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What is This?
Use of Health Care Services in a Sample of Drug-Involved Offenders:

A Comparison With National Norms

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There is evidence to suggest that drug-involved offenders are more likely to have chronic health problems, which would lead to the expectation that this group would be consumers of a disproportionate amount of health care services. However, other characteristics of the group, including higher rates of unemployment and less likelihood of health insurance, suggest that they may consume relatively low amounts of health services. This study reports on a cohort of drug-involved offenders in Delaware who were interviewed just before release from prison and again at several points following release. When compared to age- and gender-corrected norms from the National Health Interview Survey, the use of health services for drug- and alcohol-related conditions as well as for other physical conditions were all substantially higher for this group of offenders. Discussion centers on the role of drug treatment programs in reducing the need for health care services.

Prior to the onset of the AIDS epidemic, drug users experienced mortality rates of 10 to 15 deaths per thousand per year, a rate approximately 10 times higher than the mortality rates for the general population (Cherubin & Sapira, 1993; Selwyn, 1991). Research studies during the 1960s and 1970s revealed that the higher mortality rate for drug users in this era was largely attributable to drug overdoses, trauma, cirrhosis, and opportunistic infections associated with mechanisms of drug ingestion and drug-using lifestyles (see Selwyn, 1996, for review). The emergence and spread of the AIDS epidemic from the 1980s through the 1990s has inflated mortality rates among drug users to unprecedented highs. Indeed, one study of drug users enrolled in a New York City methadone maintenance program reported that from 1984 to 1987, the crude mortality rate increased among this group from 14 to more than 44 per thousand

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deaths per year (Selwyn, Alcabes, Hartel et al., 1992). It is estimated that mortality rates among drug users have increased fourfold since the emergence of the AIDS epidemic, and that injection drug users (IDUs) account for 34% of the known AIDS cases in the United States (Centers for Disease Control and Prevention [CDC], 1996).

Higher mortality rates among drug users are attributable to their higher rates of chronic illness when compared to the general population and their underuse of health care resources. In general, drug-involved offenders are at a considerably greater risk for contracting a variety of chronic health problems, the seriousness of which are further compounded by HIV seropositivity. Injection drug use, for example, is a major vector for the transmission of infectious diseases, including multiresistant tuberculosis (TB), hepatitis B and C, endocarditis, bacterial infection in the bloodstream, and HIV/AIDS (Barthwell & Gilbert, 1993; McBride, Chitwood, Page, McCoy, & Inciardi, 1990; C. B. McCoy & Inciardi, 1995; Rubinstien, Madden, & Lyons, 1996). Incidence rates of chronic illnesses such as TB are staggering among HIV-positive populations of drug users. One study of 38 intravenous drug users (IVDs) infected with AIDS in Brooklyn reported that 40% had a history of TB and 87% were diagnosed with Pneumocystis carinii pneumonia (PCP), an infection commonly associated with AIDS (Bennett et al., 1992). Several larger studies of HIV-infected drug users have reported rates of active TB ranging from 7 to 12 cases per hundred patients in a given year—a rate that is 40 times higher than the rate in TB-prevalent regions in the world (Moreno et al., 1993; Selwyn, 1996; Selwyn, Sckell et al., 1992).

The health status of drug-involved offenders is directly compromised by the toxicity of the substances and the mechanics of ingestion. For example, drug toxicity leads to a variety of health problems including fatal overdoses, liver disease, and renal failure (Barthwell & Gilbert, 1993; Cherubin & Sapira, 1993). Ingestion practices also contribute to health problems. Chronic use of marijuana and crack entails smoking, which irritates and then damages lungs; chronic use of cocaine by snorting leads to nasal perforation; and chronic cocaine use (particularly in combination with increasing age and decreasing health) contributes to greater susceptibility to strokes and heart attacks (Weiss & Mirin, 1987; Wettl, 1987). Unsanitary methods of ingestion such as the sharing of needles can result in secondary infections, including hepatitis and HIV (Alter, 1991; McBride et al., 1996; C. B. McCoy & Inciardi, 1995). In a study of 201 IDUs in Sydney, Australia, researchers discovered that nearly 60% had hepatitis C antibodies, and that hepatitis C virus (HCV) prevalence increased significantly with the first time since injecting, from 26% among IDUs who had injected for less than 3 years to 94% among those who had injected drugs for more than 10 years (Van Beek, Buckley, Stewart, MacDonald, & Kaldor, 1994).

