids, has grown dramatically over the past 2 decades in the United States, along with prescription drug addictions and lethal overdoses.[1–3] One type of opioid, hydrocodone, is now the most commonly prescribed drug in the United States,[4] and Americans are now more likely to die from a prescription drug overdose than from a car accident or suicide.[1,2,5] Since 2000, 5-fold increases in lethal overdoses involving opioids have paralleled increases in their legal prescriptions by primary care doctors, emergency room physicians, dentists, and other specialists.[1,5,6] As prescription drug deaths have surpassed those from illicit drugs,[5] health and justice officials have become increasingly motivated to better educate the public and health professionals about the dangers of opioid medications and to develop new tools that can reduce adverse prescribing practices.[3,7,8]

State-supported prescription drug monitoring programs (PDMPs) allow practitioners to rapidly visualize records of controlled substance dispensations to their patients, enhancing identification of prescription drug abuse patterns.[9,10] PDMPs may be particularly useful in behavioral health treatment settings: addictions, including those involving prescription drugs, are highly concentrated in populations with mental illness.[11–19] Given "adverse selection," where patients most vulnerable to addiction are the ones most likely to be prescribed opioids in large quantities,[13,20] and biological vulnerability to addiction in mental illness,[21,22] the regular use of PDMPs by psychiatric physicians could enhance the detection, interdiction, and treatment of prescription drug addictions. To our knowledge, there are no published studies demonstrating the use of PDMPs as either clinical or research tools in psychiatry, although a 2012 Ohio survey suggests few psychiatrists use them routinely.[23] The present study addresses this evidence gap while gauging the scope and penetrance of controlled substance prescribing in a community mental health outpatient population, with exploration of how controlled prescription patterns might correlate with specific diagnoses or differences in health insurance coverage.

METHOD

Setting, Study Population, and Data Sources

The study population comprised patients in an adult outpatient dual diagnosis clinic of Midtown Mental Health Center in Indianapolis, affiliated with Indiana University School of Medicine. The clinic receives community referrals for patients with addictions and co-occurring mental illnesses. It is staffed with psychiatrists, nurses, and master's-level therapists (licensed clinical social workers, marriage and family therapists, mental health and addiction counselors) and bachelor's-level case coordinators. Outpatient detoxification and long-term integrated dual diagnosis care combining pharmacotherapies with group and individual psychotherapies are provided. Treatment is open-ended and individualized according to clinical need, lasting weeks to years. All 292 patients active in the clinic on August 2, 2011, were candidates for the study. For final inclusion, patients needed an initial evaluation by a prescribing practitioner in the clinic by January 2, 2012. Practitioners included 2 addiction psychiatrists, 5 third-year psychiatry residents, and 2 advanced nurse practitioners. The study was approved under an Indiana University Institutional Review Board exempt waiver.

Two investigators (D.T.H., R.A.C.) compiled data from the clinic's electronic medical record and the PDMP database. Indiana's PDMP (Indiana Scheduled Prescription Electronic Collection and Tracking [INSPECT]) is housed in the Indiana Professional Licensing Agency and administered by the Indiana Board of Pharmacy. The database is accessible to registered practitioners and sworn law enforcement officials and compiles information on controlled substances dispensed, including the patient's identifying information, prescription and fill dates, type, quantity, dosing schedule, pharmacy name and address, prescriber name and address, and payer. By law, all outpatient pharmacies must submit data to INSPECT within 7 business days of dispensing a controlled substance. At the time of the study, methadone programs (for opioid dependence) and inpatient pharmacies were exempt from reporting, and Indiana physicians were not required to use the database. INSPECT did not track noncontrolled substances, pseudoephedrine, and substances dispensed for less than a 72-hour supply or Veterans Administration prescribing, as Veterans Administration systems were federally exempt from reporting until 2014.

