
Substance Dependent American Indian Veterans: A National Evaluation

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Synopsis.....

Demographic, clinical, and treatment episode characteristics of 3,087 American Indian veterans discharged from Department of Veterans Affairs hospitals in fiscal year 1991 were examined.

Substance use disorders were diagnosed in 46.3 percent of discharged American Indians, compared

with 23.4 percent of discharged veterans overall. More than 97 percent of American Indian substance use diagnoses were for alcohol dependence, while rates of other drug use disorders were low. Substance dependent American Indians were younger, and more likely to be male and unmarried, than nondependent American Indians. Psychiatric disorders, particularly personality disorders, depression, and posttraumatic stress disorder, were more prevalent among American Indians diagnosed with substance use disorders, than among nondependent American Indians.

American Indians with substance use disorders were similar demographically to the general population of substance dependent veterans. Rates of diagnosed psychiatric disorders and drug dependencies other than alcohol were lower among American Indians receiving substance (alcohol or drug) use diagnoses than among the general population of substance dependent veterans. Rates of rehospitalization following discharge were higher in substance-abusing American Indian veterans than among their counterparts.

Potential explanations for these findings are discussed.

AN EPIDEMIOLOGIC INVESTIGATION of substance abuse in American Indian adults, national in scope, has not been reported. Investigations of psychiatric disorders in nationally representative samples, such as the Epidemiologic Catchment Area Study (1,2), do not report findings for American Indians. Evaluations of substance dependent American Indian adults are usually limited to local studies of select populations (3-10).

The paucity of data pertaining to substance dependence in American Indian adults is unfortunate. Substance use rates are higher among Indian adolescents than among any other ethnic group (11), and American Indian adults experience rates of substance abuse-related morbidity and mortality substantially in excess of national averages (12). Walker and colleagues note the dearth of data pertaining to the

prevalence, etiology, and clinical implications of comorbid psychiatric disorders in substance dependent American Indians (13). The Institute of Medicine observes that "there are relatively few studies that investigate treatment use and treatment effectiveness in this population group. Basic issues concerning the prevalence of problem drinking and the patterns of treatment for alcohol problems remain unresolved" (14).

In an effort to redress the shortcomings of the empirical data base relevant to substance dependent American Indians, we examined the epidemiology of drug dependence and psychiatric disorders in a national sample of American Indian veterans treated in Department of Veterans Affairs (DVA) hospitals. Treatment episode characteristics and readmission rates were assessed. Substance dependent American Indian

Table 1. Demographic characteristics, by percentages, of American Indian veterans and all veterans discharged from DVA hospitals, fiscal year 1991

Category	American Indian inpatients					All inpatients				
	Substance dependent				Non-dependent (N=1,659)	Substance dependent				Non-dependent (N=423,786)
	All (N=1,428)	Type 1 ¹ (N=765)	Type 2 ² (N=176)	Type 3 ³ (N=487)		All (N=129,450)	Type 1 ¹ (N=49,318)	Type 2 ² (N=29,318)	Type 3 ³ (N=50,237)	
Men.....	98.4	98.4	97.7	98.6	93.4	98.7	98.7	97.8	99.2	97.2
Currently married.....	25.2	25.4	23.9	25.5	53.5	27.9	23.6	26.6	33.0	56.1
Vietnam era service.....	49.1	54.9	63.1	34.9	21.5	46.8	54.9	59.6	31.2	19.1
VA Means Test, Category										
A.....	96.8	98.2	98.3	94.0	91.9	97.7	97.4	98.0	97.9	97.0
Mean age (years).....	47.1	43.9	44.2	53.1	59.4	48.0	42.7	43.7	55.6	61.4
SD.....	12.2	10.7	9.3	12.9	14.1	13.0	10.4	10.8	12.9	13.7

¹Inpatients who received a substance dependence diagnosis at discharge from a substance abuse unit.

²Inpatients who received a substance dependence diagnosis at discharge from a psychiatric unit.

³Inpatients who received a substance dependence diagnosis at discharge from a medical or surgical unit.

NOTE: SD = Standard deviation.

