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DHS-5840-ENG 6-09

Addiction Treatment in Minnesota: Treatment Readmissions and Detox Admissions

June 2009

Minnesota Department of **Human Services**
Performance Measurement and Quality Improvement Division

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By

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In Brief

- Databases on statewide detoxification (detox) center admissions and addiction treatment (AT) in Minnesota are linked together to assess:
  - (1) how many persons enter detox;
  - (2) how many of them are referred for, and subsequently enter, AT; and then,
  - (3) how many in AT are re-admitted to AT or admitted to detox within a year of discharge from AT.
- Over recent years, about 17,000 Minnesota residents entered detox annually. About 40% of them were referred for AT and about 30% of those referred actually entered AT.
- In calendar year 2005, 30,761 Minnesota residents underwent AT in a Minnesota program.
- Compared to their numbers in the state population, males and young adults are highly over-represented as clients in detox and as patients in AT. For example:
  - Males are 49.6% of the state population but 74.3% of those in detox and 68.8% of those in AT.
  - 18- to 24-year-olds are 10.4% of the population but 20.5% of those in detox and 20.4% of those in AT.
- Compared to their numbers in the state population, blacks and American Indians/Alaskan Natives (AIANs) are much more likely than whites and Asian/Pacific Islanders (API) to have detox admissions and to enter AT. For example:
  - In calendar year 2005, blacks were 4% of the state population but more than 12% of those in AT and more than 9% of those in detox.
  - In 2005, AIANs were 1% of the population but 7% of those in AT and almost 10% of those in detox.
  - Both blacks and AIANs are also more likely to (1) *not* complete AT programs, (2) be re-admitted to AT within a year of discharge from AT, and (3) be admitted to detox within a year of discharge from AT.

Addiction is a chronic disease with behavioral components similar to diabetes, hypertension, or asthma. It destabilizes lives, introducing upheavals and stresses, both for the patient and for others, such as patients' family members and entire communities. Addiction treatment (AT) targets this problem. In the same way that medicines, lifestyle changes, and counseling can help patients live successfully with diabetes or hypertension, AT can bring the addiction under control, restore functioning, and help patients gain stability in their lives. This paper examines AT in Minnesota. It looks at patients who went through AT and had to re-enter AT within a year of their discharge.

This paper also examines detoxification (detox) center admissions. Use of detox centers increased in Minnesota in the 1990s, after the Legislature required that every county must provide safe shelter for persons taken into custody but who are too intoxicated to be held safely in jail. Currently, about 17,000 persons enter detox annually. A detox center admission is a marker of the instability that addiction fosters. Many such admissions are related to arrests for driving-while-intoxicated offenses. Examining detox admissions before and after AT also yields knowledge about the degree to which AT is helping patients cope with their addiction.

This paper will describe:

1. Among persons admitted to detox annually for calendar years (CY) 2000-2005, the rates of:
    a. referral for AT, and
    b. admission to AT among those:
        i. given a referral for AT, and
        ii. not given a referral for AT.
2. Gender, age, race/ethnicity, and geographic distribution of persons in AT and in detox in CY 2005, compared to population.
3. Among CY 2005 addiction patients, the rates of:
    a. Treatment completion,
    b. Readmission to AT during the year after leaving AT, and
    c. Admission to a detox center during the year after leaving AT.

The results in this paper are based essentially on the entire universe of persons who receive AT in Minnesota, including both publicly funded and privately insured patients. Minnesota law requires that any AT provider receiving public funding must report data on all patients, both publicly and privately funded, to the Minnesota Department of Human Services. Many patients do not have insurance or other resources to pay for AT. (Often they are ordered by a court to go into AT.) Thus, about half of all AT episodes in the state are publicly funded, and, therefore, nearly every provider receives at least some public funding.[*]

Two databases are used. The detox database provides information on every detox admission. The Drug and Alcohol Abuse Normative Evaluation System (DAANES) database provides information on every AT episode. Laws protect patient privacy. Neither of the two databases contains any information revealing patients' identities. For example, there are no

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[*] The largest exception is the addiction treatment program for veterans offered through the Veterans Administration. It is not covered by the Minnesota law. Programs within prisons also are not covered. The number of patients in these programs likely represents only 1 to 2 percent of all addiction patients in the state.

names or addresses. Instead, patients are made distinct from one another by means of a complex cryptogram up to 32 characters in length.

