Health Problems: Relationships to Demographics, Problem Severity, and Services for Substance Users in Treatment with a Legal Status

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AMONG THE ISSUES[1] faced by in-prison substance abuse treatment systems are broad-based cultural and socioeconomic disparities in health problems among those entering their drug treatment programs. This is significant as it involves public health and safety in an enormous number of drug-related incarcerations and subsequent community reentries (National Institute on Drug Abuse, 1999, 2006). While these problems have received some attention, often there is little information available to do strategic action planning. Hence, the purpose of this study is to examine the frequency of health problems and to explore them in relation to other background factors, as these may inform on the health-related needs of substance users who have a legal status upon treatment entry.

Health problems among substance users are clearly an area of public concern, as demonstrated by reports of anxiety reduction and self-medication as reasons for heroin use (e.g., Ryan & White, 1996; Simpson et al., 1986), illicit stimulant use effects on health (e.g., Falck et al., 2007), methamphetamine use and trauma (Schermer & Wisner, 1999), cocaine and cardiovascular issues (Lange & Hillis, 2001), and effects of alcohol and drug use on general health from the Medical Outcome Study (Stein et al., 1998). In a study of prevalence of medical and psychiatric conditions among 747 substance abuse patients and 3690 demographically matched controls in a HMO, it was found that approximately a third of the conditions were more common among substance abuse patients and many of these were among those most costly (Mertens et al., 2003). Poor physical health has been noted among the problems of those entering substance use treatment (Williamson, Darke, Ross, & Teesson, 2009).

The cost of healthcare is a major implication of health problems among substance users. As noted in a Milken Institute report (Devol & Bedroussian, 2007), more than 109 million Americans reported having at least one of seven diseases totaling over 162 million cases in the general U.S. population in 2003, with a corresponding economic cost of $277 billion. When loss of productivity was added to the treatment expenditures, the total cost exceeded $1.3 trillion. The way medical care is often accessed by many substance users is also of concern, because those who are medically noninsured commonly use acute emergency care settings, which often leads to spiraling healthcare costs. The economic issues with health care in the general U.S. population are applicable to substance users who enter into drug treatment, whether in community-based or prison-based treatment. Therefore, the types of healthcare access and use among substance using populations are equally important to address in respect to the types of problems that need attention.

A study of 6,009 substance users in 8 prisons located in 2 states (Joe, Lehman, Rowan, Knight, & Flynn, 2019) showed that half reported some physical ailment upon entrance, and the problem cited most frequently was bone/joint ailment (42 percent), followed by other problem (38 percent). Data from the National Center for Health Statistics show that the incidence of many diseases and health conditions (e.g., heart disease, hypertension, stroke, emphysema, sinusitis, bronchitis, cancer, diabetes, arthritis, mobility, vision, and hearing) differs considerably by demographics (Lucas et al., 2004). Accordingly, it might be expected that health problems among substance users with a legal status at treatment intake would vary also by gender, race-ethnicity, and age. The present study uses data gathered in a

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nationwide study that was used to evaluate the effectiveness of substance abuse treatment practices. As such, that data is limited but is sufficient for investigating further the relationship of health problems and access to care to sociodemographic markers and to a multi-indicator psychosocial problem severity index that was shown to be a factor in substance abuse treatment engagement and progress (Simpson et al., 1999). It is important to understand this relationship better, as it would contribute further information on health problems being another background area that impacts treatment.

Methods

Sample

The data being used are from the Drug Abuse Treatment Outcome Studies (DATOS) project, funded by the National Institute on Drug Abuse (NIDA) to study substance abuse treatment practices in their community-based settings (Flynn et al., 1997; Simpson & Brown, 1999; Simpson et al., 1999). While the data are older, they nevertheless are important, as they were collected in the last nationwide study conducted on substance users sponsored by the NIDA. They also are representative of the types of substance users who entered the major types of treatment modalities available at that time, including methadone maintenance, outpatient drug free, long-term residential (including therapeutic communities), and short-term residential. The current study used a total of 3,907 adult admissions with a legal status out of the 10,010 who had been admitted to 96 drug treatment programs in 11 cities located throughout the United States during 1991 to 1993.