Table 2. Prevalences of specific drug diagnoses, by percentages, among American Indian veterans and all veterans discharged from DVA hospitals, fiscal year 1991¹

Drug diagnosis	American Indian inpatients				All inpatients			
	Overall (N=1,428)	Type 1 ² (N=765)	Type 2 ³ (N=176)	Type 3 ⁴ (N=487)	Overall (N=129,450)	Type 1 ² (N=49,318)	Type 2 ³ (N=29,318)	Type 3 ⁴ (N=50,237)
Cocaine.....	2.7	3.7	4.5	0.6	17.6	29.8	18.0	5.4
Opioid.....	1.3	1.7	1.7	0.6	5.6	8.5	4.5	3.2
Marijuana.....	6.6	10.5	5.1	1.0	7.1	12.5	7.9	1.2
Amphetamine.....	0.5	0.7	0.6	0.2	1.2	2.1	1.2	0.2
Barbiturate.....	0.2	0.0	1.1	0.2	1.5	1.8	2.4	0.6
Other ⁵	4.8	4.4	12.5	2.7	9.5	09.8	15.7	5.4
Drug psychosis.....	0.8	0.7	2.3	0.4	2.8	2.9	3.3	2.4
Alcohol.....	97.3	98.8	90.3	97.5	87.5	88.4	79.6	91.3

¹Columns total more than 100 percent because patients can receive more than one substance dependence diagnosis at discharge.

²Inpatients who received a substance dependence diagnosis at discharge from a substance abuse unit.

³Inpatients who received a substance dependence diagnosis at discharge from

a psychiatric unit.

⁴Inpatients who received a substance dependence diagnosis at discharge from a medical or surgical unit.

⁵"Other" includes hallucinogen, anti-depressant, combination, and unidentified dependencies.

veterans were compared with American Indian veterans without substance use disorders and with the substance dependent and nondependent general veteran inpatient population, across demographic, drug use, psychiatric, general medical, and treatment dimensions.

Methods

Discharge abstracts maintained at the DVA data processing center in Austin, TX, were used to identify characteristics of inpatients discharged from DVA treatment in fiscal year 1991 (FY 91). Nearly 1 million DVA discharges annually are abstracted across demographic, clinical, and service episode dimensions. Discharge abstracts for inpatients are maintained in the Patient Treatment File (PTF).

Patients receiving primary or secondary International Classification of Diseases (9th Revision—Clinical Modification) (ICD-9) diagnoses of alcohol abuse

(codes 291 and 305.0), alcohol dependence (code 303), drug abuse (codes 292 and 305.2-305.9) or drug dependence (code 304) during their index episode of care (subsequently defined) were regarded as substance dependent. Prevalence estimates for psychiatric, substance dependence, and medical disorders were based on ICD-9 codes assigned by medical records technicians to physicians' diagnoses recorded in patients' charts. In addition to diagnoses, the PTF contained demographic information such as self-reported ethnicity.

Previous research has identified important differences between substance dependent veterans treated in addictions treatment units, psychiatric units, and medical or surgical units (15-17). Thus, a hierarchical typology was employed to classify substance dependent inpatients on the basis of the hospital unit in which they were treated (18).

Patients discharged in FY 91 were categorized as

Type 1 inpatients if they received a substance dependence diagnosis at discharge from an addictions treatment unit. Patients were characterized as Type 2 inpatients if they received a substance dependence diagnosis at discharge from a psychiatric unit but were not discharged from an addictions treatment unit with a substance dependence diagnosis in FY 91. Type 3 inpatients received a substance dependence diagnosis at discharge from a medical or surgical unit in FY 91 but did not receive a substance dependence diagnosis at discharge from either an addictions treatment or psychiatric unit in FY 91. That is, they were either not treated in a substance abuse or psychiatric unit in FY 91, or they were treated in a substance abuse or psychiatric unit but did not receive a substance dependence diagnosis at discharge. For example, a patient discharged three times from a psychiatric unit and once from an addictions treatment unit in FY 91, who received a substance dependence diagnosis at discharge from each treatment episode, would be classified as a Type 1 inpatient.

