Hospital Costs for Persons with Mental Health or Substance Use Disorders

The Hilltop Institute
analysis to advance the health of vulnerable populations

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Background

- Mental health and substance use disorders are important and frequently acknowledged targets of health care reform. Much previous research indicates this cluster of illnesses correlates with exceptionally high overall medical expenditures, resulting both from somatic and behavioral health costs.[1]
- **Hospital-based services** account for approximately **30% of health care expenditures**.[2] Such services also include intensive and high morbidity events, such as emergency department visits, inpatient stays, and outpatient surgeries.
- **Maryland's unique hospital reimbursement system** maintains an "all-payer" database that records the patient-hospital level billing experience across most of the state's hospitals.[3]

Research Objective

To estimate the adjusted impact of factors that may correlate with high versus low hospital service (inpatient, emergency, surgical) costs among those who also have behavioral health diagnoses.

Data & Study Population

- An **all-payer** (private and public) **hospital claims database** maintained by the state of Maryland
- All adults (**≥18 years**) with **any behavioral health diagnosis** (mental health or substance use) in their hospital record during state fiscal year 2012 (July 2011-June 2012).

Methods

1. Created an analytic data set with one observation per person-hospital that summarized:
   a. Age, race/ethnicity, gender, marital status, region (**demographics**)
   b. Primary **payer** identity: Private, Medicare, Medicaid, other, or uninsured
   c. Total hospital-based **expenditures** (including inpatient, emergency department, hospital clinics, and outpatient surgeries)
   d. Using the ACG system, **diagnostic** information: 269 treatment/disease flags[4]
2. Separated the population quintiles by aggregate expenditure and flagged the top 20% by rank order as "high" utilizers and the remainder as "low" utilizers[5]
3. Ran logistic regression to "predict" high (versus low) utilizer status

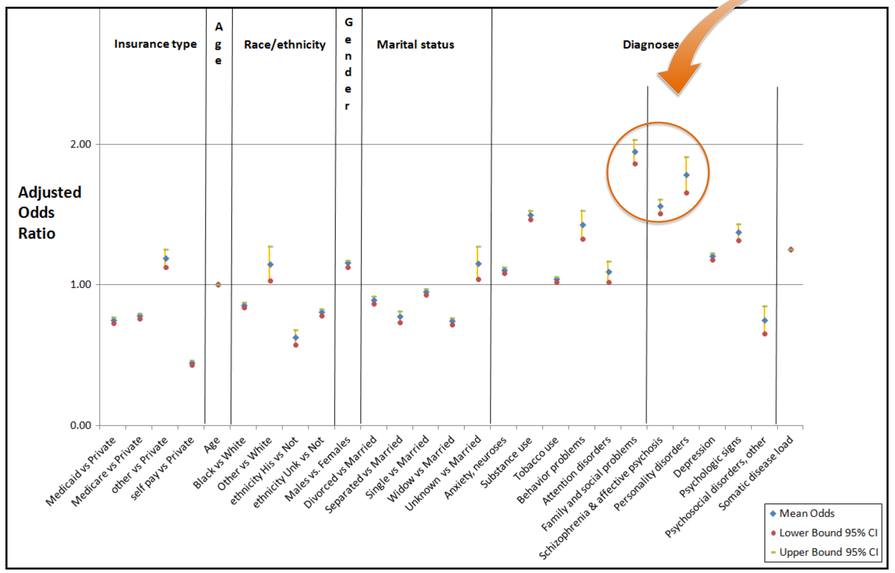
Table 1. Descriptive Statistics

Variable	"High" Utilizers	"Low" Utilizers
N	103,508	409,862
***Expenditures** (mean)*	$42,386	$3,473
Primary Payer (column %)		
Medicaid	18.9	23.5
Medicare	48.1	23.3
Self/Uninsured	4.8	16.1
Private	25.9	34.2
Other	2.3	2.9
Age (years, m±sd)	59±17	47±18
Race (column %)		
Black	32.6	34.8
White	66.8	64.6
Other	0.7	0.7
Gender (% Female)	55.9	56.2
Marital Status (column %)		
Divorced	11.3	9.3
Separated	3.1	3.4
Single	33.0	47.2
Widowed	14.6	6.7
Married	37.3	32.6
Unknown	0.76	0.75
Baltimore City (%)	22.2	20.2

Table 2. Disease Prevalence Statistics

Variable	"High" Utilizers	"Low" Utilizers
N	103,508	409,862
Psychological morbidity (%)		
Anxiety, neurosis	30.3	19.9
Substance use disorder	26.7	20.5
Tobacco use	55.3	44.7
Behavior problem	2.5	0.95
Attention disorders	1.5	2.0
Family and social problems	6.3	2.8
Schizophrenia & affective psychosis	10.9	6.7
Personality disorders	2.1	0.90
Depression	43.0	24.7
Psychologic signs	6.3	4.7
Psychosocial disorders, other	0.48	0.49
Other morbidity (mean±sd)		
Somatic disease load (count)	16.7±9.1	5.9±4.7

Logistic Regression Results with "High" Expenditure Status (top quintile) as the Dependent Variable



Results

- **Medicaid and Medicare** coverage were both associated with **decreased** adjusted-odds of high utilizer status compared to privately covered persons. Adjusted-odds ratio (AOR)= 0.76 and 0.78, and 95% confidence intervals (CIs)= 0.73-0.78 and 0.76-0.83, respectively).
- With each additional year of age, the AOR increased by .01 (AOR CI: 1.01-1.01)
- **Blacks** were less likely to be high utilizers than Whites (AOR=0.86, CI=0.84-0.88), and Hispanics demonstrated an even larger effect than Whites (AOR=0.63, CI=0.58-0.69).
- **Men** had higher odds of being high utilizers than women (AOR=1.16, CI=1.13-1.18)
- **Single** (i.e., unmarried) persons were slightly less likely to be high utilizers than those who were married (AOR=0.95, 0.93-0.98).
- **Baltimore City** residence correlated with significantly increased odds of high utilizer status compared to 19 of the 23 separate county jurisdictions in Maryland (AORs across these 19 counties ranged from 0.30-0.91). The pattern was generally of high density regions, correlating with increased AORs of high utilizer status. (Data not shown in figure.)
- Most **Psychiatric diagnoses** (10 out of 11) demonstrated increased odds of high utilizer status, with the exception of the non-specific "psychosocial disorders, other" category.
- **Family and social problems, psychoses, and personality disorders** all increased the odds of high utilizer status (AORs range 1.56-1.95) somewhat more than the other 8 psychological diagnostic categories.
- Each additional **somatic diagnosis increased** the odds of high utilizer status by an average of 26% (AOR=1.26, CI=1.26-1.26).

Comments & Implications

This work demonstrates specific payer, demographic, and diagnostic correlates with high use of hospital services among a broad population of persons with behavioral health morbidity. It especially identifies schizo-affective and personality disorders as risk factors, and it shows that publicly insured persons (Medicare and Medicaid) generally are at lower risk for high hospital expenditures than private payers. Such data can help design strategies for reducing the use of high-intensity health care services among persons with behavioral health disorders.

References

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3. The Maryland Health Services Cost Review Commission, www.hscrc.state.md.us
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