



TREATMENT FOR SUBSTANCE USE DISORDERS IN COMMUNITY HOSPITALS

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Abstract

Objective: There has been little research exploring the types of settings within community hospitals in which treatment is provided for substance use disorders (SUD). This study aimed to address this information gap by describing the presence and use of community hospital medical/surgical units, psychiatric units, and detoxification units for patients with a principal diagnosis of SUD across a sample of states. Characteristics of patients with a principal SUD diagnosis who were discharged from those settings are also described.

Method: Patients with substance use disorders treated in community hospital psychiatric or detoxification units were compared to those treated in medical/surgical beds (scatter beds) using the Healthcare Cost and Utilization Project State Inpatient Databases from 12 states.

Results: Overall, across the states, there was a ten fold variation in the hospitalization rate per capita for SUD. The percent of discharges treated in scatter beds ranged from a low of 26% to a high of 82%. Patients treated in scatter beds in hospitals without specialized units were less likely to receive detoxification or rehabilitation services. They were more likely to have a diagnosis of alcohol or drug psychosis or nondependent drug abuse, to have physical comorbidities, to be age 64+, and to be transferred to another facility.

Conclusion: The wide variation in the rate of SUD hospitalizations and use of specialized settings across the states suggests that SUD hospital admission criteria may not be uniformly applied across communities and that many patients may not be receiving specialized behavioral health services.

Introduction

Treatment of substance use disorders (SUD) occurs across a range of settings including specialty substance abuse outpatient clinics, residential facilities, specialty mental health facilities, physician offices, the offices of non-physician professionals such as social workers, in support groups, and hospitals. In 2003, alcohol and illicit drug use disorders were principally responsible for more than 385,000 community hospitalizations (as calculated on <http://hcupnet.ahrq.gov>). Inpatient community hospital SUD treatment may comprise detoxification and rehabilitation, as well as treatment of medical and psychiatric comorbidities.

Community hospitals have different structures in which they provide SUD services. Some hospitals have established distinct units of the hospital that are organized and staffed specifically to treat mental illness and/or substance use disorders. Other hospitals treat all patients with SUD in general medical beds, sometimes known as “scatter beds.” In 2002, there were approximately 1,285 to 1,467 inpatient psychiatric units in the community hospitals in the US, depending on the source used to count (Center for Mental Health Services data, American Hospital Association data, Medicare Cost Reports). Approximately 25 to 30 percent of the 4,927 community hospitals in the United States had psychiatric units (i.e., a separate ward or unit within the hospital specifically established and staffed for psychiatric patients). According to the Substance Abuse and Mental Health Services Administration, in 2006, 500 general hospitals reported providing inpatient detoxification services (Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 2007).

There has been little research exploring the types of settings used to provide SUD treatment in community hospitals. This study aimed to address this information gap by describing the

presence and use of community hospital medical/surgical units (i.e., scatter beds), psychiatric units, and detoxification units for patients with a principal SUD diagnosis across a sample of states. In addition, the study characterizes the patients with a principal SUD diagnosis who were discharged from those settings. The goal is to provide information that can form the foundation for future efforts to determine the most effective and efficient manner in which to provide services to persons with SUD.

Methods

The study used data from the State Inpatient Databases (SID), part of the Healthcare Cost and Utilization Project (HCUP) sponsored by the Agency for Healthcare Research and Quality (AHRQ). The SID contain discharge records from the universe of community hospitals in participating States. Note that psychiatric hospitals are not included in the SID databases. SID data are comprised of a core set of clinical and non-clinical information on all patients, regardless of payer, including persons covered by Medicare, Medicaid, private insurance, and all uninsured.

The study focused on patients with a principal substance use disorder (SUD patients) as identified by ICD-9-CM codes 291-292 and 303-305. Principal diagnosis is defined in the Uniform Hospital Discharge Data Set (UHDDS) as "that condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care." The project took advantage of the Uniform Bill, 1992 version (UB-92) room and board revenue codes routinely recorded on discharge records from some of the participating SID states. Particular revenue codes refer to psychiatric unit and detoxification room and board charges and thus can be used to identify discharges records from patients treated in those settings. Specifically, any

discharges with the following revenue codes were assumed to be treated in a psychiatric unit (Psychiatric Room & Board UB92 codes: 0114, 0124, 0134, 0144, or 0154). Any discharges with the following revenue codes were assumed to be treated in a detoxification unit (Detoxification Room & Board UB92 codes; 0116, 0126, 0136, 0146, or 0156). Other codes were used to identify treatment in a non-specialty setting such as a general medical surgical bed.