The socioeconomic situation of chronic drug users also increases the risk for the acquisition of communicable disease as poverty, homelessness, poor hygiene, inadequate nutrition, substandard housing, and lack of access to adequate health care exacerbate the possibilities for bacterial infection and viral transmis-
sion (Falkin, Prendergast, & Anglin, 1994; Haverkos, 1990). Among drug users infected with HIV, relatively minor conditions such as soft tissue infections, rashes, and respiratory problems can lead to much more serious complications (i.e., bacterial pneumonia, bacteremia, endocarditis) if left untreated. Similar complications can occur among HIV-seronegative drug users as well. A study by Selwyn, Budner, Wasserman, and Amos (1993) of 5,000 primary care visits made by clients of a methadone maintenance clinic at Montefiore Medical Center revealed that untreated conditions such as diabetes, hypertension, and asthma could produce serious complications in the health status of seropositive and seronegative IDUs.

Finally, the lifestyles associated with drug use (prostitution, sex-for-drug exchanges, etc.) put users at greater risks for contracting HIV/AIDS and other sexually transmitted diseases (STDs) such as human papillomavirus, gonorrhea, syphilis, and cervical dysplasia (Bickell, Vermund, Holmes, Safyer, & Burk, 1991; Greenberg, Singh, Htoo, & Schultz, 1991; Hibbs & Gunn, 1991; Inciardi, Lockwood, & Pottieger, 1993). Studies of syphilis epidemics in New York City and Philadelphia between 1985 and 1989 found that increases in syphilis and congenital syphilis cases could largely be attributed to increases in crack-cocaine use and sex-for-crack exchanges (Greenberg et al., 1991; Hibbs & Gunn, 1991). In fact, researchers found that individuals who reported engaging in prostitution and the use of crack cocaine were 4.3 times more likely to contract syphilis than individuals who did not participate in either activity (Hibbs & Gunn, 1991). A study of men and women crack users in Miami reported that gonorrhea was the most prevalent STD among this population (50.2% of men and 40.1% of women), followed by syphilis (21.9% of men and 30.4% of women), genital sores (16% of men and 17% of women), genital herpes (3% of men and 4% of women), and chlamydia (0.9% of men and none of the women) (H. V. McCoy & Miles, 1992). Women drug users face an additional set of health problems including pelvic inflammatory disease, high-risk pregnancies, cervical dysplasia, and cancer (Metsch, McCoy, & Weatherby, 1996; Minkoff et al., 1990).

Despite the increased prevalence rates of chronic health problems among drug-involved offenders and their high mortality rate when compared to the general population, little research has systematically addressed their actual patterns of health history and use of health services. Indeed, it is unclear whether drug-involved offenders are more likely to use health care services at a greater rate than nondrug users in the general population given their greater rates of chronic health problems. Despite their greater need for health care, the socio-economic characteristics (e.g., unemployment, lack of health insurance) of this group suggest they may consume lower amounts of health services than the general population.

Indeed, many drug-involved offenders have no health insurance and are forced to rely on public programs, free clinics, and visits to emergency rooms to receive medical attention for health care problems (Schneiter, Ginn, Pabst, & Bigelow, 1994; Solomon, Frank, Vlahov, & Astemborski, 1991). A large, multicity study of health service use among HIV-infected persons found that
drug injectors, women, and racial/ethnic minorities were significantly less likely to use medical services and more likely to make visits to emergency rooms and be hospitalized for acute conditions than Whites, men, and nondrug users (Piette, Mor, Mayer, Zierler, & Wachtel, 1993). The AIDS Link to Intravenous Experience (ALIVE) study of health care use among IVDUs \( n = 1,881 \) in Boston reported that 67\% of the sample had some form of health insurance (mainly Medicaid), and that those with health insurance—regardless of HIV serostatus—had significantly higher rates of inpatient admissions, outpatient visits, and drug and alcohol treatment than did those without health insurance (Solomon et al., 1991). Researchers in this study originally hypothesized that knowledge of HIV seropositivity would result in more frequent use of health services; however, among the sample (32\% of which were HIV positive), knowledge of seropositivity and/or low CD4 counts did not result in higher rates of health care service use. Instead, the authors found that the strongest predictor of health service use was the presence of two or more HIV-related clinical symptoms. Those with the lowest probability of receiving in-patient medical services were individuals who were HIV positive with low CD4 counts, were asymptomatic, and had no health insurance. In fact, asymptomatic HIV-positive IVDUs were no more likely to make use of health care services than HIV-negative respondents (Solomon et al., 1991).