Procedures

Electronic medical record review provided gender, age, ethnicity, insurance status (Table 1), date of initial prescriber evaluation, and *DSM-IV* diagnoses (text descriptions) made by the prescriber at initial evaluation. The large variety of Axis I non–substance use disorder (non-SUD) diagnoses were compiled into 7 diagnostic classes (Table 2): (1) "psychotic spectrum" included schizophrenia, schizophreniform disorder, schizoaffective disorder, brief psychotic disorder, psychotic disorder not otherwise specified (NOS), and delusional disorder; (2) "bipolar spectrum" included bipolar I and II disorders and cyclothymia; (3) "unipolar spectrum" included major depressive disorder, dysthymia, and adjustment disorder with depressed mood; (4) "mood disorder NOS" indicated diagnostic uncertainty between bipolar versus unipolar spectrum disorder and included

Table 1. Demographic Characteristics of Patients Included in the Study (N = 201)

Characteristic	n (%)
Age	
≤ 25 y	22 (10.9)
26–45 y	117 (58.2)
> 45 y	62 (30.8)
Gender	
Male	99 (49.3)
Female	102 (50.7)
Race	
White	112 (55.7)
Black	86 (42.9)
Other	3 (1.5)
Insurance	
Uninsured	12 (6.0)
Hospital subsidy	121 (60.2)
Medicaid	45 (22.4)
Medicare	19 (9.5)
Private/other	4 (2.0)

Table 2. Clinical Diagnoses Among Patients (N = 201)

Diagnosis	n (%)
Axis I non–substance use disorder	
Any Axis I non–substance use disorder	176 (87.6)
No Axis I non–substance use disorder	25 (12.4)
Psychotic spectrum	20 (10.0)
Bipolar spectrum	28 (13.9)
Unipolar spectrum	92 (45.8)
Mood NOS	31 (15.4)
Anxiety spectrum[a]	32 (16.0)
PTSD	24 (11.9)
OCD	3 (1.5)
Axis II (personality disorder)[b]	
Any	20 (10.0)
None	181 (90.0)
Axis I substance use disorder	
Any Axis I substance use disorder	186 (92.5)
No Axis I substance use disorder	15 (7.5)
Alcohol abuse	16 (8.0)
Alcohol dependence	115 (57.2)
Nicotine dependence	115 (57.2)
Cannabinoid abuse	19 (9.5)
Cannabinoid dependence	75 (37.3)
Cocaine abuse	7 (3.5)
Cocaine dependence	74 (36.8)
Opioid abuse	3 (1.5)
Opioid dependence	59 (29.4)
Sedative/hypnotic abuse	5 (2.5)
Sedative/hypnotic dependence	16 (8.0)
Amphetamine abuse or dependence	9 (4.5)
Hallucinogen abuse or dependence[c]	5 (2.5)
Inhalant dependence	1 (0.5)
Polysubstance dependence	39 (19.4)
Dual diagnosis comorbidity	
Axis I non-SUD with SUD	161 (80.1)
Only Axis I non-SUD	15 (7.5)
Only Axis I SUD	25 (12.4)

[a]Includes phobias, generalized anxiety disorder, social phobia, substance-induced anxiety disorder, anxiety disorder NOS; does not include PTSD or OCD.
[b]Coded present if the terms "traits" or "provisional" or the full diagnosis was mentioned: borderline personality disorder (n = 10), antisocial personality disorder (n = 6), obsessive-compulsive personality disorder (n = 1), personality disorder NOS (n = 3).
[c]Includes ketamine, lysergic acid diethylamide (LSD), phencyclidine (PCP).
Abbreviations: NOS = not otherwise specified, OCD = obsessive-compulsive disorder, PTSD = posttraumatic stress disorder, SUD = substance use disorder.

substance-induced mood disorders; (5) "anxiety spectrum" included specific phobias, generalized anxiety disorder, social phobia, panic disorder, substance-induced anxiety disorder, adjustment disorder with anxiety, and anxiety disorder NOS; and (6) posttraumatic stress disorder (PTSD) and (7) obsessive-compulsive disorder were counted as diagnostic classes separate from the other anxiety diagnoses. Other diagnoses (attention-deficit/hyperactivity disorder, eating disorders, traumatic brain injury, cognitive disorders) were sparse and not included in the analysis. Patients were coded as having (or not having) each of the 7 Axis I non-SUD categories. Fifteen drug-specific SUDs were coded as either present or absent (Table 2). For Axis II disorders, patients were coded as having a personality disorder if they were diagnosed with "traits" or had "provisional" or full diagnoses.