Hospitals with psychiatric units identified according to the UB-92 revenue codes were compared to two additional sources that indicated whether or not the hospital had a psychiatric unit. The first source was the American Hospital Association's Annual Survey of Hospitals which asks general hospitals to indicate whether they have a psychiatric unit and/or chemical dependency unit. The second source was Medicare Cost Reports which also indicate whether the hospital has a psychiatric unit and thus should be paid under the separate Medicare payment system for psychiatric units. For the uncommon cases in which these sources conflicted, the Internet was searched to determine whether the hospital listed a psychiatric unit as one of its services. No external sources of information were available to check the availability of detoxification units.

Using 2003 data, we identified 12 states that reported revenue codes of sufficient completeness to be useful for the study. The states were: Kentucky, Maine, Massachusetts, Nebraska, Nevada, New York, North Carolina, Pennsylvania, Tennessee, Texas, Washington, and West Virginia (see acknowledgements). Records for patients with a principal SUD diagnosis treated in those states were selected. Using revenue codes described above, each discharge record was categorized as to whether the patient was treated in a detoxification unit, psychiatric unit, or another type of unit, typically a medical/surgical bed, which we refer to as "scatter beds" for

SUD treatment. Patient and stay characteristics were compared across treatment settings (detox unit, psychiatric unit, scatter bed in a hospital with a detox or psychiatric unit vs. scatter bed in a hospital without a detox or psychiatric unit). The factors examined included age, gender, length of stay, specific ICD-9-CM substance use principal diagnoses, primary expected payer, total charges, admission source, discharge type, detoxification and rehabilitation procedures, and comorbid mental health and non-psychiatric diagnoses. Results are presented descriptively using percentages and means. Chi square tests were used to compare the distribution of the patient characteristics between detoxification units and non-unit stays and psychiatric unit and non-unit stays.

Results

As shown in Figure 1, across the 12 states, there was a ten fold variation in the hospitalization rate per capita for SUD (Figure 1), ranging from 50 discharges per 10,000 persons to 5 discharges per 10,000 persons in the state. Additionally, the relative use of scatter beds, psychiatric units, or detoxification units varied widely. The percent of discharges treated in scatter beds ranged from a low of 26% to a high of 82%. The percentage of discharges from detoxification units ranged from less than 1% to 49%. The percentage of SUD discharges from psychiatric units ranged from 8% to 68%. The number of specialty units also varied across the states. For example, State J had only seven detoxification units in general hospitals, about one per 3 million residents; while State F had 47 detoxification units or about one per 400,000 residents (not shown in Figure).

On average, across the 12 states, 13% were treated in scatter beds in hospitals without detoxification or psychiatric units, 27% in scatter beds hospitals with psychiatric/detoxification units, 37% were treated in detoxification units, and 23% were treated in psychiatric units.

Tables 1, 2, and 3 display the characteristics of discharges with principal SUD from detoxification units, psychiatric units, scatter beds in hospitals with specialty units, and scatter beds in hospitals without specialty units. Results are presented for all states combined. All comparisons of the distribution of the characteristics between the four settings were found to be statistically significantly different at $P < 0.01$ using Chi-square and t-tests.

Demographic Characteristics

Gender and Age. Across all the settings, the majority of discharges were male (72%); however detoxification units tended to have a higher proportion of males than psychiatric units or scatter beds. The average age across all substance use disorder discharges was 41 years. Patients treated in scatter beds were, on average, older than patients treated in detoxification units or psychiatric units. Scatter beds also had a higher percentage of patients age 65 or older as compared to detoxification or psychiatric units, particularly scatter beds in hospitals without psychiatric or detoxification units.

Primary Expected Payer. Medicaid comprised more than half the discharges in detoxification units (55%) and somewhat less in scatter beds in hospitals with a psychiatric or detoxification unit (46%), psychiatric units (37%), and scatter beds in hospitals without units (34%).

Private insurance covered 21% of all discharges across settings. Private insurance paid for 25% of discharges from scatter beds in hospitals without specialty units, 22% in psychiatric units, 20% of discharges from scatter beds in hospitals with a psychiatric or detoxification unit, and 19% in detoxification units.