The cryptogram is susceptible to data entry error. Therefore, the databases are linked by means of programs developed by staff in the Department of Human Services, Performance Measurement and Quality Improvement (PMQI) Division. The linking programs do not require 100% accuracy of the cryptogram, yet are themselves highly accurate in identifying distinct persons in each database and in linking records on persons in common between the databases.

Rates of (a) referral for addiction treatment and (b) admission to addiction treatment among persons admitted to detox centers annually

Since detox centers are intended only to be a place where a person can be held safely while he or she detoxifies, almost all stays are short. Seventy-nine percent are only 1 or 2 days; 99% are 7 or fewer days. As displayed in Table 1, over the six calendar years 2000-2005, the number of persons admitted to detox averaged about 17,500 annually, though the number was somewhat higher the first three years and then somewhat lower the next three years.

Table 1: Persons in detox who (A) were referred for addiction treatment, and who (B) entered addiction treatment within 30 days of leaving detox, by calendar year 2000-2005.

Year	A.		B. Percent who entered addiction treatment		
	Total persons in detox	Percent referred for addiction treatment		Total persons in detox referred for addiction treatment	Percent entering addiction treatment within 30 days
2000	17,650	42.6	yes	7,515	30.8
			no	10,135	6.2
			total	17,650	16.7
2001	17,754	41.9	yes	7,443	31.9
			no	10,311	7.1
			total	17,754	17.5
2002	17,647	42.3	yes	7,467	30.7
			no	10,180	7.5
			total	17,647	17.3
2003	17,439	40.1	yes	6,992	31.5
			no	10,447	7.8
			total	17,439	17.3
2004	17,114	41.7	yes	7,139	30.8
			no	9,975	7.9
			total	17,114	17.5
2005	16,827	36.4	yes	6,130	32.9
			no	10,697	10.7
			total	16,827	18.8

The percent given a referral for AT hovered just over 40% from 2000 to 2004, but dropped to 36.4% in 2005. Each year, 30% to 33% of those given a referral actually entered AT within 30 days of their discharge from detox.

Among those *not* given a referral, however, there may be an increase over the years in the proportion who nonetheless entered AT within 30 days. In 2000, 6.2% of those not referred nevertheless entered AT within 30 days, compared to 10.7% in 2005. This may suggest that detox centers should increase their referrals for AT (see Table 1).

Gender, age, race/ethnicity, and geographic distribution of persons in AT and in detox in 2005, compared to population in Minnesota

The remainder of this report focuses on calendar year 2005. Because of the length of time before data for a calendar year can be considered complete, 2005 is the most recent year for which it is possible to follow all patients forward in time for 365 days after the end of their AT.

Persons admitted to detox centers and AT programs are not representative of the population.

Gender

In 2005, the state's estimated population was 49.6% male and 50.4% female, but males were 68.8% of those in AT and 74.3% of those in detox (see Table 2).

Age

- Eighteen to 24-year-olds were 10.4% of the population, but 20.4% of those in AT and 20.5% of those in detox.
- Twenty-five to 44-year-olds were 28.5% of the population, but 49.4% of those in AT and 46.2% of those in detox (see Table 2).

Race/ethnicity

Black and American Indian populations were over-represented. In 2005,

- Blacks were 4.1% of the population, but 12.4% of those in AT and 9.4% of those in detox.
- American Indians (AIAN: American Indian or Alaskan Native) were 1.1% of the population, but 7.0% of those in AT and 9.9% of those in detox.