INSPECT provided a record of controlled substance dispensations to each patient over the 12 months prior to the initial practitioner evaluation date, summarizing dispensations made before active treatment in the clinic. At the time of the study, INSPECT data were not being viewed to inform the initial assessment (diagnoses and INSPECT data were independent). The following INSPECT data were manually compiled: numbers of opioid prescriptions, opioid pills, benzodiazepine prescriptions, benzodiazepine pills, different prescribing physicians, and different pharmacies where prescriptions were filled. In rare instances involving liquid dispensations, liquid doses were converted into equivalent numbers of pills. To measure prescription patterns suggestive of diversion or drug abuse based on prior research,[24] we calculated the number of incidents of overlapping prescriptions. An overlapping incident occurred when 2 consecutive dispensations (fills/refills) for the same drug class (eg, opioids) were made so that the second dispensation was filled early. Dispensation was considered "early" when the number of days of overlap was more than 10% of the duration (in days) of the first prescription, or 3 days for prescriptions lasting 30 days or less. If multiple prescriptions overlapped, we counted each overlap separately, making it possible to have more overlaps than individual prescriptions. Overlapping incidents for benzodiazepine and opioid prescriptions were considered within each class this way. For patients prescribed both benzodiazepines and opioids, instances of benzodiazepine-opioid overlaps were counted when there was any time of overlap between dispensations.

Data Analyses

Multiple logistic regression using stepwise selection assessed how INSPECT data correlated with clinical diagnoses. As an exploratory analysis, the automated regression method alternated between forward selection and backward elimination. The procedure determined the contribution of each independent variable at each step. Five independent variables were analyzed together for each of the 6 outcome variables.[25] After the procedure determined the significant independent variables, we added age, race,

and gender to control for these factors in the final analysis. An initial set of 8 independent variables from INSPECT, numbers of (1) prescribers, (2) pharmacies, (3) opioid prescriptions, (4) overlapping opioid incidents, (5) opioid pills, (6) benzodiazepine prescriptions, (7) overlapping benzodiazepine incidents, and (8) benzodiazepine pills, was reduced in scope to 5 after preliminary Spearman correlations determined which variables were highly correlated: number of opioid pills and number of opioid prescriptions were highly correlated (Spearman $r = 0.987$; $P < .0001$), so we used only number of opioid prescriptions. Similarly, number of benzodiazepine pills and number of benzodiazepine prescriptions were highly correlated (Spearman $r = 0.995$; $P < .0001$), and number of pharmacies and number of prescribers were highly correlated (Spearman $r = 0.944$; $P < .0001$). So, we selected number of benzodiazepine prescriptions and number of prescribers for the modeling. Six outcome variables were assessed with determination of odds ratio (OR) estimates and 95% Wald confidence intervals (CIs): the presence of non-SUD Axis I diagnosis (mental illness), dual diagnosis (the co-occurrence of a mental illness and SUD in the same patient), personality disorder, opioid use disorder (abuse and dependence), alcohol use disorder (abuse and dependence), and cocaine use disorder (abuse and dependence). To assess the impact of insurance status on prescribing, we dichotomized the population into those with no insurance (self-pay or hospital subsidy) versus government-supported insurance (Medicare and/or Medicaid) and applied nonparametric (Mann-Whitney *U*) testing to examine how these groups differed in terms of the 8 INSPECT variables. All analyses used $P < .05$ significance thresholds.

RESULTS

Demographics

As shown in Table 1, the final study sample (N = 201) was fairly evenly distributed by gender and the 2 major racial groups. Age was normally distributed, ranging from 18 to 64 years, with a mean of 39.8 (SD = 10.6) years. Two-thirds of patients (66.2%) were uninsured, being self-pay and/or covered by the local hospital subsidy (ie, "written off"), with a smaller proportion (31.8%) covered by government (Medicaid/Medicare) insurance.

Clinical Diagnoses

Clinical diagnoses were made by the attending psychiatrist in 94 (47%) of the cases, by residents in 37 (18%) of the cases, and by nurse practitioners in 70 (35%) of the cases. Frequencies of clinical diagnoses are shown in Table 2. Large majorities of the population had an Axis I non-SUD (87.6%), an SUD (92.5%), and both (dual diagnosis) (80.1%). The number of diagnoses was fairly normally distributed, ranging from 1 to 10, with a mean of 4.1 diagnoses per patient. A mood syndrome was suffered by 151 patients (75.1%), with anxiety disorders and PTSD present in 56 patients (27.9%). Lower rates of psychotic spectrum and personality disorders were diagnosed (10.0% for each).