Medicare paid for only 13% of discharges across all settings. Medicare paid for 20% of discharges from scatter beds in hospitals without specialty units, 16% of discharges from scatter beds in hospitals with specialty units, 14% of discharges in psychiatric units, and 9% of discharges in detoxification units.

Across all discharges with a principal SUD, about 15% were uninsured. Uninsured patients ranged from a high of 20% of discharges from psychiatric units to a low of 12% in detoxification units.

Stay Characteristics

Total Charges. Average total charges per discharge were highest for scatter beds in hospitals with specialty units (\$11,195), followed by scatter beds in hospitals without specialty units (\$10,840). The average total charges for psychiatric units and detoxification units were lower, at \$8,563 and \$7,595, respectively.

Length of Stay. Consistent with the findings for total charges, the average length of stay was highest among scatter beds in hospitals with a specialty unit (7.1 days). Average length of stay was 5.2 days in psychiatric units, 4.9 days in scatter beds in hospitals without a specialty unit, and 4.7 days in detoxification units.

Admission Source. Approximately 47% of all discharges with a principal SUD were admitted from the emergency department. Emergency department admissions were most common among discharges from scatter beds in hospitals without specialty units (58%), followed by discharges from psychiatric units (56%), discharges from scatter beds in hospitals with psychiatric/detoxification units (48%), and detoxification units (37%).

Disposition. Overall, approximately 15% of discharges were “against medical advice.” (AMA). Discharges against medical advice were highest among discharges from detoxification units (20%) and lowest from psychiatric units (8%).

Overall, 9% of discharges with a principal SUD were transferred to another short-term hospital or other facility. Transfers to another facility were highest among discharges from scatter beds in hospitals with and without units (about 12%) and lowest in psychiatric units (7%).

Overall, 0.11% of discharges with a principal SUD, (199 out of 175,789 discharges) died during the hospital stay. Among patients treated in scatter beds in hospitals without specialty units, 0.31% died (71 out of 22,797 discharges), among patients treated in scatter beds in hospitals with specialty units, 0.15% died (69 out of 47,370), among psychiatric unit discharges, 0.12% died (49 out of 40,877 discharges), among detoxification discharges, 0.12% died (<11 out of 64,745 discharges).

Diagnostic Characteristics

Principal Diagnosis. In total, 73% of detoxification unit discharges had a principal diagnosis of alcohol or drug dependence, rather than alcohol or drug psychosis or nondependent SUD. This contrasts with only 26% of discharges from scatter beds in hospitals without units, 49% of psychiatric units, and 55% of discharges from scatter beds in hospitals with units (calculated based on Table 2). In contrast, scatter beds in hospitals without specialty units were much more likely to have patients with a diagnosis of drug or alcohol psychosis or nondependent abuse of drugs (74% of all discharges).

Detoxification units had more drug dependence than alcohol dependence (43% and 31%); in psychiatric units the distribution of drug and alcohol dependence was about equal (24% each), while in scatter beds in hospitals without specialty units there was more than twice as much alcohol dependence as drug dependence (18% versus 7%).

Secondary Diagnoses. About 31% of detoxification unit discharges with a principal SUD had a secondary mental health diagnosis, compared with about 50% of psychiatric unit discharges diagnosis, 35% of scatter beds discharges in hospitals with units, and 27% of scatter beds in hospitals without units. Secondary SUD diagnoses were indicated in approximately 70 percent of discharges across the settings

Secondary non-mental health or non-SUD diagnoses were most common among scatter beds in hospitals without units (80%), followed by scatter beds in hospitals with units (78%), psychiatric units (70%), and detoxification units (64%).

Figure 2 describes the distribution of secondary diagnosis categories across the settings. The percentage of patients with mental health diagnoses was lowest in scatter beds in hospitals without units. In contrast, the percentage of patients with circulatory diagnoses (e.g., hypertension), endocrine/nutritional/metabolic/immunity diagnoses (e.g., fluid/electrolyte disorders), nervous system and sense organ diagnoses (e.g., epilepsy/convulsions), and blood and blood-forming organ diagnoses (e.g. anemia) was highest in the scatter beds in hospitals without units.

Procedures

Procedures. As shown in Table 3, less than 50% of patients treated in scatter beds in hospitals without units had any procedures and they were less likely to have received detoxification or rehabilitation relative to the average rate across the other three settings.

