

Illicit-Drug Injection Among Psychiatric Patients Without a Primary Substance Use Disorder

Ewald Horwath, M.D.
Francine Cournos, M.D.
Karen McKinnon, M.A.
Jeannine R. Guido, M.A.
Richard Herman, M.A.

Objective: To increase understanding of HIV infection risk among patients with severe mental illness, the study sought to identify predictors of injection drug use among patients who did not have a primary substance use disorder. **Methods:** A total of 192 patients recruited from inpatient and outpatient public psychiatric facilities were interviewed by trained mental health professionals using the Structured Clinical Interview for DSM-III-R (SCID), the Positive and Negative Syndrome Scale, and the Parenteral Drug Use High-Risk Questionnaire. **Results:** Sixty percent of the sample met SCID criteria for lifetime substance abuse or dependence. Although only two patients reported drug injection in the past six months, 38 (20 percent) had injected drugs since 1978, the year that HIV began to spread in the U.S. A lifetime diagnosis of opioid abuse or dependence was a strong predictor of drug injection, but only 11 of the 38 patients with a recent history of injection drug use had either of these diagnoses. The likelihood of injecting drugs was four times greater among patients with a history of intranasal substance use compared with those without such use, three and a half times greater among African-American patients than among non-African-Americans, and five times greater among patients aged 36 or older compared with younger patients. **Conclusions:** In assessing HIV risk among patients with severe mental illness, it may be more important to identify the route of drug administration than the specific substances used because of the strong association between intranasal drug use and history of injection. (*Psychiatric Services* 47:181-185, 1996)

Drug injection is a well-known vector for the transmission of HIV (1). Among diverse groups of psychiatric patients in New York City, HIV seropositivity has been reported to range from 4 percent to 22.9 percent (2-9). Injection drug use is a consistent predictor of HIV infection in psychiatric patients (2-4,6-9). Detection of a history of injection drug use is often inadequate

in psychiatric settings (3,10,11); however, in studies in which clinicians can document such use, it is associated with a two- to ten-fold increase in a person's likelihood of testing HIV positive (2-4,6,8,9). Identification of a history of injection drug use often occurs after HIV diagnosis (12).

Most studies of HIV risk behavior among people with severe mental illness focus on unsafe sexual activity,

but injection drug use may be an equally important mode of HIV transmission in this population. The small number of studies of this risk behavior have simply reported rates of recent injection drug use—1 percent to 2 percent (13,14)—or use in the past—4 percent to 20 percent (5,13-17). Only one study examined the relationship of injection drug use and age, gender, ethnicity, and psychiatric diagnosis, and it found no association (13). Identification of factors associated with use of injection drugs would make HIV risk screening and preventive interventions more effective.

In this study, we attempted to go beyond simply reporting rates and identified sociodemographic and clinical determinants of illicit-drug injection among psychiatric inpatients and outpatients. We examined the relationship between injection drug use and psychiatric diagnosis, chronicity of psychiatric illness, level of functioning, and psychiatric symptoms. We used standardized assessment interviews, an approach widely recommended but seldom taken in research on comorbidity of substance use and psychiatric disorders (18-20).

Methods

Sample and data collection

Clinicians at four sites serving people with severe and persistent mental illness in New York City were asked to refer to the study all patients seen between March 1990 and May 1991 who were between the ages of 18 and

The authors are affiliated with Columbia University College of Physicians and Surgeons in New York City. Except for Ms. Guido, they are also affiliated with the New York State Psychiatric Institute, 722 West 168 Street, Unit 88, New York, New York 10032.

59 and had any psychiatric diagnosis and whom they judged capable of consenting to give a face-to-face research interview. Patients with a primary diagnosis of substance abuse or dependence were excluded from the four treatment programs. The sites were a day treatment program and three inpatient units: acute care, specialized homeless, and community preparation units. Inpatients either were recently admitted or had opportunities for drug use during furloughs off hospital grounds. Study procedures have been described in detail elsewhere (13,21).

Sociodemographic data were obtained from interviews with patients and corroborated by patient records. A psychiatric diagnosis was made based on the Structured Clinical Interview for DSM-III-R (SCID) (22). The Global Assessment of Functioning scale (GAF), which is part of the SCID, was used to rate each patient's overall level of functioning on a scale from 0, indicating persistent danger to self or others, to 90, indicating a lack of or minimal symptoms. Assessment of current psychopathology was supplemented by the Positive and Negative Syndrome Scale (PANSS) (23), which rates symptoms on a scale from 1, no symptoms, to 7, extreme symptoms.

