

1992

# Identifying and Tracking "Heavy Users" of Acute Psychiatric Inpatient Services

Trevor R Hadley, *University of Pennsylvania*

Dennis P Culhane, *University of Pennsylvania*

Martin C McGurrin, *University of Pennsylvania*

## IDENTIFYING AND TRACKING "HEAVY USERS" OF ACUTE PSYCHIATRIC INPATIENT SERVICES

Trevor R. Hadley, Ph.D., Dennis P. Culhane, Ph.D.,  
and Martin C. McGurrin, Ph.D.

**ABSTRACT:** This study explores the extent and consistency of heavy use of acute psychiatric inpatient services among Medicaid recipients across five years and four sites. Approximately 35% of inpatient service users account for approximately 75% of the dollars spent on inpatient services across place and time. Heavy users are distinct from non-heavy users in being comprised of more children and adolescents, in being disproportionately white, and in having more severe disabilities. The study findings are discussed in the context of the planning of appropriate services for this patient subgroup.

Providing public mental health services in a more efficient and effective manner has given impetus to a delineation of subgroups among the seriously and persistently mentally ill (SPMI) who require specialized treatment planning (Holohean, Pulice & Donahue, 1991). The advent of "managed care" has likewise increased attention to patients whose service use is considered costly and inappropriate. This paper looks at one such group which has been identified elsewhere as "high users" (Surber, et al., 1987) or "heavy users" (Hadley, McGurrin, Pulice, & Holohean, 1990; Surles & McGurrin, 1987) of acute psychiatric inpatient services, and who have been found to consume large amounts of public mental health resources despite being a relatively small proportion of the overall client population.

---

Trevor R. Hadley is Associate Professor of Psychology in Psychiatry, Dennis P. Culhane is Research Assistant Professor of Psychology in Psychiatry, and Martin C. McGurrin is Clinical Associate and Senior Research Scientist, all with the Dept. of Psychiatry, Univ. of Pennsylvania. Address correspondence to Trevor R. Hadley, Ph.D., Section of Public Psychiatry and Mental Health Services Research, 301 Blockley Hall, Univ. of Pennsylvania, Philadelphia, PA 19104-6021.

The authors gratefully acknowledge the contributions of Fredrick J. Snyder and Bradley A. Saunders of the Dept. of Psychiatry, Univ. of Pennsylvania, for the data analysis, and of the faculty and staff of the Policy Modeling Workshop in the Wharton School for their assistance in the preparation of the databases.

"heavy user" group consists of the same persons over time, or that the "heavy users" in one year do not access ambulatory services in another year.

This study begins to address three of the issues raised in the literature. First, it investigates the robustness of the "heavy user" findings of Hadley et al. (1990) across place and time, using five years of Medicaid data from Philadelphia, data from two suburban counties in the Philadelphia area, and by comparing these data with findings from New York State (Holohean et al., 1991). Secondly, this study examines the extent to which particular persons appear as "heavy users" in multiple years of the Philadelphia data, or the degree of annual "crossover." Finally, this paper explores demographic and diagnostic differences between the non-heavy inpatient user group and the "heavy users," and between groups within the "heavy user" category.

## METHOD

### The Databases

This study uses Medicaid paid-claims histories of persons receiving health-care services in Philadelphia from fiscal years 1986 through 1990. Because an HIO (Health Insuring Organization) managed care program was initiated in two geographic areas of Philadelphia in 1987, approximately one-third of the Medicaid eligible patients are not included in the databases for this study from 1987 through 1990. The resulting databases contain all of the remaining individual patient claims paid through the Pennsylvania Medical Assistance Program for residents of Philadelphia.

All claims were selected for persons with at least one contact in the fiscal years 1986 through 1990. Because this file included billings and adjustments, initial processing was performed to reduce the file to one claim per stay. For this analysis, data are reported exclusively from claims for inpatient psychiatric services delivered in general hospitals and private psychiatric hospitals. Once selected, this claim-based file was transformed into a patient-based file upon which summary data could be obtained. Since each paid claim is identified by the patient's Medicaid number, birth date, diagnosis, sex, race, and date of service, unduplicated patient service history records have been created which allow for the tracking of individuals over time. An individual's treatment activities and costs of care have thus been specified for the fiscal years studied here.