These 3,907 substance users had completed the full (two-part) intake interview, which contained health information needed for this study. They averaged 31.5 years of age (22 percent were 17-25, 25 percent were 26-30, 39 percent were 31-39, and 14 percent were over 39); 72 percent were male; 44 percent were black, 41 percent white, and 13 percent Hispanic. About half (55 percent) worked at part-time or full-time jobs, and also about half (55 percent) had been in drug treatment previously. A small percentage (11 percent) considered themselves in "poor health," 29 percent rated themselves as "fair," 41 percent rated themselves as "good physical health," and 20 percent rated themselves as being in "excellent physical health" at the time of their admission to the study. About 80 percent reported using illegal drugs at least weekly before intake (including 51 percent cocaine, 26 percent marijuana, and 24 percent opioids). Half reported using illegal drugs daily (with 29 percent using cocaine and 20 percent using opioids on a daily basis).

Measures

Problem Severity Index. The *Problem Severity Index* (PSI) at intake represents patient problems in seven areas of functioning, comparable to the domains represented in the widely-used Addiction Severity Index (McLellan et al., 1992), and was used in the previous evaluation of the DATOS studies (Simpson et al., 1999). PSI components included employment, alcohol, multiple drug use, criminality, family and friend deviance, depression/anxiety problems, and an indicator of economic disadvantage based on medical insurance. Each was scored to define a "problem" as follows: (1) employment—less than full employment; (2) alcohol use—either a DSM-III-R diagnosis of alcohol dependence or self-reported daily consumption; (3) multiple drug use—weekly use of two or more drugs; (4) criminality—being on probation, parole, awaiting trial, case pending, or weekly involvement in illegal activity; (5) family/friend deviance—many family/friends with illicit drug use or if they were jailed, imprisoned, or placed in juvenile detention; (6) depression/anxiety—DSM-III-R diagnosis of depression or anxiety, a score above the median on the SCL-90 depression or anxiety scales, or self-reported suicidal ideation; and (7) low income indicator—lack of medical insurance from a private carrier. The latter was used as a general socioeconomic indicator because uninsured patients were significantly less likely ($p < .001$) to be employed (53 percent versus 69 percent) or to have completed high school (20 percent versus 35 percent) and were more likely to be on Medicaid (27 percent versus 3 percent).

While the scores for the total sample of 10,010 on the PSI were 0 for 2 percent, 1 for 7 percent, 2 for 16 percent, 3 for 23 percent, 4 for 23 percent, 5 for 17 percent, 6 for 9 percent, and 7 for 3 percent, the present study is concerned only with those with legal status. Therefore, among the 3,907 with a legal status, the corresponding percentages for these PSI scores were 1.3 percent, 9.6 percent, 21.6 percent, 26.4 percent, 23.4 percent, 14.1 percent, and 3.6 percent for the categories of 1, 2, 3, 4, 5, 6, and 7 problems, respectively (there were none with zero, as the sample consisted of those with a legal status). For comparability with previous research and to streamline interpretation of findings (Simpson et al., 1999), scores were combined to form three problem severity categories: 1-3 represented "low" problems (32 percent), 4-5 represented "medium" problems (50 percent), and 6-7 represented "high" problems (18 percent) for those with a legal status.

Health Problems

Each patient was queried about 10 categories of physical health problems during the 12 months before intake. These were *respiratory* (conditions related to the respiratory system or breathing problems such as bronchitis, asthma, hay fever, pneumonia, emphysema, shortness of breath, or wheezing); *heart* (heart or circulatory system problems including high blood pressure, irregular heartbeat, palpitations, heart murmur, or heart disease); *digestive* (digestive system or stomach problems such as ulcers, colitis, nausea, vomiting, persistent diarrhea, or heartburn); *liver/kidney* (hepatitis, cirrhosis of the liver, jaundice, or liver/kidney problems); *bone/muscle* (bone and muscle problems including paralysis, bursitis, arthritis, or permanent stiffness); *nervous system* (nervous system problems like seizures, epilepsy, migraines, convulsions, or blackouts); *STD* (venereal or sexually transmitted disease including gonorrhea, syphilis, chlamydia, or herpes); *TB* (tuberculosis); if male, *prostate* (prostate problems or problems with urinating), or if female, *gynecological* (female or gynecological problems like ovarian cysts, severe bleeding or severe cramps, endometriosis, fibroids, lower abdominal pain, breast lumps, or breast pain); and *other health problems* (other physical health problem or illness, including AIDS/HIV+).

Health Service Visits

An index for health service visits was the summed number of health-related visits to a doctor or other health care provider.