Information about drug injection and intranasal drug use was elicited using a modified Parenteral Drug Use High-Risk Questionnaire (24), which covers the previous six months and also covers the years between 1978 and six months before the interview. The year 1978 has been identified as the point at which HIV began to spread in the United States (25) and among drug injectors in New York City (26).

Data analysis

We sought to develop a prediction model using logistic regression analysis, which requires dichotomous categorical variables. Continuous variables (age, number of previous hospitalizations, GAF scores, and PANSS scores) were dichotomized above and below median values. Ethnicity was dichotomized as African American versus non-African-American because previous studies at the same sites (3,27) found disproportionately ele-

vated HIV infection rates among African-American patients. Lifetime alcohol abuse and dependence was dichotomized as meeting or not meeting SCID criteria.

Chi square tests were used to examine differences between patients with and without a history of injection drug use. Unadjusted and adjusted odds ratios were used to estimate relative risk of injection drug use. When unadjusted odds ratios showed significant associations between an independent variable and drug injection, adjusted odds ratios were derived from the regression analysis to estimate the relative risk of drug injection for each factor (28), controlling for the effects of all others entered stepwise into the equation.

Results

Of the 264 patients referred to the study, 61 did not consent to participate, resulting in an overall participation rate of 77 percent. Three patients dropped out of the study after consenting, and assessments were not completed for eight other patients due to transfer or discharge. The final sample consisted of 192 patients for whom all measures were completed. Patients who participated in the study did not differ from nonparticipants in age, gender, number of previous psychiatric hospitalizations, or documented history of substance abuse treatment.

Participant characteristics

Table 1 shows sociodemographic and clinical characteristics of the 192 participants. The sample was ethnically diverse. The median age was 36. About one-third of the participants were female. Nearly every patient had a psychotic disorder. A median of four previous psychiatric hospitalizations and a median GAF score of 40 indicated that patients had severe and chronic psychiatric illnesses.

Table 2 presents information about participants' substance use disorders. Twenty-three patients (12 percent) met criteria for current substance abuse or dependence: one patient had an alcohol-related disorder, 20 had disorders related to both alcohol and other substances, and two had substance-related disorders not involving alcohol. All patients who met

criteria for current abuse or dependence also met criteria for past abuse or dependence.

A total of 116 patients (60 percent) met criteria for lifetime substance abuse or dependence—27 (14 percent) for alcohol alone, 56 (29 percent) for alcohol and other substances, and 33 (17 percent) for substances other than alcohol.

Drug injection

Thirty-eight patients (20 percent) reported injection of illicit drugs since 1978. Current use of injection drugs (that is, during the previous six months) was reported by two patients (1 percent). Thirty-seven patients (19 percent) reported that they had used injection drugs since 1978 but not in the previous six months; one of the 37 also reported current injection.

Unadjusted and adjusted odds ratios for injection drug use are presented for sociodemographic and clinical characteristics in Table 1 and for substance use histories in Table 2. Using unadjusted odds ratios as an estimate of relative risk, several variables were found to be significantly associated with drug injection since 1978. They were age over 36 years; African-American ethnicity; more than four previous psychiatric hospitalizations; a PANSS positive symptom score greater than 12; a lifetime diagnosis of alcohol, cocaine, or opioid abuse or dependence; and a history of intranasal drug use.

Adjusted odds ratios, which simultaneously control for the effects of all significant univariate associations, showed that patients over age 36 were five times more likely to have injected drugs since 1978 compared with those who were age 36 or younger. African-American patients were nearly three and a half times as likely as non-African-American patients to have injected drugs since 1978. Patients who met SCID criteria for a diagnosis of opioid abuse or dependence were more than seven times as likely as those without the diagnosis to have an injection history. Patients who reported a history of intranasal drug use were nearly four times as likely as those who did not report this history to have injected drugs since 1978.

