



## **SUBSTANCE ABUSE TREATMENT AND HOSPITAL ADMISSIONS: ANALYSES FROM WASHINGTON STATE**

*Washington State  
Department of Social  
and Health Services*

*Research and  
Data Analysis Division  
and Northwest Crime  
and Social Research*

Bill Luchansky, Ph.D.  
Lijian He, Ph.D.  
Dario Longhi, Ph.D.

November 2002

### **Brief Summary**

Analyses presented here suggest that publicly funded substance abuse treatment has an effect on overall medical costs by reducing the chances of an inpatient hospital admission for those completing treatment. The main findings are:

- In the year following discharge from chemical dependency treatment, completing an episode of treatment was associated with a lower rate of hospital admissions: about 21 percent less. The adjusted rate of hospital admissions after treatment was 88 per 1000 clients among completers compared to 112 per 1000 clients among non-completers.
- The reduction in the hospital admission rate of 21% held true even for clients with very high hospital admission rates, such as those with mental health problems and those over 45 years of age.
  - Clients with mental health problems had high rates of hospital admissions: more than two and a half times higher than clients without such problems. Reasons for hospital admissions reflected this fact: the most common primary diagnosis for admissions was mental disorders (over 44% of all admissions).
  - Older clients, particularly those over 45, had higher rates of hospital admissions: more than twice as high as those 30 and younger.
- Medicaid and Medicare, together, paid for over 74% of hospital costs, which implies that reducing such hospital admissions would reduce publicly funded medical costs.

A large sample was used (n=9906). Statistically adjusted rates of hospital admissions were calculated for treatment completers (n=2697) and non-completers (n=7209). These rates adjusted for differences in client characteristics and experiences prior to treatment between the groups.

## Background

Nationwide, Harwood et al. (1998) estimated that the cost to hospitals from alcohol and drug abuse was \$5.9 billion in 1992. In Washington State, Wickizer (1999) estimated that in 1996, hospital inpatient costs directly or indirectly related to drug or alcohol use or abuse were \$130.8 million. Thus, an important policy question is whether publicly funded treatment can reduce those costs. This issue has been addressed by using Medicaid data (Luchansky and Longhi 1997), but Medicaid records include only those eligible for that program. An alternative way to examine the question is to use data collected by the Washington State Department of Health, which records all inpatient hospital admissions, regardless of payer. Data from that source, along with records of publicly funded substance abuse treatment, were the primary sources of data used in this report.

## This Report

For this report, the study population was 9,906 clients who received publicly funded chemical dependency treatment administered by the Department of Social and Health Services Division of Alcohol and Substance Abuse (DASA) in 1995. These clients, ages 18-64, began and ended a treatment episode in 1995, and were tracked from one year before entering treatment to one year following discharge<sup>1</sup>. Analyses focused on the relationship of treatment completion and subsequent hospital admissions, a description of the types of clients with high admission rates, the reasons for hospital admissions, and who the payer was.

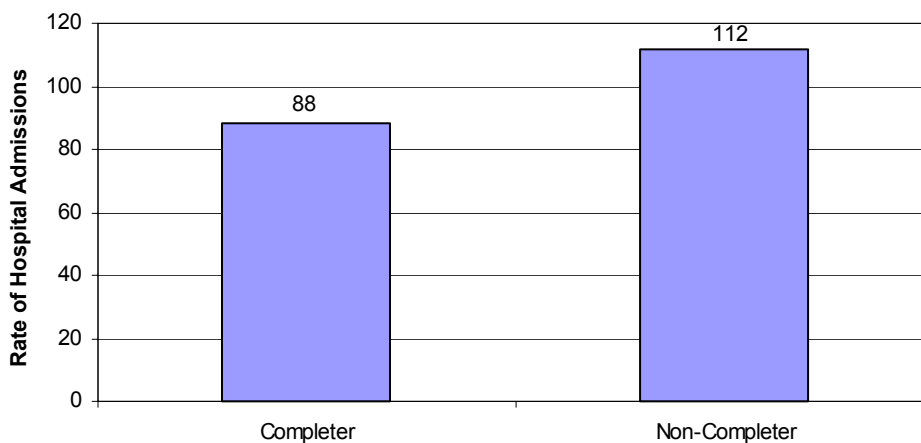
---

<sup>1</sup> For a more complete description of clients and their treatment, see Luchansky et al. 2000.