A patient's index episode of care was his first discharge from the highest level (Type 1, 2, 3) of the hierarchical typology. The index episode of care for a patient not receiving substance dependence diagnosis was his first episode of inpatient treatment in FY 91. Demographic, diagnostic, and service episode data are based on information collected at discharge from the index episode of care.

Results

A total of 3,087 American Indians were discharged from DVA inpatient care in FY 91, 0.56 percent of the 553,236 inpatients discharged. Almost half (46.3 percent) of discharged American Indians received a substance dependence diagnosis, compared with 23.4 percent of discharged veterans overall.

Demographic characteristics. Demographic characteristics of substance dependent and nondependent American Indian veterans are displayed in table 1. All reported demographic differences between the total group of substance dependent American Indian veterans and the nondependent American Indian group were statistically significant ($P < .001$). Proportions were tested with chi-square analysis and age differences with t-tests. Similarly, all differences between substance dependent veterans overall and the total group of nondependent veterans were statistically significant ($P < .001$).

Substance dependent American Indian veterans were 12 years younger, on average, than their nondependent counterparts. A larger proportion were unmarried,

'Substance use rates are higher in Indian adolescents than in any other ethnic group, and American Indian adults experience rates of substance abuse-related morbidity and mortality substantially in excess of national averages.'

male, and served during the Vietnam era. Substance dependent American Indian veterans were more likely than nondependent American Indians to receive VA Means Test Category A status. Veterans assigned to Category A of the VA Means Test are those with either service-connected disabilities, low incomes, a history of exposure to radiation, service in World War I or earlier, eligibility for Medicaid, or those who were prisoners of war. Substance dependent veterans from the general veteran population were an average of 13 years younger than the overall group of nondependent veterans. A larger proportion of overall veterans with substance dependence diagnoses were male, unmarried, of Category A status, and served during the Vietnam era than nondependent veterans overall.

Substance dependent American Indian veterans and substance dependent veterans overall were similar with respect to age, sex, and marital status. Relative to substance dependent veterans generally, a larger proportion of substance dependent American Indians were discharged from addictions treatment units (53.6 percent versus 38.5 percent), while a smaller percentage were discharged from psychiatric units (12.3 percent versus 22.6 percent). Nonsubstance dependent American Indian veterans were similar demographically to the general population of nonsubstance dependent veterans. A larger proportion of American Indians was female, however, and fewer met the DVA's Category A standards.

Substance dependence disorders. Alcohol dependence was the most frequent substance abuse diagnosis among substance dependent American Indian veterans, accounting for more than 97 percent of all diagnoses (table 2). Marijuana dependence was the second most frequent substance abuse diagnosis among substance dependent American Indian veterans (6.6 percent), followed by "other" dependence (hallucinogens, antidepressants, combination, and unspecified dependencies), and cocaine dependence. Alcohol, cocaine, marijuana, and "other," were the four most prevalent

Table 3. Prevalence of selected psychiatric disorders, by percentages, among American Indian veterans and all veterans discharged from DVA hospitals, fiscal year 1991

Disorder	American Indian inpatients					All inpatients				
	Substance dependent				Non-dependent (N=1,659)	Substance dependent				Non-dependent (N=423,786)
	All (N=1,428)	Type 1 ¹ (N=765)	Type 2 ² (N=176)	Type 3 ³ (N=487)		All (N=129,450)	Type 1 ¹ (N=49,318)	Type 2 ² (N=29,318)	Type 3 ³ (N=50,237)	
Personality	5.3	5.4	17.1	0.8	1.4	8.5	9.7	18.8	1.3	1.2
Depression	6.3	5.2	22.8	2.1	3.1	8.9	7.3	20.7	3.6	3.5
Posttraumatic stress	6.6	3.9	29.0	2.7	2.8	6.2	5.1	16.0	1.5	1.4
Schizophrenia	3.6	2.5	14.2	1.4	2.5	8.1	3.3	26.4	2.1	4.7
Bipolar affective	1.3	0.8	5.1	0.6	0.7	3.4	2.2	9.7	0.9	1.5
Neurotic	0.6	0.3	2.8	0.4	0.4	2.0	1.2	5.6	0.7	0.6
Other ⁴	6.3	3.8	21.0	5.1	4.8	7.1	3.9	16.1	5.1	6.5