### Definition of Heavy User

The definition of "heavy user" employed in this analysis is any person whose annual psychiatric inpatient service costs exceed the mean for all individual inpatient service costs in each fiscal year (Hadley et al., 1990). While a relative

TABLE 2  
Inverse Cumulative Percentages of Clients and Reimbursements for a Five-Year Period in Philadelphia

Dollar Ranges	FY 86		FY 87		FY 88		FY 89		FY 90	
	Clients	Dollars	Clients	Dollars	Clients	Dollars	Clients	Dollars	Clients	Dollars
\$0-6,000	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
\$6,001-10,000	31.8%	72.6%	38.0%	86.0%	39.0%	80.0%	31.7%	75.3%	32.4%	77.1%
\$10,001-14,000	17.5%	52.1%	23.3%	66.9%	23.5%	62.1%	19.4%	59.1%	21.0%	63.6%
\$14,001-18,000	9.5%	34.6%	14.0%	48.9%	14.2%	45.9%	11.9%	44.3%	12.7%	48.7%
\$18,001-22,000	4.5%	20.1%	8.3%	34.2%	8.2%	31.8%	6.9%	31.0%	8.4%	38.5%
\$22,000-26,000	2.2%	11.9%	4.8%	22.9%	5.0%	22.4%	4.3%	22.1%	5.8%	30.8%
\$26,001-30,000	1.1%	6.9%	2.7%	14.9%	3.1%	15.8%	2.4%	14.5%	4.0%	24.3%
OVER-\$30,000	0.6%	4.4%	1.6%	9.7%	2.4%	13.2%	1.5%	10.2%	2.9%	19.8%

costs  
itor-  
ents  
eim-  
liza-  
on of

in of  
1 the  
nean  
year,  
d the  
ears.  
users  
. For  
per-  
ost of  
te for  
nt an  
itutes

atient  
dollar

nt

Dollars  
eavy  
er

.529  
.032  
.767  
.997  
.439

**TABLE 3**  
Inverse Cumulative Percentages of Clients and Reimbursements Across Four Sites

Dollar Ranges	Philadelphia FY 89		Bucks FY 89		Chester FY 89		New York State FY 89	
	Clients	Dollars	Clients	Dollars	Clients	Dollars	Clients	Dollars
\$0-1,000	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
\$1,001-6,000	86.0%	98.7%	81.9%	98.3%	80.8%	97.8%	81.9%	99.2%
\$6,001-13,000	31.7%	75.3%	32.4%	69.8%	22.7%	57.5%	53.9%	91.8%
\$13,001-25,000	13.3%	47.6%	9.3%	35.1%	7.0%	27.5%	31.2%	75.4%
\$25,001-44,000	2.9%	16.7%	1.7%	11.7%	0.3%	2.0%	14.6%	51.3%
OVER-\$44,000	0.4%	3.8%	0.7%	6.7%			5.2%	26.2%
	mean = \$5,917		mean = \$4,955		mean = \$4,285		mean = \$12,452	

ifts  
sis-  
ined  
me.  
the  
% of  
r an  
liem  
the  
990.

rban  
with  
same  
para-  
ients  
nty,  
ever,  
sites,  
York  
while  
rices.

1989)  
ee of  
rsons  
ted).  
ltiple  
cent-  
years

arison  
(non-  
user  
o chi-  
pen-  
city of  
of 19  
users

TABLE 4  
Demographic and Diagnostic Characteristics of Inpatient  
User Groups, Philadelphia, 1990