Results

Demographics and Health

More than half of the sample (54 percent) reported having at least one physical health problem, with 25 percent reporting one problem, 22 percent 2-3 problems, and 7 percent more than 3 problems. Table 1 shows the most frequent reports were for respiratory (20.6 percent), digestive (16.4 percent), bone/muscle (14.1 percent), nervous system (13.5 percent), heart (12.5 percent), and other health issues (10.0 percent). Among females, gynecologic problems were reported by 22.5

percent. The finding that respiratory and heart problems are two of the most frequently cited corresponds with the most prevalent health problems found for the general U.S. population by Devol & Bedroussian (2007). In order of frequency, the most regularly reported diseases from their survey were pulmonary conditions (17.4 percent), hypertension (13 percent), mental disorders (10.7 percent), heart disease (6.8 percent), diabetes (4.9 percent), cancers (3.7 percent), and stroke (.9 percent). Another large survey of a general population found that in a drug treatment sample health problems are somewhat higher. A Canadian study conducted by the Fraser Institute (Ramsay et al., 1999), found in a telephone survey of 1500 individuals that the 10 most frequently reported medical conditions were back and neck problems (30 percent), allergies (29 percent), arthritis/rheumatism (20 percent), difficulty walking (17 percent), frequent headaches (16 percent), lung problems (12 percent), digestive problems (12 percent), gynecological problems (10 percent), anxiety attacks (9 percent), and heart problems/chest pain (9 percent).

Contingency table analyses of the present drug treatment sample data, as shown in Table 1, indicated gender to be significantly related to most self-reported health problems, with the exception of TB and the Other Health category. Females reported more respiratory, heart, digestive, liver/kidney, bone/muscle, nervous system, and STD problems than males. Males and females were also significantly different on the composites of "Total Drug Use" and "Any Drug Use," with females more likely to report a problem and averaging more problems than males.

As shown in Table 2, age also proved to be significantly related to the self-reported composite health indicators and to the specific self-reported health problems, with the exception of respiratory and nervous system. Differences were noted for heart, digestive, liver/kidney, bone/muscle, STD, TB, and Other Health. Generally, the percentages were monotonically increasing with the categories of age for all the significant health problems, with the exception of STD (which was monotonically decreasing with the age categories). The two older age groups were significantly higher than the two youngest age groups on the two self-reported health composites and on self-reported heart, liver/kidney, bone/muscle, TB, and Other Health. The oldest category was also significantly higher than the two youngest on self-reported digestive problems. The youngest group had significantly higher rates on STD than did the two oldest age groups.

TABLE 1
Percentage of Health Problems by Gender

	Total	Male	Female	χ^2 (1)
Total (mean) (sd)	1.2 (1.4)	0.9 (1.3)	1.6 (1.6)	t=13.63****
Any	54.2	48.7	68.7	126.20****
Respiratory	20.6	16.9	30.3	85.47****
Heart	12.5	11.3	15.6	12.59***
Digestive	16.4	14.5	21.4	27.39****
Liver/Kidney	7.3	6.6	8.9	6.23*
Bone/Muscle	14.1	13.0	16.8	9.25**
Nervous system	13.5	11.6	18.6	32.64****
STD	7.4	5.1	13.6	82.88****
TB	1.8	1.9	1.5	.63 ns
Prostate (n=2890)	2.0	2.0	NA	NA
Gynecologic (n=1258)	22.5	NA	22.5	NA
Other Health	10.0	9.7	10.9	1.29 ns

**p < .01, ***p < .001 *****p< .0001

TABLE 2
Percentages of Health Problems by Age

		Age				
	Overall Average	17-25	26-30	31-39	40 and older	χ^2 (3)
Total (mean)	1.1	.9	1.0	1.2	1.4	F(3, 3901) =15.60***
Any	54.2	49.0	51.9	56.3	60.8	23.56****
Respiratory	20.6	20.8	19.8	19.9	24.1	4.83 ns
Heart	12.5	8.1	9.9	14.5	18.7	45.67***
Digestive	16.4	13.4	15.6	17.0	21.0	14.58**
Liver/Kidney	7.3	5.0	5.5	8.1	11.8	28.80****
Bone/Muscle	14.0	8.6	11.1	15.1	25.1	82.65****
Nervous system	13.5	13.2	14.0	14.1	11.2	3.11 ns
STD	7.4	9.5	8.3	6.7	4.5	14.07**
TB	1.8	.8	1.1	2.4	2.8	13.25**
Prostate (n=2888)	2.0	1.9	1.6	1.8	3.2	4.18 ns
Gynecologic (n=1258)	19.0	14.8	18.9	21.0	20.9	4.73 ns
Other Health	10.0	6.2	8.9	11.3	14.3	28.19****