Research also suggests that the lifestyle associated with drug use militates against the use of health care services (Horner et al., 1996; Power, Hartnoll, & Chalmers, 1992; Schneiter et al., 1994; Solomon et al., 1991). Many drug users fear that medical providers will report their drug use to authorities and/or treat them in a demeaning manner (McBride et al., 1996; Schneiter et al., 1994). This fear is particularly salient for drug-using, pregnant women who are concerned that authorities will prosecute them for drug use and/or take away their children (Inciardi, Surratt, & Saum, 1997). Lifestyle barriers also mitigate against seeking out medical resources. One study found that the primary barrier to treatment services was a lack of transportation and/or the absence of health services in respondents’ neighborhoods (McBride et al., 1996). Other studies report institutional-level barriers such as hospitals with a high percentage of HIV-positive Medicaid clients who are less likely to perform certain tests—such as diagnostic bronchoscopies that reduce the mortality rate associated with PCP—than hospitals with a large percentage of privately insured patients (Horner et al., 1996). IDUs are much more likely to have Medicaid than private insurance and are less likely to receive diagnostic bronchoscopies, which may explain why they are approximately 66\% more likely to die from PCP than HIV-positive individuals with private health insurance (Horner et al., 1996).

This study of drug-involved offenders in Delaware explores their self-reported health status and rates of health care use and compares the health status of this group to the age- and gender-corrected norms of a national health survey. In an effort to understand the extent to which drug-involved offenders are actually using health care services and seeking treatment for their medical
conditions, this study examines hospital stays (arising from complications with drug and alcohol ingestion, as well as from other physical ailments), insurance status, and self-reported health status and compares these responses to the general population.

**DATA AND METHODS**

The data for the current study are derived from two ongoing research demonstration projects funded by the National Institute on Drug Abuse (Inciardi, Martin, Butzin, Hooper, & Harrison, 1997). Beginning in summer 1990 and continuing through spring 1997, a total of 1,431 prison inmates with a history of drug abuse and who were eligible for parole or work release were interviewed just prior to their departure from prison. This report examines a subset of these respondents ($n = 820$) who have been located in the community and interviewed again 18 months after their release from the institution. This particular subset was selected from the larger pool of respondents because many had participated in work-release and/or residential drug treatment programs during the 6-month period immediately following their release from prison. Thus, the 18-month interview provides a window into respondent behavior during the 12-month period when they were “on the street.” The vast majority (i.e., 90%) of cases reported are drawn from the time period 1992 to 1995, with a minority of cases reflecting the years 1991 and 1996.

Lengthy interview data were collected on drug use and sexual activities, criminal offending, drug abuse treatment history, health status, perceived health care needs, actual use of health care services, psychosocial and mental health status, and sociodemographics. Measures used in this analysis are self-report items taken from the 18-month interview and refer to the previous 12-month period. Participants were paid a total of $50 at each of the testing intervals. Specifically, they received $25 for participating in the interview and an additional $25 for agreeing to provide a blood and urine sample. Respondents’ answers are confidential and protected by a federal grant of confidentiality issued to the principal investigator on both grants.

Comparison data are drawn from the National Health Interview Survey conducted for 1994 (Adams & Marano, 1995). The National Health Interview Survey consists of a series of items regarding the health status and use of health care services among a representative national sample. Given the demographic characteristics of the sample of drug-involved offenders (80% are male with a mean age of 30 years), comparative analysis is based on the National Health Interview Survey estimates from the sample of more than 77,000 18- to 45-year-old males.

All of the Delaware sample had a history of drug involvement. The sample was 80% male, 78% had previous drug treatment, and 74% were African American, whereas virtually all others were White. Specific drugs of abuse were
marijuana (65.3% reporting some use), injection or noninjection use of cocaine (82.9%), and use of heroin and/or other opiates (23.4%) in the 6 months prior to incarceration. The mean age of the sample at baseline was 30 years, ranging from 18 to 53 years.

RESULTS

As a whole, the sample of drug-involved offenders reported greater consumption of health services, a lower rate of health insurance, and lower health status than did the comparable national sample. Among the national sample, there were 5.2 hospital discharges per 100 respondents in a 1-year period compared to a rate of 18.1 hospital stays reported by the drug-involved sample. In the national sample, 71.4% of respondents reported having health insurance, compared to only 29.8% of the drug-involved offenders.