In contrast,

- Whites were 85.9% of the state population, but only 73.4% of those in AT, and 70.7% of those in detox.
- Asian and Pacific Islanders (API) were 3.4% of the population, but 0.8% of those in AT and 0.7% of those in detox.

Region of residence

There are not clear patterns of over- or under-representation among the Alcohol and Drug Abuse Division's seven regions of the state (see map in Appendix). When patients are assigned to regions based on county of residence, each region's proportion of total persons in AT was the same, plus or minus not more than 2.2 percentage points, as its share of the state's population.

For persons in detox, there were somewhat greater differences among the regions. The Northeast counties had 6.3% of the state's population but 11.9% of persons in detox. The seven metro counties had 53.5% of the population but 48.0% of those in detox.

Table 2: Percentage distribution for gender, age, ethnicity, and region of residence of persons in detox and persons who had an addiction treatment span ending in calendar year 2005 (Minnesota residents only), compared to state population.

		Addiction treatment (n=30,761)	Detox (n=16,827)	Population[†] (n=5,132,799)
Gender	Male	68.8	74.3	49.6
	Female	31.2	25.7	50.4
Age	17 and younger	11.0	3.6	24.0
	18-24	20.4	20.5	10.4
	25-44	49.4	46.2	28.5
	45-64	18.1	27.8	25.0
	65 and older	0.9	1.9	12.1
	Unknown	0.2	<0.1	
Race / Ethnicity	White	73.4	70.7	85.9
	Black	12.4	9.4	4.1
	AIAN	7.0	9.9	1.1
	Hispanic	4.2	6.3	3.6
	API	0.8	0.7	3.4
	Other / Unknown	2.1	3.1	1.8[‡]
Residence	Northwest	4.9	3.1	3.9
	Northeast	7.5	11.9	6.3
	West Central	5.8	5.9	6.1
	East Central	9.4	8.2	11.0
	Southwest	7.7	9.7	9.9
	Southeast	7.5	11.2	9.4
	Metro	53.6	48.0	53.5
	Not stated[§]	3.6	2.0	

[†] Estimates of Minnesota population as of July 1, 2005, are from the U.S. Census Bureau, Population Division. The region of residence estimates are from Table 1 (CO-EST2005-01-27). The gender and age estimates are from Table 2 (SC-EST2005-02-27). The race and ethnicity estimates are from Table 4 (SC-EST2005-04), but see following note for explanation of adjustments made.

[‡] The Census Bureau's estimates of population by race/ethnicity do not contain the category "other/unknown." Instead, through a procedure it identifies as "hot-deck imputation," the Bureau imputes a value for race/ethnicity when race/ethnicity is not reported. Such a practice is not followed for the Minnesota addiction treatment data. Therefore, to make the Census Bureau's estimates comparable to the DAANES data, the results of the hot-deck imputations had to be undone. The method of doing this was as follows: for the 2000 census, the Bureau reported population figures both with and without imputation. Thus, it was possible to measure the factors by which the original race/ethnicity population numbers changed after the adjustment was made. Those factors were then applied to the Census Bureau's 2005 adjusted population estimates, permitting those estimates to be, in effect, unadjusted.

[§] Residence "not stated:" persons who are believed to reside in Minnesota, but for whom county of residence (and hence region) was not given.

Rates of (a) addiction treatment completion, (b) addiction treatment readmission, and (c) post-addiction treatment detox among 2005 patients

The mere absence of an AT readmission or post-AT detox admission does not mean the patient's life has suddenly become stable and that the patient is suddenly free of addiction problems. The patient may have resumed substance abuse and be in need of AT but simply not yet have sought out or been forced (e.g., by court order) to enter AT. The patient may have died, entered prison, or moved away from Minnesota. Thus, AT readmission and post-AT detox admission rates are imperfect measures of the impact of AT on the stability of patients' lives.

However, this approach is a practical alternative to much more expensive studies that would involve tracking and interviewing patients over long time periods. Using the linking programs and taking advantage of existing databases preserves patient confidentiality and is affordable.