	<i>All Users</i>		<i>Heavy Users</i>	
	<i>Non-Heavy Users</i>	<i>Heavy Users</i>	<i>Moderate Heavy Users</i>	<i>Extreme Heavy Users</i>
<b>Age</b>				
1-18	2.7%	16.5%	14.8%	20.0%
19-29	32.5%	26.9%	27.9%	24.7%
30-39	38.9%	28.9%	29.9%	26.9%
40-49	15.1%	14.8%	14.3%	15.7%
50-69	9.2%	12.0%	12.5%	11.1%
> 69	1.6%	0.9%	0.6%	1.5%
	Chi sq. = 451.63, p < .0001		Chi sq. = 15.49, p < .009	
<b>Race</b>				
Black	63.8%	57.8%	59.0%	55.9%
White	28.1%	35.5%	34.8%	36.5%
Other	8.1%	6.7%	6.2%	7.6%
	Chi sq. = 36.41, p < .0001		Chi sq. = 2.34, p = .30	
<b>Gender</b>				
Male	58.6%	49.1%	50.7%	46.1%
Female	41.4%	50.9%	49.3%	53.9%
	Chi sq. = 50.26, p < .0001		Chi sq. = 3.6, p = .057	
<b>Diagnosis</b>				
Schizophrenia	13.2%	35.8%	32.9%	41.3%
Major Affective Disorders	9.4%	29.0%	29.4%	28.0%
Other psychosis	32.6%	11.5%	12.0%	10.7%
Anxiety disorders	2.4%	3.7%	3.9%	3.2%
Personality disorders	1.0%	1.6%	1.9%	1.1%
Adjustment reaction	5.1%	7.3%	7.9%	6.1%
Substance abuse	34.7%	4.1%	5.4%	1.8%
All other	1.6%	7.0%	6.6%	7.8%
	Chi sq. = 1689.88, p < .0001		Chi sq. = 31.43, p < .0001	

with inpatient costs greater than one standard deviation above the mean (approximately \$16,000). Fewer differences were apparent, with only age and diagnoses having significant chi-squares. The extreme heavy users are comprised of relatively more children and adolescents, as are the heavy users generally. Nevertheless, the majority of both heavy user groups remains young adults between 19 and 39. The extreme heavy users also show a tendency to be

more  
e. By  
th far  
disor-  
lers as  
s and  
  
n any  
were  
ndard  
ersons

was done here. Indeed, this study found that both non-heavy inpatient users and heavy users are primarily young adults, and therefore that young adulthood was not unique to the heavy users. The real distinguishing age factor among heavy users was a much greater preponderance of children and adolescents. This is a function of the longer average length of stay (ALOS) for this age group which is almost double the ALOS for adults which means the majority of children approach heavy user status. Gender and race differences were much less pronounced, though men were more likely to be non-heavy users, and whites more likely to be heavy users. This study does concur, however, that heavy users have more severe disorders than the non-heavy users, particularly schizophrenia and major affective disorders, suggesting a role of the disability in producing heavy use of acute inpatient services. Differences between moderate and extreme heavy users are generally less evident, although, again, children and adolescents and a diagnosis of schizophrenia are more common among the extreme heavy users.

In conclusion, this study found that the "heavy user" phenomena in acute inpatient services is a consistent phenomenon across place and time, and that it is the nature of the treatment system not the heavy user that is likely to play the major role in producing "heavy use." This study reaffirms that heavy users of acute inpatient services should remain a priority group for specialized treatment planning. However, further research is necessary to plan adequately for the needs of this group. First, research must determine what degree of "heavy use" is inappropriate for what persons. For it may be the case that long or recurrent hospital stays are necessary for the stabilization of some clients, given both the nature of their disabilities and the current structure and availability of community programs. Secondly, treatment effectiveness research is needed to determine what ambulatory services prevent heavy use or repeat patterns of heavy use. Once these issues have been clarified, administrators of public mental health programs should be able to identify potential heavy users and either to plan for alternative services or for follow-up programs that prevent repeat patterns of heavy use. Finally, managed care programs which attempt to reduce "heavy use" should also be evaluated for both their cost- and treatment-effectiveness. The potential savings from reducing heavy utilization of inpatient services is considerable, and should help to motivate future planning and research.

## REFERENCES

- Birch and Davis Associates. (1987, July). *External assessment of the Health Pass Program*. Final Report. Silver Spring, MD: Author.
- Goldfinger, S.M., Hopkin, J.T., & Surber, R.W. (1984). Treatment resisters or system resisters? Toward a better service system for acute care recidivists. In B. Pepper & H. Ryglewicz (Eds.), *Advances in treating the young adult chronic patient*. New Directions for Mental Health Services, no. 21. San Francisco: Jossey-Bass.