**p < .01, ***p < .001

In Table 3 (next page), significant race-ethnic differences were found for the self-reported health composites (total health problems index and any health index) and for most of the specific health areas, with the exception of heart and other health. Whites reported significantly more health problems in terms of the health composites (total health problems index and any health problem index) than Blacks or Hispanics. Their self-reported percentages on respiratory, liver/kidney, bone/muscle, and nervous system were significantly higher than those reported by Blacks and by Hispanics. Additionally, Whites also reported more digestive problems than Blacks. In contrast, Whites had significantly lower self-reported TB rates than either Blacks or Hispanics. On the other hand, Blacks reported more STD problems than Whites or Hispanics.

Problem Severity Index and Health

The PSI had stronger relationships with

TABLE 3
Percentages of Health Problems by Race and Problem Severity

	Race-ethnicity					Problem Severity Index (PSI)			
Health Problem	White	Black	Hispanic	Other	χ^2 (3) Race	1-3	4-5	6-7	χ^2 (2) PSI
Total (mean)	1.2	1.0	.9	1.2	F(3, 3903)= 9.27****	.7	1.1	1.7	F(3, 3904)= 122.89****
Any	57.1	53.4	47.2	56.6	15.88**	40.2	55.4	70.6	171.69****
Respiratory	24.3	17.6	18.4	23.6	24.61****	13.3	20.9	30.1	78.36****
Heart	11.9	13.8	9.6	14.2	7.06 p<.07	8.4	12.9	17.2	32.31****
Digestive	15.6	13.1	16.2	21.7	27.73****	10.3	16.4	24.7	68.73****
Liver/Kidney	10.0	4.9	6.4	6.7	32.64****	3.2	6.8	14.1	80.98****
Bone/Muscle	16.5	12.9	10.2	15.1	15.65**	10.1	14.2	19.1	30.78****
Nervous System	17.6	10.8	9.7	12.3	39.98****	4.9	14.3	23.2	132.70****
STD	5.1	10.8	3.0	8.6	55.14****	4.1	7.6	11.5	36.98****
TB	.8	2.5	2.6	.9	15.47**	1.2	1.9	2.3	3.42 ns
Prostate	2.3	1.8	1.6	1.4	1.15 ns	1.0	2.0	3.5	10.04**
Gynecologic	19.6	19.6	13.4	29.0	6.32 p<.10	15.7	17.8	24.5	8.56*
Other Health	10.6	9.7	10.0	5.7	3.07 ns	7.5	9.7	14.3	23.55****

**p < .01, ***p < .001, ****p < .0001

the self-reported health composites and to each of the 11 health problem areas than did demographic characteristics, with the PSI displaying a monotonic increasing trend with each health problem. Individuals with more psychosocial problems (Simpson et al., 1999) tended to have the higher percentages for each health problem, and those with 1-3 problems showed the lowest percentages. The PSI was more discriminating than demographics when using the percentage differences between high- and low-severity groups. In particular, the percentage difference between the highest and lowest PSI groups for the health composite "any health problem" was approximately 30 percent, compared to 10 percent as the largest difference among categories for race-ethnicity, 12 percent for age, and 10 percent for gender. The PSI also was correlated with the total number of health problems (r = .25, $p < .0001$), and these differences were made clearer when categorized by groups. Specifically, the percentages of substance users with 2 or more health problems were 17 percent, 29 percent, and 45 percent in the low, middle, and high PSI severity groups, respectively.

Psychiatric Diagnosis and Health

Finally, health was also found to be related significantly with psychiatric diagnosis. A DSM-III psychiatric diagnosis (based on antisocial personality, depression, or generalized anxiety disorder) was correlated significantly (r = .18, p<.0001) with self-reported total health problems index, and when examined more closely, especially with a DSM diagnosis of depression (r = .23, p<.0001). Furthermore, the self-reported total health problems index was significantly correlated with suicidal ideation (r = .30, p<.0001), SCL-90 depression (r = .31, p<.0001), anxiety (r = .34, p<.0001), and hostility (r = .24, p<.0001). Together, these relationships emphasize the relationships of health problems with problem severity, consistent with the literature on psychopathology and physical health (e.g., Marshall et al., 2008; O'Donohue & Cucciare, 2005).