Table 3. INSPECT Report Variables Over the Study Sample (N = 201)

INSPECT Variable	Mean	SD	Maximum
No. of prescribers	2.6	3.7	23
No. of pharmacies	2.0	2.8	16
Opioid prescriptions	4.0	7.3	42
Overlapping opioid incidents	1.3	6.8	85
Opioid pills	212.9	590.7	5,760
Benzodiazepine prescriptions	2.4	7.8	92
Overlapping benzodiazepine incidents	2.3	23.5	331
Benzodiazepine pills	112.5	332.4	2,636
Patients prescribed opioids and benzodiazepines within 1 year	n	%	
No opioid or benzodiazepine	76	38	
Benzodiazepine, but no opioid	10	5	
Opioid, but no benzodiazepine	62	31	
Both opioid and benzodiazepine[a]	53	26	

[a]Thirty-six patients (18%) were prescribed both opioids and benzodiazepines with overlapping prescription fills, and 17 (8.5%) were prescribed opioids and benzodiazepines at different times without overlapping regimens.
Abbreviation: INSPECT = Indiana Scheduled Prescription Electronic Collection and Tracking.

Nicotine dependence and alcohol use disorders were the most common SUDs, each diagnosed in > 50% of the population and occurring together in n = 84 (41.8%) of the population. Cannabis, cocaine, and opioid dependence disorders were each diagnosed at comparable rates in approximately a third of cases.

Prescription Drug Monitoring Data

Controlled dispensations occurring in the 12 months before the initial diagnostic interview are described in Table 3. A majority of the sample (n = 115; 57%) had been prescribed an opioid. Hydrocodone was prescribed for 100 patients, oxycodone for 38, codeine for 11, morphine for 2, methadone for 2, buprenorphine for 13, and other opioids for 13. Nearly half of these opioid-medicated patients (n = 53) were also prescribed a benzodiazepine within the same year. Of these 53, the majority (n = 36; 17.9% of the total study population) had been prescribed opioids and benzodiazepines simultaneously. The mean number of opioid pills dispensed per patient calculated over the entire study population (N = 201) was 213, nearly double the number of benzodiazepine pills. Among the 115 patients who had been prescribed an opioid, a mean of 372 opioid pills had been dispensed. All of these variables were skewed to the right, with fewer patients representing greater extremes of controlled prescription exposure (eg, 1 patient received 5,760 opioid pills in a year). Of the total of 1,375 controlled prescriptions captured by INSPECT over the study population, 58.6% were for opioids, 34.6% were for benzodiazepines, and 6% were for other controlled substances (pregabalin, various barbiturates, amphetamines, and modafinil).

According to the logistic regression, number of opioid prescriptions significantly increased the odds of being diagnosed with opioid dependence (OR = 1.08; 95% CI, 1.016–1.145), with each unit increase in number of opioid prescriptions producing an 8% increase in the likelihood of an opioid dependence diagnosis. However, prescribed opioids significantly decreased the odds of being diagnosed with

Table 4. Effects of Insurance Status on INSPECT Variables[a]

	None or Hospital Subsidy (n = 133)		Medicaid or Medicare (n = 64)		
INSPECT Variable	Mean (SD)	Maximum	Mean (SD)	Maximum	*P* Value
Opioids					
Total prescriptions	2.8 (5.0)	35	6.7 (10.3)	42	.012
Total pills	147.4 (536.2)	5,760	361.3 (686.6)	2,886	.014
Overlapping prescriptions	0.4 (2.1)	17	3.1 (11.4)	85	.004
Benzodiazepines					
Total prescriptions	1.4 (3.4)	20	4.5 (12.7)	92	.019
Total pills	76.8 (241.7)	1,298	186.4 (466.6)	2,636	.028
Overlapping prescriptions	0.4 (1.7)	14	1.4 (3.4)	20	.021
No. of prescribers	2.1 (3.2)	23	3.8 (4.6)	17	.005
No. of opioid/benzodiazepine overlaps[b]	1.0 (3.8)	28	4.0 (10.9)	64	.044

[a]All tests are Mann-Whitney *U*, independent samples; none/hospital subsidy group (n = 133); Medicaid/Medicare (n = 64); 4 of 201 patients had private insurance and were not included in this analysis.
[b]Defined as instances in which patients had a prescription regimen for both an opioid and benzodiazepine overlapping in time; this occurred in 36 patients in the total sample.
Abbreviation: INSPECT = Indiana Scheduled Prescription Electronic Collection and Tracking.