¹Veterans who received a substance dependence diagnosis at discharge from a substance abuse unit.
²Veterans who received a substance dependence diagnosis at discharge from a psychiatric unit.
³Veterans who received a substance dependence diagnosis at discharge from

a medical or surgical unit.
⁴“Other” disorders include psychoses (senile, transient, and unspecified organic psychotic conditions, paranoia, unspecified reactive psychoses, and psychoses with origin specific to childhood) and nonpsychotic mental disorders (sexual disorders and unspecified disorders).

Table 4. Prevalence of selected medical disorders, by percentages, among American Indian veterans and all veterans discharged from DVA hospitals, fiscal year 1991

Medical disorder and ICD-9 codes	American Indian inpatients		All inpatients	
	Substance dependent (N=1,428)	Nondependent (N=1,659)	Substance dependent (N=129,450)	Nondependent (N=423,786)
Diseases of the blood and blood-forming organs 280–289	7.3	10.1	9.4	9.5
Diseases of the circulatory system 390–459	25.1	52.0	29.0	53.0
Diseases of the musculoskeletal system and connective tissue 710–739	17.9	18.0	12.6	16.8
Diseases of the skin and subcutaneous tissue 680–709	11.3	10.9	8.2	7.9
Diseases of the digestive system 520–579	27.7	22.7	28.1	24.0
Diseases of the genitourinary system 580–629	6.4	20.1	7.2	18.9
Symptoms, signs, and ill-defined conditions 780–799	15.2	20.2	19.4	20.6
Infectious and parasitic disease 000–139	9.7	12.2	9.5	9.7
Injury and poisoning 800–999	12.9	14.9	8.3	10.5
Mental disorders ¹ 290–319	23.9	12.9	34.7	17.5
Endocrine, nutritional, and metabolic diseases, and immunity disorders 240–279	24.5	39.8	18.5	30.3
Neoplasms 140–239	2.2	12.4	4.8	15.1
Diseases of the nervous system and sense organs 320–389	16.3	20.7	13.6	21.5
Diseases of the respiratory system 460–519	14.6	23.2	18.7	24.9

¹Excluding substance use disorders.

diagnoses among substance dependent patients overall. Marijuana was the second most prevalent diagnosis among American Indian patients discharged from substance dependence units (10.5 percent), while “other” drug dependence followed alcohol dependence among American Indian patients discharged from psychiatric units (12.5 percent).

Drug use diagnoses other than alcohol were higher among American Indian patients discharged from psychiatric units than among those discharged from addictions treatment or medical or surgical units. With the exception of alcohol, prevalence rates for specific

drug dependencies were lower among substance dependent American Indian veterans than among the general population of substance dependent veterans. Rates of cocaine dependence were substantially lower among substance dependent American Indians (2.7 percent) than among substance dependent veterans generally (17.6 percent).

Polydrug dependence was less common among American Indian substance abusers than among substance dependent veterans from the general population. Nearly three-quarters (73.7 percent) of American Indians with substance dependence diagnoses received

one substance dependence diagnosis, 21.1 percent received two such diagnoses, and 5.2 percent received three or more substance dependence diagnoses. Comparable figures for substance dependent veterans generally were 62.9 percent, 26.8 percent, and 10.3 percent.

Psychiatric disorders. Psychiatric disorders were more common among substance dependent than in nondependent veterans for both the American Indian and total veteran groups (table 3). With the exception of posttraumatic stress disorder, psychiatric disorders were less prevalent in substance dependent American Indians than among the general population of substance dependent veterans. Posttraumatic stress disorder accounted for 2.8 percent of psychiatric diagnoses in nonsubstance dependent American Indians and 1.4 percent of psychiatric diagnoses in the general nonsubstance dependent veteran population; among substance dependent American Indians, 6.6 percent had posttraumatic stress disorder, as did 6.2 percent of substance dependent veterans generally.