## Results

### *What was the association between completing or not completing treatment and the rate of hospital admissions?*

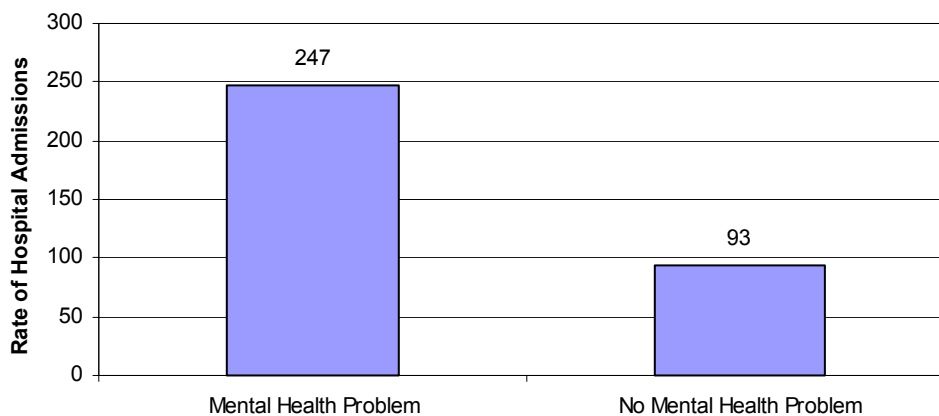
**Fig. 1: Adjusted Rates of Hospital Admissions per 1000 Clients in the Year following a Treatment Episode for Completers and Non-Completers**



- There were 88 hospital admissions per 1000 clients for completers, compared with 112 per 1000 clients among non-completers: a difference of 21 percent in the chances of hospital admissions over a period of one year after discharge.

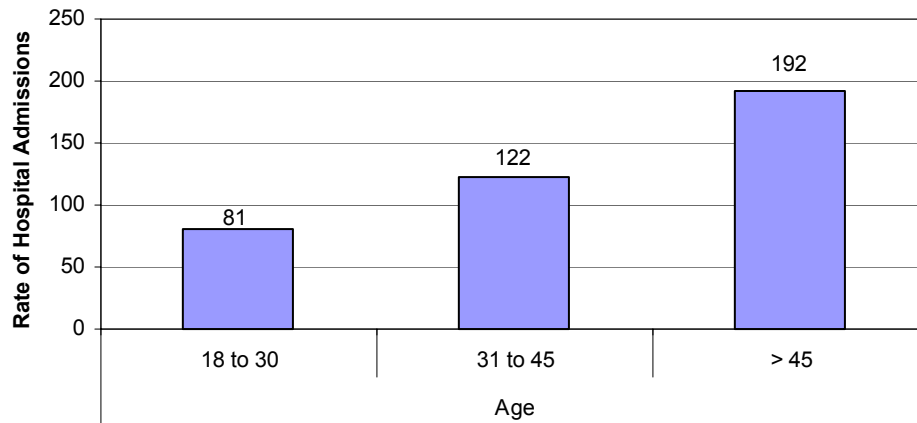
### *What client characteristics were associated with post-treatment rates of admission?*

**Fig. 2: Adjusted Rates of Hospital Admissions per 1000 Clients by Mental Health Status, in the Year following Treatment**



- Clients assessed by their treatment counselor as having a mental health problem had higher rates of hospital admissions, compared with clients without such an assessment. The rate for clients with mental health problems was 247 admissions per 1000 clients, while the rate for clients without such problems was 93 admissions per 1000 clients.

**Fig.3: Adjusted Rate of Hospital Admissions per 1000 Clients in the Year after Treatment**



- Age was strongly related to hospital admissions. There were 81 admissions per 1000 clients for those 18-30, 122 for those 31 to 45, and 192 for those over 45 years.