Table 1

Sociodemographic and clinical characteristics and illicit-drug injection since 1978 among 192 psychiatric patients without a primary substance-related diagnosis

Characteristic	Total sample		Patients with injection history		p ¹	Unadjusted odds ratio	95% confidence interval
	N	%	N	%			
Age ²					.006	2.74	1.29–5.83
18 to 36 years	98	51.0	12	12.2			
37 to 59 years	94	49.0	26	27.7			
Gender ³					.08	2.06	0.91–4.65
Male	123	64.1	29	23.6			
Female	69	35.9	9	13.0			
Ethnicity ⁴					.04	2.21	1.08–4.55
African American	81	42.2	22	27.2			
Latino	61	31.8	6	9.8			
White	50	26.0	10	20.0			
Patient status					.29	1.50	0.70–3.19
Inpatient	117	60.9	26	22.2			
Outpatient	75	39.1	12	16.0			
Previous hospitalizations ⁵					.02	2.28	1.10–4.70
Zero to four	107	55.7	15	14.0			
Five to ten	85	44.3	23	27.1			
Axis I diagnosis ⁶					.89	1.03	0.41–2.56
Schizophrenia	94	49.0	18	19.1			
Schizoaffective disorder	24	12.5	5	20.8			
Bipolar disorder	23	12.0	4	17.4			
Depressive disorder	13	6.8	3	23.1			
Other psychotic disorder	34	17.7	8	23.5			
All other axis I diagnoses	4	2.1	0	0.0			
Global Assessment of Functioning Score					.13	1.79	0.83–3.87
40 or lower	116	60.4	27	23.3			
41 or higher	76	39.6	11	14.5			
Positive and Negative Syndrome Scale scores							
General psychopathology ⁷					.18	1.65	0.79–3.42
28 or lower	103	54.5	16	15.5			
29 or higher	86	45.5	20	23.3			
Positive symptoms ⁸					.01	2.48	1.19–5.16
12 or lower	105	54.7	14	13.3			
13 or higher	87	45.3	24	27.6			
Negative symptoms ⁹					.12	1.78	0.86–3.70
17 or lower	92	48.2	14	15.2			
18 or higher	99	51.8	24	24.2			

¹ Value is for chi square test.

² $\chi^2=7.68$, $df=1$; adjusted odds ratio=5.26, 95% confidence interval=1.72–16.04, $p=.004$

³ $\chi^2=3.09$, $df=1$; adjusted odds ratio=3.40, 95% confidence interval=1.23–9.32, $p=.02$

⁴ $\chi^2=6.58$, $df=2$; odds ratios for ethnicity compare African-American patients with all other patients.

⁵ $\chi^2=5.24$, $df=1$

⁶ Odds ratios for diagnosis compare affective disorders with all other disorders.

⁷ $N=189$ due to missing data

⁸ $\chi^2=6.09$, $df=1$

⁹ $N=191$ due to missing data

Discussion

Predictors of drug injection

One in five patients we interviewed reported having injected drugs since 1978, and we identified several predictors of injection.

This study is the first to show that

intranasal drug use predicts injection drug use in this population. Almost half (44 percent) of all patients had a history of intranasal drug use, and these patients were nearly four times more likely to have used injection drugs than patients without this histo-

ry. Sniffing drugs was a more powerful predictor of injection drug use than a history of alcohol or cocaine abuse or dependence.

Only 8 percent of patients met SCID criteria for a lifetime diagnosis of opioid abuse or dependence. Not surprisingly, these patients were seven times more likely to have an injection history than those who did not meet the diagnostic criteria. However, only 29 percent of injectors met criteria for a diagnosis of opioid abuse or dependence at any time in their lives. Eleven of 14 patients (79 percent) with this diagnosis reported a history of injection drug use; of the remaining three opioid abusers without an injection history, two reported intranasal use, and for one the route of administration was unknown. In the absence of a lifetime diagnosis of comorbid opioid abuse or dependence, the route of drug administration appears to be a better predictor of injection drug use in psychiatric patients than having a nonopioid substance use disorder.

Drug injection was more prevalent among African-American patients than others. In seroprevalence studies among new admissions to two public psychiatric hospitals (3), we found that African-American patients were almost six times more likely to be HIV positive than non-African-American patients. That African-American patients in the study reported here were three and a half times more likely to have injected drugs since 1978 may partly explain the earlier finding. Although the socioeconomic status of the patients in this study varied little, other contextual determinants, including geography (29) and degree of drug dependence (30), may explain this finding.

The relatively low rate of injection drug use reported by Latino patients in this study is consistent with findings from the National Household Survey on Drug Abuse (31). Injection drug use may vary by ethnic group due to differences that were not measured in this study, including degree of acculturation (32) or cultural differences in reporting this behavior.