In sum, while rates of diagnosed psychiatric disorders for substance dependent American Indian veterans were generally higher than for their nonsubstance dependent counterparts, they were lower than rates in the general substance dependent veteran population.

Medical disorders. Medical disorder prevalence rates are presented in table 4 for substance dependent and nondependent American Indian veterans and for veterans from the general inpatient population. Substance dependent American Indian veterans experienced higher rates of digestive and nonsubstance-related mental disorders than nondependent American Indians. Nondependent American Indians had higher rates of circulatory, genitourinary, endocrine, nutritional, metabolic, immunity, and neoplastic disorders than substance dependent American Indians. Differential susceptibility to these disorders is due, in all probability, to the advanced age of the nondependent group relative to the substance dependent group.

Digestive and nonsubstance-related mental disorders were more prevalent among the overall group of veterans with substance dependence diagnoses than among the overall nondependent group. Circulatory, genitourinary, endocrine, nutritional, metabolic, immunity, neoplastic, nervous system, and respiratory diseases were more prevalent in the total group of nondependent veterans than in the total group of substance dependent veterans.

Substance dependent American Indian veterans had a 6.0 percent higher rate of endocrine, nutritional,

metabolic, and immunity disorders than substance dependent veterans overall; a 5.3 percent higher rate of musculoskeletal and connective tissue disorders, a 4.6 percent higher rate of skin and subcutaneous tissue disorders, and a 3.1 percent higher rate of injury and poisoning. Substance dependent veterans from the general population had a 10.8 percent higher rate of nonsubstance-related mental disorders than those of substance dependent American Indians; a 4.2 percent higher rate of signs, symptoms, and ill-defined conditions, a 4.1 percent higher rate of respiratory disorders, and a 3.9 percent higher rate of circulatory disorders.

Service episode characteristics. Nondependent American Indian veterans experienced fewer episodes of inpatient care in FY 91 than the general population of nondependent veterans χ^2 (df = 3, N = 425,445) = 30.13, $P < .001$. Approximately 71 percent of nonsubstance dependent American Indian veterans experienced one treatment episode, while 16.3 percent had two, 7.7 percent three, and 5.2 percent more than three episodes. In the nonsubstance dependent general veteran population, 64.6 percent had one treatment episode, 20.5 percent had two, 8.1 percent had three, and 6.7 percent more than three.

Substance dependent veterans had more episodes of care than their nonsubstance dependent counterparts. Nearly 60 percent of substance dependent American Indian veterans had one episode of care in FY 91, 21.1 percent had two episodes, 9.0 percent had three episodes, and 10.6 percent had more than three episodes. In the substance dependent general veteran population, 56.9 percent had one episode, 22.0 percent had two, 10.1 percent had three, and 11.0 percent had more than three.

Nonsubstance dependent American Indian veterans experienced shorter index episodes of care [mean 11.8 days, standard deviation (SD) 19.0] than nonsubstance dependent veterans (mean 13.3 days, SD 26.6) t (425,443) = 3.27, $P < .01$. Substance dependent American Indian veterans had shorter mean index episodes of care (mean 20.9 days, SD 27.4) than substance dependent veterans generally (mean 23.9 days, SD 96.5) t (130,876) = 4.00, $P < .01$. On average, substance dependent patients had index episodes of care nearly twice the length of their nondependent counterparts.

Differences between substance dependent American Indians and the total population of substance dependent veterans, with respect to average length of index episode of care, may be attributable to increased rates of discharge against medical advice (AMA) in American Indians. AMA rates for substance dependent

'The prevalence of substance dependence disorders in American Indian veterans receiving inpatient care was approximately twice the rate for the general veteran population.'

American Indians were 11.2 percent and 2.3 percent for non-dependent Indians χ^2 (df = 1, N = 3,087) = 101.6, $P < .001$. Comparable figures for general population veterans were 10.8 percent and 1.7 percent χ^2 (df = 1, N = 553,236) = 22,372.3, $P < .001$. Mean lengths of index episodes of care for patients who completed treatment (that is, excluding AMA discharges) were 20.2 days (SD=19.40) for substance dependent American Indians and 20.3 days (SD=25) for substance dependent veterans generally. Mean index episodes of care for nonsubstance dependent American Indians were 11.9 days (SD=19.1) and 13.35 days (SD=26.7) for nonsubstance dependent veterans overall (excluding AMA discharges) t (418,297) = 3.1, $P < .01$.

