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Does referral from an emergency department to an alcohol treatment center reduce subsequent emergency room visits in patients with alcohol intoxication?

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Abstract

Study Objective: In October 2005, a facility opened in Albuquerque whose purpose is to provide treatment for persons addicted to alcohol and other substances. The goal of this study is to evaluate the effect of this facility on emergency room utilization among patients who were seen in the Emergency Department for alcohol intoxication.

Methods: This is a historical prospective study that measures health care utilization among two groups of patients treated at the University of New Mexico Emergency Department (UNM ED) for alcohol intoxication. One group is identified as being subsequently treated at an alcohol treatment facility, the Metropolitan Assessment and Treatment Services (MATS), and the second is composed of those who have not been exposed to this facility. All UNM ED patients who were between the ages 18 and 100 and had a diagnosis of alcohol intoxication were eligible. Exposure classification groups are: 1) ever treated at MATS (with the first UNM ED visit for alcohol intoxication with subsequent referral and treatment at MATS as the index visit); and, 2) never treated at MATS (with first alcohol intoxication visit to UNM ED after the MATS opening date of 10/27/05 as the index visit).

The principal outcome is: time between index visit for alcohol intoxication and subsequent UNM ED visit for any complaint. Total numbers of visits were analyzed using univariate, bivariate and multivariate analysis.

Results: Patients who were discharged to MATS on their index visit to the UNM ED for alcohol intoxication (n=74) had a shorter time between their index visit and a return ED visit. The mean number of days from index visit to return to the UNM ED for MATS patients was 100 days (confidence interval (CI) 72.21 to 128.14) while for patients who were not discharged to MATS (n=109), the mean was 83 days (CI 61.42 to 104.67). A small subset of patients were found to be using the most health care services, 4 patients presented 50 or more times. One patient had 24 visits involving an alcohol related diagnosis. Of 5,222 alcohol related visits, during the entire period only 8.6% were discharged to MATS. The large portion of patients (40.3%) only had one visit in the entire period. This made statistical analysis of number of subsequent visits unanalyzable in terms of significance.

Conclusion: Treatment at substance abuse treatment centers may have an impact on health care utilization. Referrals to such a center increased time from index visits to subsequent ER visits for MATS users but was not statistically significant. Increasing referrals to such facilities may reduce ER visits and subsequently reduce ED costs but in order to draw this conclusion, further study needs to be done with a larger sample size.

Introduction

Background and Rationale

Alcohol abuse is a significant national issue with estimated costs of $184.6 billion in 1998 from specialty alcohol services, medical consequences, lost income, crashes, fines, criminal justice etc. Compared to 1992, this is a 25% increase or an annual average increase of 3.8%. With the fifth highest percentage of residents who abused or depended on alcohol over the year 2003-2004 (Source: Office of Applied Studies, date accessed 3/17/2007; http://www.oas.samhsa.gov/.), New Mexico contributes considerably to this burden. Each year from 1999 to 2003, New Mexico ranked first or second among states with respect to alcohol-related liver mortality. (Source: CDC Wonder, data accessed 1/1/2007; http://wonder.cdc.gov/cmf-icd10.html. The number of alcohol and drug co-intoxication overdose deaths statewide increased by 73% from 1994 to 2003. [1]

In 2007, 3.9 million persons aged 12 or older (1.6 percent of the population) received some kind of treatment for a problem related to the use of alcohol or illicit drugs. 23.2 million persons aged 12 or older needed treatment for an illicit drug or alcohol use problem (9.4 percent of the persons aged 12 or older). Of these, 2.4 million (1.0 percent of persons aged 12 or older and 10.4 percent of those who needed treatment) received treatment at a specialty facility. Thus, 20.8 million persons (8.4 percent of the population aged 12 or older) needed treatment for an illicit drug or alcohol use problem but did not receive treatment at a specialty substance abuse facility in 2007. (Source: Office of Applied Studies, date accessed 4/18/09; http://www.oas.samhsa.gov/.)