Patients over age 36 were five times more likely than younger patients to have a drug injection history. Use of

Table 2

Substance use histories and illicit-drug injection since 1978 among 192 psychiatric patients without a primary substance-related diagnosis

Characteristic	Total sample		Patients with injection history		p ¹	Unadjusted odds ratio	95% confidence interval
	N	%	N	%			
Met criteria for current substance abuse or dependence							
Alcohol ²	13	6.8	5	38.5	.09	2.71	0.83–8.81
Cannabis	9	4.7	2	22.2	.86	1.16	0.23–5.82
Cocaine	9	4.7	2	22.2	.86	1.15	0.23–5.78
Opioids	0	—	0	—			
Met criteria for lifetime substance abuse or dependence							
Alcohol ³	83	43.2	24	28.9	.01	2.53	1.19–5.39
Cannabis	64	33.3	15	23.4	.12	1.88	0.85–4.16
Cocaine ⁴	49	25.5	13	26.5	.04	2.29	1.02–5.18
Opioids ⁵	14	7.3	11	78.6	<.001	23.50	6.07–91.00
Ever sniffed drugs ⁶	84	43.8	27	32.1	<.001	4.18	1.93–9.05

¹ Value is for chi square test.

² $\chi^2=2.93$, $df=1$

³ $\chi^2=6.07$, $df=1$

⁴ $\chi^2=4.12$, $df=1$

⁵ $\chi^2=31.83$, $df=1$; adjusted odds ratio=7.10, 95% confidence interval=1.40–35.98, $p=.02$

⁶ $\chi^2=14.35$, $df=1$; adjusted odds ratio=3.84, 95% confidence interval=1.34–10.99, $p=.01$

injection drugs typically begins by the mid-twenties (33), so younger patients in this study would not have reached the age at which injecting typically begins. The lower prevalence of injection drug use among younger patients may also reflect the relatively recent appearance of crack, a smokable form of cocaine, and its use as an alternative to injectable drugs. The increasing availability of HIV risk and prevention information in the community may also partly account for the lower prevalence.

Only two patients reported recent injection. In light of the much higher rate of past injection in the sample, it appears that injection drug use may be an intermittent behavior. As many as 70 percent of past injectors may resume injection even after stopping for a year or more (34). Therefore, patients with a history of injection or intranasal drug use must be considered at risk of future injection, and interventions should be targeted at preventing this behavior.

We did not inquire about sharing contaminated injection equipment, the date when patients began injecting or sniffing drugs, or how use of particular substances related to equipment shar-

ing or to age at first use. We do not know whether or when patients who sniff drugs progress or revert to injecting. Longitudinal study of injection drug use in this population is critical. Despite these limitations, our study found that inquiring about the route of drug administration is a crucial step in taking an HIV-risk history and may be more important as a predictor of HIV exposure risk than asking patients which drugs they use.

Despite the exclusion of patients with primary diagnoses of substance use disorders from admission to the study sites, 12 percent of the study participants met criteria for current substance abuse or dependence. This finding indicates that the absence of a current comorbid substance-related diagnosis is an unreliable criterion for ruling out risk of HIV infection from drug injection. In a large prospective study of drug users who had never injected, 30 percent reported initiating injection drug use within five years after the study began (34).

Use of the SCID to assess patients' clinical status may have underestimated the prevalence of substance use disorders. To avoid false positives, respondents to the SCID must pro-

vide clear examples of symptoms, either verbally or by their behavior during the interview (35). In psychiatric patients, rates of comorbid substance use disorders ranging from 20 percent to 75 percent have been reported (18–20,36,37), which are substantially higher than rates of dual diagnosis in the general population found by the Epidemiologic Catchment Area study (38) and the National Comorbidity Survey (39).

The specific psychiatric diagnosis, which was established by a standardized assessment instrument, did not differentiate patients who had injected illicit drugs from those who had not. Measures of severity of illness, psychiatric symptoms, and level of functioning also failed to predict injection drug use. Therefore, clinical characteristics do not appear to be reliable predictors of drug injection in people with severe mental illness.

Conclusions

We sought to identify predictors of illicit-drug injection among a group of severely and chronically ill psychiatric patients in New York City. Although illicit substances are presumably more widely available in New York City than in many other regions of the United States, high rates of injection drug use have been reported elsewhere (29,40–42). However, our results may be specific to urban areas, where many psychiatric patients live (16).

We found that a history of intranasal drug use was the best behavioral predictor of drug injection. Even when public mental health programs screen out by administrative mandate patients with primary diagnoses of substance use disorders, drug injection constitutes a prominent HIV risk behavior among the patients they treat. A critical need exists for implementation of realistic and appropriate substance abuse assessment, treatment, and preventive interventions in all programs for people with severe psychiatric disorders. Implementing such efforts would be an important step toward primary prevention of HIV infection in this population. ♦

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