Readmissions to hospital. A total of 894 substance dependent American Indians (62.6 percent of all substance dependent American Indians) were discharged from their first FY 91 admission between October 1, 1990 and March 31, 1991. Thus, they were at risk for readmission for at least 180 days in FY91. Approximately half (N=467) of these patients were discharged from addictions treatment units (Type 1 inpatients); 110 were discharged from psychiatric units (Type 2 inpatients), and 317 were discharged from medical or surgical units (Type 3 inpatients).

A total of 457 substance dependent American Indians (51.1 percent) were readmitted to a VA hospital by the end of FY 91. Of the American Indian patients discharged from addictions treatment units, 215 (46 percent) were readmitted to DVA hospitals before the end of that fiscal year, 122 (56.7 percent) to an addictions treatment unit, 29 (13.5 percent) to a psychiatric unit, and 64 (29.8 percent) to a medical or surgical unit. Of the American Indian inpatients discharged from psychiatric units 75 (67.3 percent) were rehospitalized prior to the end of FY 91, 3 (4 percent) to substance abuse units, 54 (72 percent) to psychiatric units, and 18 (24 percent) to medical or surgical units. Of inpatients discharged from medical or surgical units, 167 (52.7 percent) were readmitted to VA hospitals prior to the end of FY 91, 2 (1.2 percent) to a substance abuse unit, 1 (0.5 percent) to a

psychiatric unit, and 164 (98.2 percent) to a medical or surgical unit. The chart shows cumulative rates of readmission to DVA inpatient care by patient type.

Costs. Following the methodology of Moos and coworkers (18), total cost of medical care for Type 1 American Indian veterans was estimated at \$6.9 million, for Type 2 veterans, \$2.3 million, and for Type 3, \$2.7 million. DVA inpatient care for 1,428 substance dependent American Indian veterans cost approximately \$12 million, or an average of \$8,400 each, in FY 91.

Discussion

American Indians comprise approximately 0.6 percent of veterans in the United States (19,20). A small percentage (1.9 percent) of the estimated 159,000 American Indian veterans nationally received DVA inpatient care in FY 91 (19). American Indian veterans appear to receive DVA inpatient care at a rate lower than that of other ethnic groups. We estimate that 2.4 percent of white American veterans, 4.4 percent of Latino veterans, and 6.5 percent of African American veterans nationally were treated in VA hospitals in FY 91 (20).

A number of factors may account for lower utilization rates among American Indians. Many American Indians receive treatment from Indian Health Service hospitals, while others live too far from VA hospitals to have access to them. It is also possible that American Indian veterans find some VA hospitals culturally insensitive environments.

Nearly half of the 3,087 American Indians treated received a substance use diagnosis. It is likely that this figure underestimates the true prevalence of substance use and related morbidity in American Indian veterans. Sugarman and Smith recently surveyed 47 clinical directors of Indian Health Service hospitals to determine the proportion of patients hospitalized on a single day due to alcohol-related causes (21). More than one-third (34.5 percent) of adult male hospitalizations were attributable to alcohol consumption. Fewer than half of alcohol-related hospitalizations were associated with alcohol-defined diagnoses (for example, alcoholic psychoses, alcoholism). Infectious diseases accounted for 15.5 percent of alcohol-related hospitalizations and injuries for 18.4 percent. Sugarman and Smith relied on case-by-case determinations of the role of alcohol in individual patients' hospitalizations. Our investigation relied on physicians' diagnoses of substance dependence and associated disorders and may have underestimated the prevalence of substance dependence and co-morbid conditions

among American Indian veterans and veterans generally.