Healthy People 2010 cites decreasing alcohol-related emergency department visits as one of its objectives in the coming decade. Alcohol related health service utilization contributes substantially to health care costs. For example, in comparing alcohol-only and non-alcohol related visits from National Hospital Ambulatory Medical Care Survey data, alcohol-only visits had longer service times (325 minutes vs. 188 minutes, p<.0001), more total diagnostic tests (4.5 vs. 3.0, p=.09) and more medical procedures (0.8 vs. 0.5, p<.0001.)[2] In 2002, the estimated alcohol-related hospitalization charges in New Mexico were $74.5 million. This cost was almost twice the amount of alcohol taxes that were collected in New Mexico in 2002 ($38 million). [3]

Few studies have evaluated the effect of the availability of substance abuse treatment services on subsequent health care utilization. One such study demonstrated an association with greater onsite medical care in low- and moderate-volume drug treatment clinics and less repeated ED use. Logistic regression models examined associations of availability of onsite medical services with repeated (two or more) ED visits. Repeated ED visits occurred in 15% of the cohort and were less likely when medical services were all onsite versus more distant (12.9% vs 16.8%, P<0.001). Onsite medical care was associated with less ED use only in low-volume (<or=1350 visits/wk, adjusted odds ratio [AOR] 0.64 [0.47-0.88]) and moderate volume (1351-2500 visits/wk, AOR 0.79 [0.64-0.97]) clinics.[4]

Another study examined the general effect of alcohol treatment on subsequent medical care. Claims and encounter data of 29,122 adults (mean age 40 years, 35% female) receiving benefits from both a mental health managed care program and its parent medical care insurance company were used. These patients had a diagnosis of alcoholism and were analyzed using a longitudinal Poisson regression model fit by the generalized estimating equation method to compare differences between the groups in medical utilization before and after alcoholism treatment. The diagnoses associated with medical care were assigned to one of four groups: alcohol specific, alcohol acute, alcohol chronic, and not alcohol related. This study's results showed that acute care for intoxication was reduced in a patient population receiving alcohol treatment but medical care for chronic conditions associated with alcohol remained the same. [5]

Among HIV positive patients, a study that monitored ED use before and after substance abuse treatment showed a 50% reduction in use after treatment (adjusted odds ratio=0.5; 95% CI= 0.3-0.9). [6]

Providing housing for persons with homelessness and chronic alcohol problems has recently been shown to reduce health care costs by a total cost rate reduction of 53% after six months of living in a Seattle based housing program, named Housing First. This study compares health care costs between persons living at Housing First and those who have been wait listed. [7]

These studies indicate that alcohol and drug addiction treatments, conducted outside the ED, have the potential to reduce ED patient volume. On October 27th of 2005, Bernalillo County opened the Metropolitan Assessment and Treatment Services (MATS) in order to increase the available services for persons who desire detoxification treatment. A secondary outcome that was anticipated by Bernalillo county officials and by the administration of the three major hospitals that serve this county, was the reduction in ED use by persons who seek alcohol and drug treatment. MATS offers short-term detoxification which averages three to five days and includes licensed substance abuse counselors who provide one-on-one or group counseling, motivational interviewing, and community outreach. Additional thirty day or nine month substance recovery programs are also offered. Services that are available in these long term programs include: evidence-based substance abuse treatment services, intervention, education, benefit enrollment assistance and referrals to other supportive services. These clients are also provided smaller, more advanced classes and group sessions providing a better understanding of alcoholism, addiction symptoms and recovery.

Hypothesis

Health services utilization, as measured by time between index ED visit and subsequent ED visits, will differ between patients treated at MATS versus patients unexposed to MATS.

Methods

Design

This is a historical prospective study that measures health care utilization among two groups of patients treated at the University of New Mexico Emergency Department (UNM ED) for acute or chronic alcohol intoxication. One group was subsequently treated at an alcohol treatment facility, the Metropolitan Assessment and Treatment Services (MATS), and the second was composed of those who have not been exposed to this facility.