Within Gender Analyses

Analyses were conducted also within gender groups to assess race and age relationships to health. This was done because male and female substance users in an in-prison treatment setting will be treated separately, and it is important to determine whether gender might modify the previous total sample findings concerning race and age with health. Overall, the analyses within gender groups illuminated several differences. For instance, there were significant age differences on all health problems (with the exception of prostate [F(3, 2809) = 1.36]) and STD [F(3, 2819) = 1.23] problems) for males, and fewer differences in the age by health relationships for females. For example, while there were STD differences [F(3, 1068) = 4.78, p<.003] for age for males, in contrast there were no age differences on this health area for females. On the other hand, there were no significant differences by age on respiratory problems (F(3, 1071) = .22), digestive problems [F(3, 1071) = .91], TB [F(3, 1064) = 1.05], liver/kidney [F(3, 1070] = .98), and nervous system [F(3, 1068) = 1.39], or gynecological problems [F(3, 1059) = 1.01] for females, but age relationships for these health problems were found for males.

With regard to race and health within gender, it was found that males had significant differences on all health problems, with the exception of bone/muscle [F(3, 2824) = 1.39], prostate [F(3, 2811) = .34], and the other health problem group [F(3, 2795) = 1.53]. The examination of health by race for females, however, found significance with race by respiratory [F(3, 1071) = 3.18, p< .03], digestive [F(3, 1071) = 5.72, p< .0007], liver/kidney [F(3, 1070) = 6.50, p< .0002], bone/muscle [F(3, 1067) = 6.20, p< .0004], nervous system [F(3, 1068) = 3.27, p < .021], and STD (F(3, 1068) = 8.13, p< .0001), but no differences by race on heart (F(3, 1070) = .10), TB [F(3, 1064) = 1.35], gynecological problems [F(3, 1059) = 1.41], and the other health problems group [(F(3, 1063) = .06].

The analyses of PSI and health within gender also showed differences for males and females. Among males, there were significant relationships between PSI and all health problems with the exception of TB [F(3, 2822) = 1.37]. In contrast, for females, significant differences were found for respiratory [F(2, 1072)

= 5.18, p< .006], digestive [F(2, 1072) = 6.23, p< .002], liver/kidney [F(2, 1071) = 11.78, p< .0001], nervous system [F(2, 1069) = 20.02, p< .0001], and STD [F(2, 1069) = 8.94, p< .0001], but no PSI significant relationships with TB [F(2, 1065) = .71], heart [F(2, 1071) = 1.20], bone/muscle [F(2, 1068) = 1.86], and the other health problems category [F(2, 1064) = 2.09]. ,

Prior Drug Use and Health

Not surprisingly, health problems were significantly related to pretreatment history of illegal drug use; however, the strength of the relationship was not large. The strongest relationships involved sedative use, which was correlated with overall health (r = .13, p < .0001) and nervous system (r = .12, p < .0001). Furthermore, multiple drug use was associated with multiple health issues, including the overall health index (r = .17, p < .0001), as well as specific problems involving respiratory (r = .11, p<.0001), digestion (r = .10, p< .001), liver/kidney (r = .14, p < .001), and nervous system (r = .12, p < .0001). Health problems related to opioid use included the overall health index (r = .11, p < .001) and liver/kidney (r = .14, p < .001); cocaine use was associated with STD (r = .14, p < .001) and gynecological problems (r = .11, p < .001), and alcohol with total health problems index (r = .12, p < .0001) and nervous system (r = .11, p < .0001).

Health Care and Background Factors

As expected, the total health problem index was significantly related fairly strongly to the number of health care visits (r = .28, p < .001). Approximately 64 percent of the sample reported at least one health service visit (either to a doctor or other health professional). Sixty-one percent visited one or more doctors and 28 percent visited another type of health professional (nurse or physician assistant). Gender also was significant [F(1, 3899) = 43.68, p < .0001], with females averaging 8.3 and males 4.8 health service visits, respectively. The analysis by age was also significant [F(1, 3895) = 3.67, p < .012], with the number of health visits being 4.5, 5.5, 6.1, and 7.1 for those aged 17-25, 26-30, 31-39, and over 39, respectively. Analysis of variance showed health visits not to be significantly related to race-ethnic group [F(3, 3897) = 1.94, p < .12]. The health visit averages were 6.4, 5.3, 4.9, and 5.9 for whites, blacks, Hispanics, and other races, respectively.