Discussion

To summarize, across the 12 states there was wide variation in the substance abuse hospitalization rate and the extent to which hospitalized patients were treated in scatter beds, psychiatric units, or detoxification units. The percent of discharges treated in scatter beds ranged from a low of 26% to a high of 82%. Patients treated in hospitals without specialized units and were less likely to receive drug or alcohol detoxification or rehabilitation interventions. They were more likely to be admitted from the emergency room; to present with alcohol or drug psychosis or nondependent use of drugs; to be transferred to another short-term hospital or other facility; were more likely to die than patients treated in other settings (although deaths were rare). These findings have several implications.

First, according to placement criteria developed by the American Society of Addiction Medicine (ASAM) - which are widely used by third party payers and providers in the United States - hospital inpatient care is considered justified if a patient is at high risk of severe withdrawal; requires 24 hour medical monitoring (due to other biomedical conditions) or requires 24-hour psychiatric care (as well as addiction treatment) (American Society of Addiction Medicine, 2001). The wide variation in the rate of SUD hospitalizations across the states suggests that these admission criteria are not applied uniformly across communities.

Second, although ASAM guidelines do not elucidate the type of setting in which patients should be treated when they are admitted for an SUD; the guidelines do indicate that patients needing 24-hour care should receive care from an interdisciplinary clinical treatment team that is knowledgeable about the biosocial dimensions of addiction as well as biomedical, emotional, behavioral, and cognitive disorders. Patients treated in regions where specialized substance abuse or psychiatric units are scarce are most likely not receiving the interdisciplinary services recommended as evinced by the fact that less than half of patients in hospitals without units received any type of rehabilitation or detoxification procedure.

This study must be understood in light of its limitations. The data come from 12 states and are not nationally representative; in particular, they may include states with more psychiatric unit or detoxification beds. However, the states represent 24 percent of all states in the U.S., with approximately 31 percent of the U.S. population, and 45 percent of all discharges with a principal SUD diagnosis. The data comprise administrative records and do not contain details about the types of providers treating patients within hospitals, such as the extent to which patients were treated by consulting psychiatrists or psychiatric nurses, nor about the particulars of the clinical services offered, such as what types of psychoactive medications patients might have been provided. Finally, the study focuses on general hospitals but an important extension would be to combine HCUP data with information on stand-alone substance abuse outpatient and residential facilities.

Despite these limitations, this study provides an important framework for future analysis on the optimal ways to organize inpatient SUD services in community hospitals. Subsequent work must focus not only on the ability of hospitals to address patients' addiction, psychiatric, and medical

conditions, but also the provision of services that encourage patients to receive ongoing treatment once discharged. Detoxification in hospitals is often the first treatment that someone with SUD receives, yet only 50% of patients who receive inpatient detoxification receive subsequent mental health or substance abuse treatment within 30 days of discharge (Mark et al., 2003).

Because specialized units require a relatively large number of patients to be fiscally sustainable, policymakers must also consider the availability of these services across communities of various sizes. Currently, hospitals open or close units at will, however, more regional planning efforts may be needed to assure the appropriate supply of specialized services. Further, planning and thought should extend to the specialized substance abuse and psychiatric services in hospitals without specialty units, such as by training nursing staff in detoxification procedures and creating substance abuse consultation teams (Becker and Semrow, 2006; Fuller and Jordan, 1994).

Finally, planning efforts for addiction services need to occur in concert with consideration of behavioral health services broadly. As the data reveal, about one third to one half of discharges with SUD had a secondary mental health diagnosis, which may be an underestimate because of under coding (Havassy et al., 2009; McGovern et al., 2006; Harris and Edlund, 2005). Thus, treatment providers must be able to treat both psychiatric conditions and addiction.

The role of hospitalization in the treatment of individuals presenting with substance use disorders continues to evolve and be debated. Current standards outline criteria for hospital placement and detail the services that should be available to patients with substance use disorders when hospitalized. This study highlights that SUD hospitalization rates overall, and the use of

specialized behavioral health units within hospitals varies greatly across communities and patients. The data reveal a need for more research and policy attention focused on how patients with substance abuse are being treated in community hospitals and the appropriate supply and use of specialized hospital settings across geographic regions.

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Figure 1.