As can be seen in Table 1, the samples also differ in their description of their present health status. Nearly three quarters of the national sample reported having excellent health, whereas just greater than a quarter of the drug-involved offenders described their health status as excellent.

The yearly incidence of STDs (specifically syphilis and gonorrhea) was higher for the drug-involved sample at a rate of 1.50 per 100 than for the national sample, which had an STD rate of 0.21 per 100.

The substantial rate of hospital stays among the drug-involved offenders is not solely attributable to the direct effects of drug use (i.e., toxicity and/or overdose). At the 18-month interview, respondents were asked to differentiate between alcohol/drug use and physical ailments as the reason for their hospital stay. Respondents indicated that 4.0 per 100 were the direct result of the ingestion of drugs and/or alcohol, whereas physical ailments resulted in 14.1 per 100 of the cases.

For drug-involved offenders 18 months after prison release, the impact of recidivism, relapse to drug use, and health insurance on hospital stays can be seen in Table 2. Among the sample of drug-involved offenders, it appears that those who were not incarcerated, had no health insurance, or had not relapsed to drugs had fewer visits to the hospital, although it should be noted that none of these differences reached statistical significance. Relapse to drug use did have a statistically significant effect on those hospital stays that resulted from drug or alcohol ingestion, with a rate of 5.9 per 100 for those who relapsed and 1.0 per 100 for those who reported no relapse in the past year (p = .008). Additionally, those respondents with positive HIV serostatus (10.7% of this sample) had a significantly higher rate of hospital stays than seronegative respondents.

A subset of the sample who had participated in a work-release drug treatment program (Inciardi, Martin et al., 1997) was also examined. The 129 respondents who had completed the treatment program had 12.4 stays per 100 in the subsequent year, whereas the 122 who failed to complete the program had 23.8 stays per 100, although the difference was not statistically significant, p = .15.
TABLE 1: Reported Health Status of the National Health Interview Survey Sample and the Delaware Drug-Involved Offender Sample (in percentages)

<table>
<thead>
<tr>
<th></th>
<th>Excellent/Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>National sample</td>
<td>70.7</td>
<td>22.4</td>
<td>5.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Drug-involved sample</td>
<td>26.2</td>
<td>48.1</td>
<td>23.0</td>
<td>2.4</td>
</tr>
</tbody>
</table>

TABLE 2: Hospitalizations in the Previous Year for the Delaware Sample of Drug-Involved Offenders 18 Months After Release From Prison

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Hospital Stays per 100 Respondents</th>
<th>p Value From t Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health insurance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>244</td>
<td>21.7</td>
<td>.23</td>
</tr>
<tr>
<td>No</td>
<td>572</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>Incarcerated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>282</td>
<td>13.5</td>
<td>.08</td>
</tr>
<tr>
<td>No</td>
<td>537</td>
<td>20.5</td>
<td></td>
</tr>
<tr>
<td>Relapsed to drug use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>513</td>
<td>20.5</td>
<td>.11</td>
</tr>
<tr>
<td>No</td>
<td>306</td>
<td>14.1</td>
<td></td>
</tr>
<tr>
<td>HIV serostatus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>84</td>
<td>34.5</td>
<td>.005</td>
</tr>
<tr>
<td>Negative</td>
<td>702</td>
<td>16.4</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

This study demonstrates that, although drug-involved offenders are less likely to have health insurance when compared with a representative sample of 18- to 45-year-old men in the general population, they are considerably more likely to be hospitalized during a 12-month period. This greater hospitalization rate is attributable to both immediate complications arising from drug ingestion (such as overdose and other problems associated with toxicity) and to other physical ailments arising from the chronic health problems associated with drug use (particularly injection drug use) and drug-using lifestyles. On the surface, this finding appears to contradict previous studies that have suggested that drug-involved offenders make less use of health care services than the general population. This study, however, measured health care use in terms of hospitalizations—the most expensive health service—as opposed to measuring use in terms of visits to public programs, health care clinics, and physicians for screenings, routine physicals, and other forms of nonserious medical interventions. Although several studies have demonstrated that drug-involved offenders make use of basic care services at a considerably lower rate than the general
population, research does indicate that the drug users seek out expensive medical care at considerably greater rates when chronic illnesses and medical conditions reach debilitating stages (Solomon et al., 1991).