Finally, health service visits were related to PSI [F(2, 3898) = 15.86, p < .0001], with 3.7, 6.2, and 7.3 visits for low, middle, and high problem groups, respectively. Even after covariate adjustments were made for the demographic variables of race, gender, and age, associations involving psychosocial problems remained significant [F(2, 3889) = 11.22, p < .0001].

Discussion

The findings of the current study affirm that a large percentage of drug users entering substance abuse treatment with a legal status have health problems that include a variety of ailments, a finding also noted in a sample of more current data (collected between 2009 and 2011) but limited to in-prison treatment participants in two states (Joe et al., 2019). The current study also discerned that the most frequently reported ailments were respiratory, digestive, nervous system, bone/muscle, and, among women, gynecologic. These areas correspond with previous findings for general populations, where pulmonary conditions was the most prominent category in the Milken Institute report (Devol & Bedroussian, 2007) and where lung problems, digestive problems, frequent headaches, arthritis/rheumatism, difficulty walking, and gynecological problems were among the 10 most frequently reported medical conditions found by the Fraser Institute (Ramsay et al., 1999). Relative to the percentages reported in these general population studies, the present research sample of drug users with a legal status was higher on respiratory, digestive, heart, and gynecological problems.

The largest gender-related differences involved respiratory problems and STDs. For age, heart and bone/muscle problems were major considerations. When race was examined, the principal differences appeared for liver/kidney, nervous system, STDs, and respiratory problems, particularly in contrasting whites and blacks. However, an index based on psychosocial problems (PSI) had a stronger relationship with health problems than did demographic categories. Psychiatric diagnoses were also found to be related to health problems, although these were based on scales keyed to DSM-III. Future research would need to examine how DSM-V diagnoses relate to health. A TCU Drug Screen 5 (Knight, Blue, Flynn, & Knight, 2018) has been developed that addresses DSM-V drug diagnoses and can be used in pursuit of that purpose.

The data analyzed in this study, collected between 1991 and 1993, are relevant today and contribute useful information on the relationships among health, other background problems, and treatment effectiveness. Previous studies of these patients have shown that those with high PSI scores have better follow-up outcomes when treated in higher-intensity residential programs rather than outpatient or short-term care treatment settings (Simpson et al., 1999). On the other hand, treatment intensity and setting carried less importance for outcomes of patients with low PSI scores. In terms of how those findings relate to the present analyses, they show patients with high PSI scores also have over twice the rate of multiple health problems, compared to patients with lower scores. That is, 45 percent of high-PSI patients reported two or more health symptoms, versus 17 percent of low-PSI patients. They likewise reported more preadmission visits to medical care or emergency clinics (7.3 versus 3.7 visits).

The present study is based on a large and diverse sample of sequential admissions to representative treatment agencies; however, it is limited by the use of "self-reported" health problems and use of health services. Official medical records were not accessible, but could potentially show that some problem areas were underreported and the prevalence of various health problems was underestimated. Reporting bias also might have differed across the subgroups. Further, the seriousness of medical care responses to health problems was not reported and could impact the extent to which individuals recognize a problem and seek medical help. Additionally, hepatitis information did not differentiate its subtypes, and their relationships to HIV could not be specified.

Conclusions

Substance users entering treatment often have health problems that exceed those reported by the general population; this is also true of substance users who enter treatment with a legal status. These problems have been shown to be related to obstacles to effective treatment, as shown in a previous nationwide study of community drug treatments. Patient background information commonly collected at intake to substance abuse treatment programs—and used in this study to calculate the PSI—identifies many of the high-risk and high-cost users of public health care. Systematic and integrated linkages for medical care and related services would comply more closely with a comprehensive addiction treatment care network, as advocated by the National Institute on Drug Abuse (National Institute on Drug

Abuse, 1999), and it could reduce significantly the need for subsequent medical care from comparatively expensive emergency care clinics. Just as Flynn, Kristiansen, Porto, and Hubbard (1999) have documented, substance abuse treatment-related cost benefits from crime reduction and health benefits also apply. Improving patient access to needed health care can be equally important, because resolving basic health problems may eliminate some of the reasons for substance abuse.

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