A patient may leave one program, but transfer to another. The second program may be better suited for the patient, or just a logical follow-on to the first program. For example, a more intensive inpatient program may be followed by a less intensive outpatient program. If AT episodes were separated by 30 or fewer days, they were treated as parts of a single AT experience, called a treatment span. If a patient was out of AT for more than 30 days and then re-entered AT, the later admission was defined as an AT readmission. If a patient had a detox admission at any time (not just 30 or more days) after discharge from the AT span, the detox admission was counted as a post-AT detox admission.

There were 34,506 patients who had one or more AT spans ending in 2005. Of that number, 2,397 were from outside Minnesota. Rather than treat them as if they had the same opportunity as Minnesota residents for AT readmission or post-AT detox admission, they were excluded from the analysis. An additional 1,348 patients with unknown residence were also excluded. Finally, 1,112 patients who had an unknown county of residence but who were believed to be Minnesota residents were included in the analysis. This left a total of 30,761 patients who were followed for 365 days after leaving AT.

For these patients, three outcome variables were examined: AT completion, AT readmission, and post-AT detox admission (Table 3).

Gender

There were 2.2 times as many males as females in AT in 2005. Males were slightly more likely to complete AT (63.4% versus 60.3%). Females were somewhat more likely than males (25.3% versus 20.8%) to have an AT readmission in the year after leaving AT. Males and females were almost identically likely to have a post-AT detox admission (9.7% and 8.9% respectively).

Age

The lowest AT completion rate occurs among 18- to 24-year-olds: only 56.9% of them completed AT compared to 62.8% of 25- to 44-year-olds, 68.2% of 45- to 64-year-olds, and 74.2% of patients 65 and older.

Younger patients also had the highest AT readmission rate: 25.9% of 8- to 17-year-olds were readmitted. The rate then declined steadily, down to 15.0% of patients 65 and older. This may not mean that AT is more effective for older patients; it could just mean that some older patients are perceived as more challenging to treat and so are not referred, and not admitted, to AT as often as younger persons.

In fact, consistent with the idea that some older patients may be seen as more challenging to treat, because of the advanced progression of the disease, the post-AT detox admission rate increased with age: 3.7% of 8-to 17-year-olds had a post-AT Detox admission, compared to 6.6% of 18- to 24-year-olds, 10.1% of 25- to 44-year-olds, and 14.0% of 45- to 64-year-olds.

Race / ethnicity

Whites completed AT at the highest rate (65.5%), followed by Hispanics (60.6%), Asian/Pacific Islanders (57.9%), American Indians (54.1%), and blacks, who had the lowest AT completion rate (50.9%). American Indians had the highest AT readmission rate (30.1%), followed by blacks (26.8%), while whites, Hispanics, and APIs each had lower than average AT readmission rates.

The post-AT detox admission rate for all groups combined was 9.4%. However, the rate was 18.0% for American Indians – almost twice the overall rate. The rate for each of the other racial/ethnic groups was below the overall rate.

Region of residence

The Alcohol and Drug Abuse Division's seven regions of the state do not seem to vary in systematical ways on the three outcome variables (see map in Appendix). For example, the East Central and Southeast regions had the highest AT completion rates (66.3% and 66.1% respectively), but the East Central region had the lowest post-AT detox admission rate (6.7%) while Southeast had the highest post-AT detox admission rates (12.5%). The West Central region had the lowest AT completion rate, but was close to the overall state rate on AT readmission and post-AT detox admission.

In general, the AT readmission rates for the regions varied from the overall state rate by no more than 2.5 percentage points. There was only slightly more variation in the post-AT detox admission rates. Possibly the seven regions have considerable heterogeneity within them, such that variation, or the lack of it, among the regions has no special significance.

Primary substance of abuse

Patients are classified in terms of their primary substance of abuse. Close to 20 substances are collapsed here to seven categories (excluding "other" and "unknown"): alcohol, marijuana, methamphetamine, cocaine, crack cocaine, heroin, and other opiates.