Furthermore, previous research indicates that drug users have considerably higher rates of emergency room visits and hospitalizations than do nonusers (Piette et al., 1993). Using reported hospitalizations as a measure, the present study demonstrates that drug-involved offenders make greater use of more serious forms of medical intervention than the general population. This is attributable in part to health problems arising from their drug use but is also likely to be the immediate result of their failure to receive primary care services to treat the early stages of chronic illnesses. Indeed, one study of HIV-infected IDUs found that more than half had to be hospitalized for conditions that were preventable if basic health care had been provided at the onset of symptoms (Stein, 1994).

Data from this study also suggest that drug treatment may significantly reduce the health problems and health care costs associated with drug use. Among the sample of drug-involved offenders, those who did not relapse to drug use following their release from prison were less likely to be hospitalized than those who had relapsed following their release. Furthermore, those who had successfully completed a work-release drug treatment program had a significantly lower hospitalization rate than did those who failed to complete the program.

The findings from this study as well as from similar studies of health use among drug-involved offenders are critical for two reasons. First, increases in drug-related criminality and the concomitant “war on drugs” during the 1980s and 1990s have dramatically increased the number of drug-involved offenders incarcerated in state and federal penitentiaries (Inciardi, 1996). As infection rates for HIV/AIDS, TB, and other chronic illnesses become increasingly more prevalent among drug-involved offenders, correctional facilities are suddenly finding themselves in the position of having to provide extensive and complex medical care services to seriously ill inmates. The costs for providing intensive health care services in correctional facilities are exorbitant. Indeed, it is estimated that U.S. correctional systems spent approximately $2 billion in 1994 on inmate health care, an increase of 33% over spending in 1993 (Wees, 1995). The costs were concentrated across five broad categories: HIV/AIDS, OB/GYN services, alcohol and drug abuse treatment, dental, and mental health (Wees, 1995).

Second, most drug-involved offenders have received limited health care attention and medical services prior to their incarceration (see Glaser & Greifinger, 1993; Koehler, 1994). Lack of attention to these chronic illnesses increases medical care expenses tremendously and can result in severe illness and death (Bennett et al., 1992; Schneider et al., 1994; Selwyn, 1996). In a study of health care costs among IVDUs with AIDS, researchers estimate that individuals in the sample had a mean annual medical charge of $33,000 per patient per year, with approximately three quarters of the expenditures due to in-patient
medical care (Bennett et al., 1992). Forty percent of the sample had a history of TB, and 87% had the most common AIDS-defining illness, PCP. Collectively, patients averaged 1.13 hospitalizations per year with an average of 38.5 days of in-hospital care. Higher rates of hospitalizations and a greater amount of in-hospital care per episode were noted among those IVDUs who did not have a stable housing environment.

If correctional and general societal health costs are to be reduced or contained in a population of chronic drug users at very high service and cost risk, then prisons and community-based correctional agencies must incorporate health screening, preventative health care, and medical services as a routine part of the intake process. In fact, offender drug treatment programs provide an excellent opportunity to reduce costs through (a) preventing opportunistic infections and other health problems from becoming serious and costly health problems; and (b) drug treatment, by eliminating problems associated with drug ingestion (toxicity, lung damage, liver disease, etc.) and drug-using lifestyles (STDs, HIV), can significantly reduce chronic illnesses among drug-using populations (e.g., HIV seroprevalence is higher among out-of-treatment drug users than among in-treatment drug users; Lampinen, Joo, Seweryn, Hershon, & Wiebel, 1992; see also Inciardi, 1996). In addition to the findings from the present study, other research studies also suggest that drug treatment improves health status and reduces rates of health service use (Holder, 1987; Holder & Blose, 1992).

Finally, incorporating medical services with the provision of drug treatment in prison, work-release, and parole settings promises to yield greater patient compliance with health care guidelines. Although some drug users may lack the motivation to seek out health services and are unconcerned with their health status, research has discovered that it is actual barriers to treatment rather than a lack of concern that prevents most drug users from resolving their health care problems (Schneiter et al., 1994). In one of the only controlled, randomized studies of use of medical care services at an addiction treatment site, researchers found that 92% of the clients used medical services extensively for health problems and health education when service was provided on site. Among the program’s clients who were referred to outside medical care, only 35% actually sought out and received care for their health problems (generally acute instances of TB, HIV, STDs, and hypertension) (Schneiter et al., 1994). This study suggests that drug treatment and the provision of medical services can be effectively combined to produce high rates of patient compliance and care.

REFERENCES