Subjects and exposure status

Exposure classification is grouped as follows: 1) ever treated at MATS (with the first UNM ED visit for alcohol intoxication with subsequent referral and treatment at MATS as the index visit); 2) never treated at MATS (with first alcohol intoxication visit to UNM ED after the MATS opening date of 10/27/05 as the index visit).

To establish exposure status, the UNM ED patient database was searched for incidents of patient visits for any alcohol related complaints occurring between 5/1/2004 and 6/30/2007. All UNM ED patients between 18 and 100 years were eligible (n=2,783). Patient numbers were further refined to visits that included the diagnosis of chronic or acute alcohol intoxication (n=566). Patient visits were divided into two groups: those for which patients were discharged to MATS (n=74), and those for which patients were discharged to home (n=109). Using

unique identifiers from the ED database, the patient visit database were collapsed into a database for which the patient is the unit of analysis. Patients who have never been discharged to MATS comprised the unexposed subject groups. Patients whose ED records indicate one or more discharges to MATS were considered for inclusion in the exposed subject group. The MATS inpatient database was used to confirm whether patients discharged to MATS were actually admitted. Patients who were discharged to MATS by the UNM ED but did not reach the facility were excluded from our study.

Principal outcome measures

The principal outcomes for all subjects are: 1) time between index visit and subsequent UNM ED visit for alcohol-related complaint during the study period 10/21/2005 to 6/30/2007.

Data analysis

Statistical analyses was done involving descriptive, univariate, bivariate, and multivariate techniques. Descriptive techniques (prevalences and measures of central tendency) were used to characterize the populations. Bivariable techniques, including odds ratios, relative risks, and logistic regression, were used to identify variables that were associated with ED index visit and numbers of ED presentations. Multivariable techniques, i.e., logistic regression, was used to control variables such as age and sex while identifying and quantifying the effect size of the variables found to be significant in the bivariable analyses.

<u>Data sources</u>

Two existing administrative databases were probabilistically linked in pairs: 1) UNM ED patient data from 5/1/2004 to 6/30/2007 and 2) MATS patient data from 10/1/2005 to 6/30/2007. Each of these databases were reviewed for errors and cleaned.

The MATS patient database was used to confirm exposure status among potential subjects recorded in the UNM ED database as having been discharged to MATS. Identifiers and other variables useful in linking in this database included patient name, date of birth, and date of service.

Results

Characteristics of Study Subjects

For the study period of 10/21/2005 to 6/30/2007 looking at the UNM ED patient database as the primary data set, a majority of patients who had visits for alcohol intoxication were male (77.1%) with the remainder female. Index visit age ranged from 18 to 86 with a mean of 39 years, a mode of 41 years and a median of 40 years.
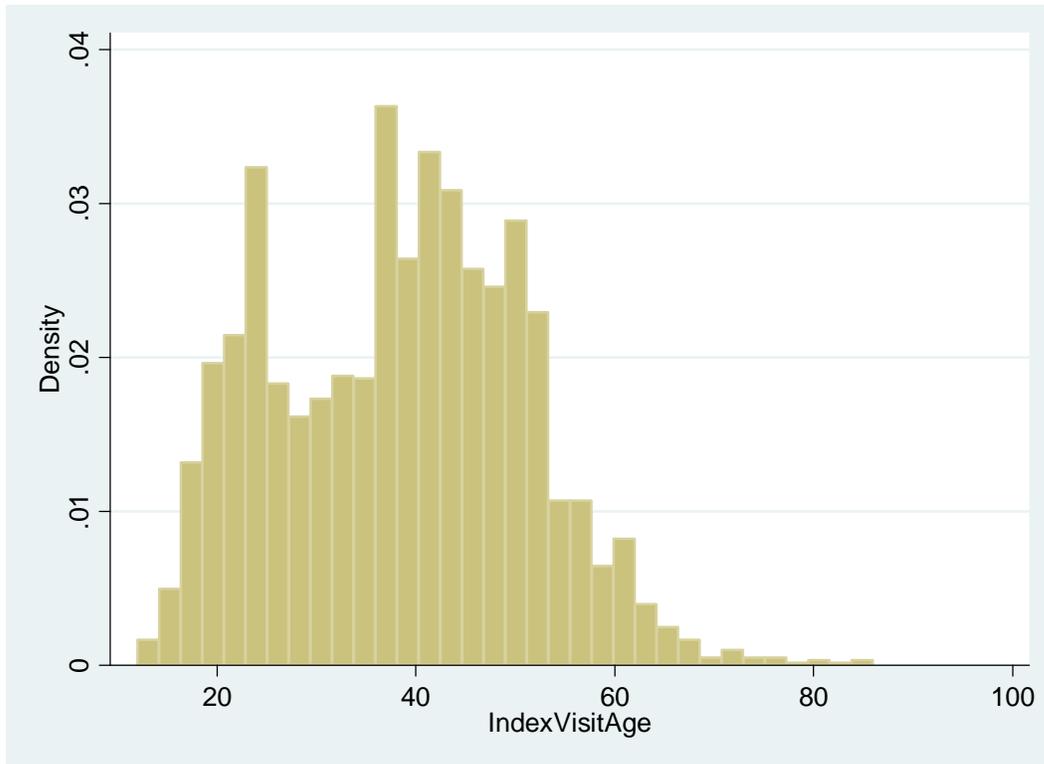
The patient data had a bimodal distribution with peaks at 25 and 41 years.