an alcohol use disorder (OR = 0.905; 95% CI, 0.859–0.955), having a non-SUD Axis I disorder (OR = 0.945; 95% CI, 0.900–0.992), and having a dual diagnosis (OR = 0.938; 95% CI, 0.896–0.982). Each unit increase in opioid prescriptions reduced the odds of being diagnosed with an alcohol disorder by 9.1%, a non-SUD Axis I disorder by 5.5%, and dual diagnosis by 6.2%. The number of opioid prescriptions, overlapping opioid prescription incidents, benzodiazepine prescriptions, or benzodiazepine overlaps was not otherwise predictive of any of the other outcome variables. An increase in the number of prescribers was predictive of a personality disorder (OR = 1.112; 95% CI, 1.001–1.235), so that each unit increase in number of prescribers increased the odds of being diagnosed with a personality disorder by 11.2%.

Patients with government-supported health insurance (n = 64) versus those with no insurance (n = 133) had significantly higher rates of prescribing patterns indicative of prescription drug risk across all 8 of the outcomes we measured with respect to opioids, benzodiazepines, and their combinations (Table 4).

DISCUSSION

This study demonstrates PDMP utility in quantifying controlled substance prescribing in a treatment-seeking mentally ill/addicted population. Our results show that exposure to legally prescribed opioids is substantial and typical in this population, consistent with prior descriptions of "adverse selection," where patients most vulnerable to addictive or other dangerous effects of opioids are actually more likely to be prescribed opioids.[20] On average, any given patient in the sample had been prescribed controlled substances by 2.6 different prescribers and 213 opioid pills via 4 different prescriptions. These numbers are substantially greater than the average number of opioid pills dispensed to American adults in 2007 (about 120).[5] Nearly 1 in 5 patients had been prescribed an opioid in combination with a benzodiazepine, which, outside of comfort care for terminally ill patients, intensive care units, or detoxification settings, is a controversial and potentially dangerous combination with little evidence-based justification.[26–28]

The clinical population we sampled had a large majority of dual diagnosis patients, consistent with many studies showing that mental illness and addiction comorbidity is typical in psychiatric populations.[29,30] In our sample, psychotic, mood, and anxiety diagnoses occurred 3 to 10 times more frequently than in the general population.[31] Alcohol and nicotine use disorders were diagnosed at 2- to 3-fold higher rates, while cannabis, opioid, and cocaine use disorders were diagnosed 5 to 10 times more frequently than in the general population.[32–34] The relative proportions of mental illnesses, addictions, and their comorbidities found in our sample were also similar to those in large population studies (eg, National Comorbidity Survey).[31,34] For instance, psychotic disorders were diagnosed less frequently than mood or anxiety disorders, while nicotine dependence was identified frequently in patients with alcohol disorders.[34] In sum, with respect to Axis I disorders, the clinical population we sampled is likely generalizable to many moderately to severely ill psychiatric populations. Notably, however, we suspect that this study identified an inaccurately low rate of personality diagnoses, which is common in studies that do not employ structured interviewing.[35]

Unsurprisingly, we found that the number of opioid prescriptions was associated with the likelihood of an opioid dependence diagnosis. Moreover, the number of controlled substance prescribers correlated with risk of a personality disorder diagnosis. This also is not surprising considering that pathologic social dynamics and affective symptomatology in these disorders can produce overutilization of health care resources, polypharmacy, and unstable doctor-patient relationships.[36,37] More unexpectedly, the number of opioid prescriptions was associated with a lower likelihood of being diagnosed with alcohol dependence, a non-SUD disorder, or dual diagnosis. These findings, observed in a clinical sample that contains large majorities of patients with each of these diagnostic conditions, could be due to a number of complex dynamics that warrant further investigation. In this population, addiction to 1 drug class (eg, opioids) may financially and motivationally crowd out addiction to another drug (alcohol). Additionally, comorbid alcohol or dual diagnosis disorders with opioid use disorders may be particularly lethal (and thus occur in lower frequencies) or lead to greater advancement to nonprescribed opioids (eg, heroin). Alternatively, these findings may reflect less access to physicians who prescribe opioids among the most severely mentally ill and addicted people.