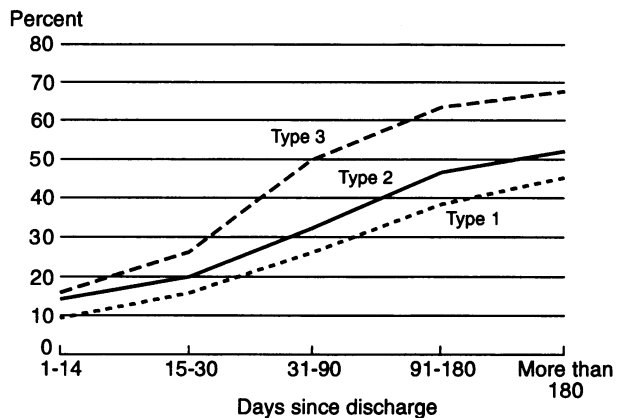
The prevalence of substance dependence disorders in American Indian veterans receiving inpatient care was approximately twice the rate for the general veteran population. Substance dependent American Indian veterans were similar, demographically, to the total population of substance dependent veterans. Both groups displayed the same pattern of demographic differences from their nonsubstance dependent counterparts. Substance dependent veterans were younger, and a greater proportion were male and unmarried, compared with nonsubstance dependent veterans. Substance dependent American Indian veterans received fewer nonalcohol drug dependence diagnoses than substance dependent veterans generally.

A particularly striking finding was the low rate of cocaine dependence among American Indians with substance use disorders, relative to the total substance dependent veteran population. Whether this finding reflects true differences between American Indian veterans and the total population of veterans, with respect to the prevalence of cocaine dependence or is attributable to underreporting of American Indian cocaine dependence is unknown. Similarly, psychiatric diagnoses, with the exception of posttraumatic stress disorder, were less commonly diagnosed among substance dependent American Indians than among substance dependent veterans generally. This finding may reflect true differences in the prevalence of psychiatric disorders or failure to detect or report psychiatric dysfunction in American Indian veterans. Rates of psychiatric disorders in substance dependent veterans were elevated relative to nonsubstance dependent veterans. For both American Indians and the total veteran population, substance dependence was associated with increased rates of personality disorders, depression, posttraumatic stress disorder, and schizophrenia.

Substance dependent American Indian veterans experienced fewer episodes of inpatient care in FY 91 than substance dependent veterans from the general DVA inpatient population (40.8 percent with more than one treatment episode versus 43.1 percent). Nonsubstance dependent American Indians had fewer treatment stays than nonsubstance dependent veterans generally (29 percent with more than one stay versus 35.4 percent). Factors influencing hospitalization rates in American Indian veterans should be examined.

Rehospitalization rates suggest greater severity of substance dependence problems, fewer social supports, or both, in American Indian veterans, relative to the general DVA inpatient population. More than half (51.1 percent) of substance dependent American Indian

Cumulative rehospitalization rates by types of 894 inpatients for substance dependent American Indian veterans, fiscal year 1991



NOTE: Only veterans admitted during the first 6 months of the fiscal year were examined

veterans were readmitted to inpatient care within 180 days. Six-month readmission rates reported by Moos and coworkers (18) for the general population of substance dependent veterans were 33 percent for Type 1 inpatients, 46 percent for Type 2, and 39 percent for Type 3. Comparable figures obtained in this study for American Indian veterans were 38.5 percent for Type 1, 63.6 percent for Type 2, and 46.7 percent for Type 3. Psychiatrically disordered substance dependent veterans, particularly American Indians, are at high risk for readmission.

Veterans treated within the DVA are at a substantial risk for substance use disorders (22). American Indian veterans were diagnosed twice as frequently with substance dependence disorders as veterans generally. American Indians had higher readmission rates than veterans overall, suggesting that they experience relatively severe substance dependence problems or have fewer social supports. Other studies (21) suggest that our findings may underestimate rates of substance dependence and medical comorbidities in hospitalized veterans.

Further investigation of the epidemiology of substance dependence and related disorders in American Indian veterans is needed. In particular, it is important to determine whether substance dependence and psychiatric disorders are less frequently detected, underreported, or both, in American Indian veterans relative to the general population of veterans. Future epidemiologic evaluations should examine American Indian veterans receiving inpatient care on a case-by-case basis, so that accurate estimates of substance dependence and related medical and psychiatric disorders can be obtained.

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