*In the year following treatment, why were clients admitted to the hospital, and who paid?*

**Table 1: Primary Diagnosis<sup>2</sup> and Primary Payer for Post-Treatment Hospital Admissions**

Characteristic	N	%
<b>Primary Diagnosis: ICD 9 Categories</b>		
Mental Disorders*	625	44.2%
Injury and Poisoning	232	16.4%
Diseases of the Digestive System	129	9.1%
Diseases of the Respiratory System	69	4.9%
Diseases of the Musculoskeletal System	59	4.2%
Diseases of the Circulatory System	52	3.7%
Other	248	17.5%
<b>TOTAL</b>	<b>1414</b>	<b>100.0%</b>
<b>Primary Payer</b>		
Medicaid	870	61.5%
Self-Pay	203	14.4%
Medicare	196	13.9%
Commercial Insurers	128	9.1%
Worker's Compensation	17	1.2%
<b>TOTAL</b>	<b>1414</b>	<b>100.0%</b>

\*Includes substance dependence and abuse diagnoses

- The most common primary diagnosis for hospital admissions was mental disorders (over 44% of all admissions), followed by injuries and poisonings (16.4%). This finding is consistent with the higher rate of hospitalization among clients with mental health problems.
- Medicaid paid for over 61% of all hospital admissions after treatment and Medicare paid about 14%. Together they paid 75% of hospital admission costs. The high proportion of hospitalizations paid by Medicaid and Medicare indicates that lowering the chance of hospitalization will translate to reduced costs to taxpayers.
- Clients self-paid in over 14% of all hospital admissions, while some form of commercial insurer paid for over 9% of all admissions.

<sup>2</sup> In these data, diagnoses were recorded at discharge from the hospital.

## Conclusion

These results, along with several other studies on Washington State clients (Brown et al. 1997; Luchansky et al. 2000a; Luchansky et al. 2000b), highlight the association of treatment completion with better medical outcomes and the importance of retaining clients until they complete treatment. Since Medicaid and Medicare paid for 75% of hospital costs, retaining clients in treatment may result in significant costs savings. This study also found higher rates of hospitalization among clients with mental health problems as well as clients over 45 years of age.

## REFERENCES

- Allison, P.D. 1995. *Survival Analysis Using the SAS System*. Cary, NC. : SAS Institute.
- Brown, M., Longhi, D., and Luchansky, B. 1997. *Employment Outcomes of Chemical Dependency Treatment and Additional Vocational Services Publicly Funded by Washington State*. Olympia, WA: Department of Social and Health Services.
- Harwood, H., Fountain, D., and Livermore, F. 1998. *The Economic Costs of Alcohol and Drug Abuse in the United States, 1992*. Bethesda, MD: U.S. Department of Health and Human Services.
- Luchansky, B., Brown, M., Longhi, D., Stark, K., and Krupski, A. 2000a. *Chemical Dependency Treatment and Employment Outcomes: Results from the ADATSA Program in Washington State*. *Drug and Alcohol Dependence* 60:151-159.
- Luchansky, B., He, L., Krupski, A., and Stark, K. 2000b. *Predicting Readmission to Substance Abuse Treatment Using State Information Systems: The Impact of Client and Treatment Characteristics*. *Journal of Substance Abuse* 12:255-270.
- Luchansky, B. and Longhi, D. 1997. *Cost Savings in Medicaid Medical Expenses*. Olympia, WA: Department of Social and Health Services.
- Wickizer, T. 1999. *The Economic Costs of Drug and Alcohol Abuse in Washington State, 1996*. Olympia, WA: Department of Social and Health Services.

For questions or comments on this report, contact:

Dario Longhi, Ph.D., DSHS Research and Data Analysis at (360) 902-0734,  
e-mail: [longhde@dshs.wa.gov](mailto:longhde@dshs.wa.gov),

Bill Luchansky, Ph.D., NWCSR, Inc. at (360) 570-7532 or  
e-mail: [bill.luchansky@nwcsr.com](mailto:bill.luchansky@nwcsr.com) or

Toni Krupski, Ph.D., DSHS Division of Alcohol and Substance Abuse at  
(360) 438-8206 or email: [krupstk@dshs.wa.gov](mailto:krupstk@dshs.wa.gov)

*Prepared for the Department of Social and Health Services, Division of Alcohol and Substance Abuse in Partial Fulfillment of Requirements of the Washington State Treatment Outcomes and Performance Pilot Studies Enhancement (TOPPS II) Grant (1 UR1 T111481-01). Funded through the Center for Substance Abuse Treatment.*



Research and Data Analysis Division  
Report Number 4.46fs