Having Medicaid or Medicare insurance, compared to having no insurance, was significantly associated with greater opioid and benzodiazepine exposure with respect to every INSPECT variable we analyzed. This finding is

consistent with prior research suggesting that health care reimbursed by these programs is associated with relatively prolific prescribing of controlled substances.[19,38,39] Inciardi and colleagues[39,40] have documented criminal networks that specifically target, accumulate, and sell prescription drugs acquired from Medicaid and Medicare patients. Notably, in our study, both insured and uninsured groups were poor people suffering from high rates of dual diagnosis. For either group, we were not able to determine how many or which pills we detected by PDMP had been diverted (given away, lost, stolen, sold) or consumed. At the time of this study, government insurance programs in Indiana readily reimbursed prolific prescribing of opioids for pain indications without requiring findings on clinical examination, screening for mental illness or addictions, urine drug testing, or other significant regulatory oversight. Meanwhile, these insurance plans maintained arduous administrative barriers and provided inadequate or no funding for many evidence-based addiction treatments.[41,42] Accordingly, these findings may point to a critical unmet need to achieve greater parity of insurance reimbursement for addictions and dual diagnosis treatment and for routine PDMP usage in the prevention and treatment of prescription drug addictions.

Our study design has several limitations. First, we did not systematically assess whether prescribing detected with INSPECT was beneficial versus harmful. Discovery and tracking of clinical indications and competence and types of prescribing physicians and/or centers would have been prohibitively difficult. However, only 13% of 115 patients prescribed opioids were treated with methadone or buprenorphine, with methadone being prescribed for pain in 100% of cases, indicating that the vast majority of opioids were for pain indications. Notably, in our clinical experience after this data collection, we found that controlled substance prescribing to our patients detected on INSPECT was often detrimental, requiring direct interdiction via doctor-to-doctor communications. A second major limitation was the lack of standardized scales for making diagnoses. We relied on a range of clinician types and did not incorporate diagnostic evolution after initial assessment. Larger studies using standardized diagnostic measures and inclusion of psychiatrically healthy controls in more diverse clinical settings are needed. Nevertheless, the approach we used was naturalistic with regard to how diagnoses are made in nonresearch settings, and it allowed us to avoid selection biases introduced by obtaining informed consent. Finally, this study did not observe how PDMP data would have influenced diagnoses or treatment planning involving professional communications or psychotherapeutic, educational, and psychopharmacologic modalities of care. Future studies examining these effects and examining PDMPs as outcome measures in psychiatric care are warranted.

Drug names: buprenorphine (Subutex, Suboxone, and others), ketamine (Ketalar and others), methadone (Methadose and others), modafinil (Provigil), oxycodone (OxyContin, Roxicodone, and others), pregabalin (Lyrica).

Disclosure of off-label usage: The authors have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents that is outside US Food and Drug Administration–approved labeling has been presented in this article.

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Author contributions: Drs Hackman and Chambers (Department of Psychiatry, Indiana University) worked on research design, primary data collection, analysis, and manuscript construction. Ms Greene and Dr Wright (School of Public Health, Indiana University) and Mss Fernandes and Brown (INSPECT team, Indiana Professional Licensing Agency) provided effort in project design, implementation, and manuscript finalization. Drs Hackman and Chambers had full access to all the data in the study and take responsibility for the integrity of the data and accuracy of the data analysis. The authors alone are responsible for the content and writing of this paper.

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Posttest

To obtain credit, go to PSYCHIATRIST.COM (Keyword: July) to take this Posttest and complete the Evaluation.

1. Since 2000, as the number of opioid prescriptions has increased, lethal overdoses involving opioids have increased ___.

a. 2-fold

b. 3-fold

c. 4-fold

d. 5-fold

2. By using a prescription drug monitoring program (PDMP), the investigators in this study found that ___% of dual diagnosis patients had received opioid prescriptions in the past 12 months, probably for pain.

a. 7

b. 37

c. 57

d. 77

3. Mr A, a new 34-year-old patient, is seeking treatment for pain as well as depression and anxiety, both of which he says developed after a car accident last year. When you access his PDMP data, you see that he has had 5 prescriptions for opioids and 3 for benzodiazepines from 3 other providers in the past 12 months. Which of the following statements is *false*?

a. The number of opioid prescriptions predicts an alcohol disorder diagnosis

b. The number of prescribers predicts a personality disorder diagnosis

c. The number of opioid prescriptions predicts an opioid dependence diagnosis

4. Results demonstrated that patients with mental illnesses, who are more vulnerable to addictive or other dangerous effects of opioids, are *less* likely to be prescribed them.

a. True

b. False