Patients whose primary substance of abuse is alcohol account for half (50.0%) of all patients. They complete AT at the highest rate (70.7%) and are readmitted for AT at the lowest rate (19.2%). However, they have the highest post-AT detox admission rate (13.7%).

Patients receiving AT for heroin addiction are at the other extreme. They are few in number (819, or 2.7% of the 30,761 patients in 2005), but have by far the lowest AT completion rate (28.5%, compared to the overall rate of 62.5%), and the highest AT readmission rate

(36.1%). "Other opiates" users are similar but the number of patients (29) appears too small to permit generalization.

After heroin and other opiates, crack cocaine (the primary substance for 6.8% of patients) had the lowest AT completion rate (53.8%) and highest AT readmission rate (29.0%).

Cocaine (not including crack) was the primary substance of abuse for 2.6% of patients, methamphetamine for 13.9%, and marijuana for 18.6%. Patients receiving AT services for these three drugs had similar AT completion rates (from 55.5% to 57.9%), similar AT readmission rates (23.2% to 24.6%), and similar post-AT detox admission rates (3.9% to 5.9%).

Treatment completion status

The circumstances under which patients leave AT were classified into four categories: (1) the patient completed the program, (2) the patient left the program against staff advice, (3) the patient left because s/he was assessed as inappropriate or the staff requested that the patient leave because of behavioral problems, and (4) all other reasons (loss of financial support, death, transfer to another program, expiration of a civil commitment or hold order, or unspecified other reason).

Treatment program completers had lower AT readmission rates and lower post-AT detox admission rates:

- 16.2% of AT completers were readmitted, compared to 32.2% of those who left against staff advice and 36.5% of those whom staff assessed as inappropriate or requested to leave due to behavioral problems.
- 8.1% of AT completers had a post-AT detox admission, compared to 13.1% of those who left against staff advice and 11.6% of those whom staff assessed as inappropriate or requested to leave due to behavioral problems.

In general, therefore, AT completion is a relatively strong predictor of lower readmission rates and lower post-AT detox admission rates.

Prior detox

The more pre-AT detox admissions a patient had, the worse he or she did on the three outcome measures. As pre-AT detox admissions increased from none to three or more, the AT completion rate went down from 63.3% to 55.4%, the AT readmission rate went up from 20.1% to 35.1%, and the post-AT detox admission rate went up from 4.1% to 48.7%

Prior treatment

Number of prior AT episodes is also a relatively strong predictor of the outcome variables. As prior AT episodes increased from zero to four or more, program completion went down from 65.4% to 51.9%, readmission rose from 18.0% to 39.0%, and post-AT detox admission rose form 5.7% to 27.3%.

Table 3: Calendar year 2005 addiction treatment patients (Minnesota residents only) -- Percent who (1) completed treatment, (2) were readmitted to treatment within one year, and (3) had a post-treatment detox admission within one year of leaving treatment.