Rate of Community Hospital Discharges for Substance Use Disorders per 10,000 State
Population by Scatter Beds, Psychiatric Units, and Detoxification Units

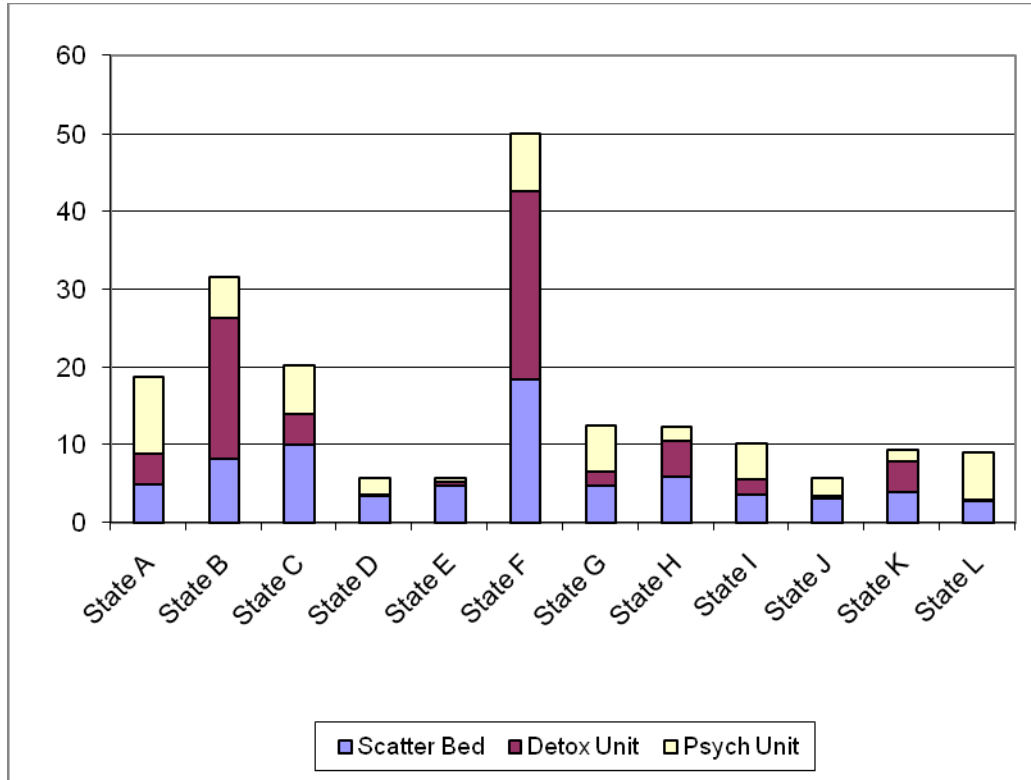


Table 1.

**Demographic and Stay Characteristics of Discharges with Substance Use Disorders Treated in Psychiatric Units,
Detoxification Units, or Non-Specialty Units**

	Number of Discharges					Column Percentages				
	All SUD Discharges	Non-Specialty Unit		Detox Unit	Psychiatric Unit	All SUD Discharges	Non-Specialty Unit		Detox Unit	Psychiatric Unit
		Hospital Without Psychiatric/ Detox Unit	Hospital with Psychiatric/ Detox Unit				Hospital Without Psychiatric/ Detox Unit	Hospital with Psychiatric/ Detox Unit		
Number of Discharges	105,622	22,797	47,370	64,745	40,877	100.0%	100.0%	100.0%	100.0%	100.0%
Male	77,001	16,052	33,383	48,994	28,007	72%	70%	70%	76%	69%
Average Age (SD)						41 (12.7)	45 (15.6)	43 (13.4)	40 (10.5)	40 (12.6)
Age 65+	2,837	2,697	3,353	1,066	1,771	5%	12%	7%	2%	4%
Primary expected payer										
Medicare	11,197	4,475	7,730	5,553	5,644	13%	20%	16%	9%	14%
Medicaid	50,991	7,762	21,921	35,722	15,269	46%	34%	46%	55%	37%
Private insurance	21,058	5,786	9,538	11,979	9,079	21%	25%	20%	19%	22%
Uninsured	14,649	3,705	5,509	7,361	7,288	14%	16%	12%	11%	18%
Average Charge per Stay (SD)						9,222 (12,672)	10,840 (15,759)	11,195 (15,885)	7,595 (7,068)	8,563 (12,919)
Average Length of Stay (SD)						5.5 (6.0)	4.9 (6.5)	7.1 (8.0)	4.7 (3.8)	5.2 (5.6)
Emergency Admission	46,530	13,303	22,927	23,731	22,799	47%	58%	48%	37%	56%
Disposition										
Routine	79,736	16,113	34,108	46,102	33,634	73.9%	70.7%	72.0%	71.2%	82.3%
Short-term Hospital	1,106	859	727	615	491	1.5%	3.8%	1.5%	0.9%	1.2%
Other Facility	7,987	2,235	4,834	5,285	2,702	8.6%	9.8%	10.2%	8.2%	6.6%
Home Health	377	496	648	53	324	0.9%	2.2%	1.4%	0.1%	0.8%
AMA	15,985	2,919	6,859	12,604	3,381	14.7%	12.8%	14.5%	19.5%	8.3%
Died	49	71	69	<10	49	0.11%	0.31%	0.15%	na	0.12%