For most patients (76.1%), their first visit for alcohol intoxication was also their first visit in the study period. This is largely driven by the fact that a large portion of the patients in the database (40.3%) had only one visit during the entire period. Only 7% (203 of 2,783) patients were discharged to MATS following their index visit. This group comprised the exposed group using the simplest definition.

Main Results

Many patients presented more than once during the study period, and four patients presented fifty or more times. Looking specifically at visits with an alcohol diagnosis, one patient had 24 such visits during the study period.   Four

patients who were discharged to MATS out of 2,783 original study group were responsible for greater than 200 visits. There were 1,151 days of visit data, on 466 of those days 10 or more ED visits involved patients with some history of treatment for alcohol intoxication.

In comparing the days between index visit and subsequent visit, patients who were exposed to MATS had a longer time between visits, mean=100.1757 (standard deviation 120.6935, CI 72-128) while patients who were unexposed had a mean time between visits of 83.04587 (standard deviation 113.8993, CI 61-105).

Limitations

There are several factors that make this an imperfect study. Our sample size was smaller than we had hoped for based on pre-study analysis. In order to have an odds ratio of 0.75 with 1:1 exposed to unexposed samples, we would have needed 1,996 patients. In the final analysis, we only had 109 in the unexposed group and 74 in the exposed group.

Environmental factors that may have had an impact on study results and even in the sample sizes we obtained, include: the novelty of the MATS program, ER staff unawareness of MATS as a possible referral site and loss of patients during the transport process. Our study time parameters start at the opening of MATS when it was a fledgling facility and not well known in the community. At that point in time, they only had three to five day short term detoxification available and a

limited number of substance abuse counselors. Currently, they have long term comprehensive programming and a greater capacity.

Our study is somewhat simplistic in that it does not examine other parameters such as what criteria ER physicians are using to refer out. It seems from our preliminary data that patients who are being referred are more of the chronic alcoholics who have repeat visits. In this case, they may use more health care than those who have a single visit for intoxication due to the nature of their disease.

Conclusions

Based on our results, treatment at MATS may have a positive impact on health care utilization. Referrals to MATS increased time from index visits to subsequent ER visits for our study group but our data is currently without statistical significance. Further study is needed to look at the impact of MATS on health care utilization in the UNM ED specifically. Examination of data subsequent to 6/30/07 may show an increase in visits to MATS as it became more established as a referral site for substance abusers and also increase the sample size giving the study more power.

One positive benefit of this study is the discovery that of the 2,783 patients in the database, 4 were responsible for a minimum of 200 visits total. Addressing these few super users may potentially dramatically reduce health care costs of alcohol related visits.

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