		Total patients	(1) Completed addiction treatment (percent)	(2) Re-admitted to addiction treatment (percent)	(3) Post-addiction-treatment detox admission (percent)
All clients	**Category (% of total)**	**30,761**	**62.5**	**22.2**	**9.4**
Gender	Male (68.8%)	21,169	63.4	20.9	9.7
	Female (31.2%)	9,592	60.3	25.2	8.9
Age group	8 to 17 (11.1%)	3,415	61.3	25.9	3.7
	18 to 24 (20.4%)	6,281	56.9	23.4	6.6
	25 to 44 (49.4%)	15,182	62.8	22.4	10.1
	45 to 64 (18.1%)	5,569	68.2	18.6	14.0
	65 and older (0.9%)	267	74.2	15.0	12.4
	Not stated (0.2%)	47	48.9	21.3	4.3
Race / ethnicity	White (73.4%)	22,575	65.5	20.8	9.2
	Black (12.4%)	3,816	50.9	26.8	7.2
	American Indian (7.0%)	2,164	54.1	30.1	18.0
	Hispanic (4.2%)	1,288	60.6	18.8	7.1
	Asian / Pacific Isl. (0.8%)	259	57.9	20.5	5.0
	Other/ mixed / not stated (2.1%)	659	57.2	25.3	8.7
Residence	Northwest (4.9%)	1,508	61.5	24.6	9.8
	Northeast (7.5%)	2,312	64.0	20.0	12.3
	West Central (5.8%)	1,797	56.6	21.1	10.2
	East Central (9.4%)	2,893	66.3	20.3	6.7
	Southwest (7.7%)	2,354	65.0	20.3	9.6
	Southeast (7.5%)	2,292	66.1	20.9	12.5
	Metro (53.6%)	16,493	61.7	23.2	8.9
	Not stated** (3.6%)	12,112	58.4	23.0	9.3
Primary substance of abuse	Alcohol (50.0%)	15,370	70.7	19.2	13.7
	Marijuana (18.6%)	5,735	57.8	23.2	3.9
	Methamphetamine (13.9%)	4,283	55.5	24.6	4.4
	Cocaine (2.6%)	798	57.9	23.3	5.9
	Crack (6.8%)	2,079	53.8	29.0	6.8
	Heroin (2.7%)	819	28.5	36.1	7.6
	Other opiates (0.1%)	29	41.4	20.7	6.9
	Other (1.3%)	384	61.5	22.1	6.8
	Not stated (4.1%)	1,264	46.5	26.7	7.5
Completion status	Completed program (62.5%)	19,210		16.2	8.0
	Against staff advice (9.6%)	2,940		32.2	13.1
	Staff requested/inappropriate (9.4%)	2,896		36.5	11.6
	All other (18.6%)	5,715		30.1	11.0
Prior detox admissions (since 1-1-2000)	0 (74.8%)	23,003	63.3	20.1	4.1
	1 (13.2%)	4,065	62.9	24.7	12.1
	2 (4.4%)	1,340	59.6	28.7	22.8
	3 or more (7.7%)	2,353	55.4	35.1	48.7
Prior addiction treatment episodes (since 1-1-2000)	0 (59.6%)	18,317	65.4	18.0	5.7
	1 (17.2%)	5,289	62.2	22.4	9.4
	2 (9.8%)	3,023	58.2	28.9	13.4
	3 (5.4%)	1,650	53.8	31.0	16.4
	4 or more (8.1%)	2,482	51.9	39.0	27.3

** Residence "not stated:" persons who are believed to reside in Minnesota, but for whom county of residence (and hence region) was not given.

Summary

Linking the detox center and the DAANES databases together and using the resulting linked data to examine AT completion, readmission, and post-AT detox admission, is an imperfect but nonetheless practical and affordable means of gauging the extent to which addiction treatment services in Minnesota are helping to increase the level of stability in patients' lives.

Patients treated for alcohol abuse are by far the most numerous, and treatment is more successful for them than it is for patients with other primary substances of abuse. They complete addiction treatment at the highest rate and have the lowest one-year readmission rate.

Certain minority populations disproportionately experience addiction-related problems. It is reasonable to believe that historical trauma and disfranchisement, and the consequent alienation from mainstream culture which some members of these groups experience, are factors that help account for this disproportionate experience of addiction-related consequences. Blacks had the lowest AT completion rate and a high readmission rate. American Indians had the second lowest AT completion rate, the highest readmission rate, and by far the highest post-AT detox admission rate.

In the future, the same type of database-linking techniques used here can be used to examine addiction treatment program impacts in other areas as well. For example, it may be possible to work with the Department of Corrections' prison database to assess changes in criminal behavior levels among persons in AT, and to work with the Unemployment Insurance database maintained by the Department of Employment and Economic Security to assess employment stability for AT patients.

Appendix

Map of the Alcohol and Drug Abuse Division's seven regions of the state.