NOTE: All differences in characteristics across settings were statistically significant at P < 0.01

Table 2.

**Diagnostic Characteristics of Discharges with Substance Use Disorders Treated in Psychiatric Units, Detoxification Units, or
Non-Specialty Units**

	Number of Discharges					Column Percentages				
	All SUD Discharges	Non-Specialty Unit		Detox Unit	Psychiatric Unit	All SUD Discharges	Non-Specialty Unit		Detox Unit	Psychiatric Unit
		Hospital Without Psychiatric/ Detox Unit	Hospital with Psychiatric/ Detox Unit				Hospital Without Psychiatric/ Detox Unit	Hospital with Psychiatric/ Detox Unit		
Principal Diagnosis										
Alcohol psychosis	34,362	6,978	11,482	8,883	7,019	20%	31%	24%	14%	17%
Drug psychosis	34,412	7,612	7,490	7,931	11,379	20%	33%	16%	12%	28%
Alcohol dependence	46,521	4,139	12,554	19,848	9,980	26%	18%	27%	31%	24%
Drug dependence	52,530	1,694	13,294	27,671	9,871	30%	7%	28%	43%	24%
Nondependent abuse of drugs	7,964	2,374	2,550	412	2,628	5%	10%	5%	1%	6%
						56%	26%	55%	73%	49%
Secondary Diagnoses										
Secondary MH diagnosis	63,527	6,223	16,855	19,849	20,600	36%	27%	36%	31%	50%
Secondary SUD diagnosis	125,363	16,152	32,310	47,461	29,440	71%	71%	68%	73%	72%
Secondary non MHSUD diagnosis	125,495	18,313	36,925	41,720	28,537	71%	80%	78%	64%	70%

NOTE: All differences in characteristics across settings were statistically significant at P < 0.01

Table 3.

Procedures Received by Individuals with Substance Use Disorders Treated in Psychiatric Units, Detoxification Units, or Non Specialty Units

	Number of Discharges					Column Percentages				
	Total SA Discharges	Non-Specialty Unit		Detox Unit Discharges	Psychiatric Unit Discharges	Total SA Discharges	Non-Specialty Unit		Detox Unit Discharges	Psychiatric Unit Discharges
		Hospital Without Psychiatric/ Detox Unit	Hospital with Psychiatric/ Detox Unit				Hospital Without Psychiatric/ Detox Unit	Hospital with Psychiatric/ Detox Unit		
Alcohol Rehab	3,332	645	2,125	387	175	3%	3%	4%	1%	0%
Alcohol Detox	39,980	2,763	8,398	20,371	8,448	38%	12%	18%	31%	21%
Alcohol rehab and detox	4,448	33	1,023	2,352	1,040	4%	0%	2%	4%	3%
Drug rehab	2,949	522	1,384	596	447	3%	2%	3%	1%	1%
Drug detox	28,804	1,349	5,210	17,796	4,449	27%	6%	11%	27%	11%
Drug rehab and detox	4,205	14	871	2,587	733	4%	0%	2%	4%	2%
Combined alcohol and drug rehab	7,205	679	4,662	715	1,149	7%	3%	10%	1%	3%
Combined alcohol and drug detox	31,172	2,483	5,578	18,495	4,616	30%	11%	12%	29%	11%
Combined alcohol and drug rehab and detox	4,096	66	1,865	1,503	662	4%	0%	4%	2%	2%
No Procedure Provided	27,694	12,084	12,418	1,690	15,610	24.0%	53%	26%	3%	38%

NOTE: All differences in characteristics across settings were statistically significant at P < 0.01

1. Note that patients could have had more than one procedure code listed.

Figure 2.

Distribution of Secondary Diagnosis Categories by Site of Care

