

# Factors Associated with Inpatient and Outpatient Treatment for Children and Adolescents with Serious Mental Illness

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## ABSTRACT

**Objective:** This study describes the distribution of children and adolescents in psychiatric inpatient and outpatient facilities and identifies factors associated with the selection of individuals into inpatient versus outpatient care. **Sample Data:** The data are from a 1986 nationally representative sample surveyed by the National Institute of Mental Health. **Results:** Results indicate that the vast majority of children and adolescents with psychiatric problems receive outpatient treatment rather than inpatient care. Factors that predict psychiatric hospitalization rather than outpatient care are (1) public or private insurance coverage versus no insurance; (2) previous hospitalization; (3) psychiatric diagnosis of affective or psychotic disorders versus conduct disorders, adjustment disorders, drug and alcohol abuse, and other disorders; and (4) age, with adolescents more likely to be hospitalized than children. **Conclusions:** Further research is needed to explore the role of insurance in mental health sorting processes. Moreover, systematic, controlled research is needed to determine how different financing strategies affect mental health outcomes for children and adolescents. *J. Am. Acad. Child Adolesc. Psychiatry*, 1995, 34, 4:425-433. **Key Words:** inpatient psychiatric hospitalization, outpatient psychiatric care, insurance, children and adolescents, diagnosis, age.

Little is known about the factors associated with selection into inpatient psychiatric hospitalization versus outpatient mental health treatment. For children and adolescents, hospitalization is usually considered a highly restrictive treatment setting which, if possible, should be replaced by less restrictive, community-based alternatives. The goals of the National Institute of Mental Health (NIMH) Child and Adolescent Service System Program (e.g., Stroul and Friedman, 1986),

for example, suggest that hospitalization should be replaced by a specific mix of home-based and community services. Services should be coordinated and integrated around the needs of each individual adolescent and should be built on partnerships between professionals and parents, who become allies in the service delivery process. In addition, a single team of providers or a case manager should have continuing responsibility for each adolescent over time (Lourie and Isaacs, 1988). Finally, whenever possible, adolescents should live at home, services should be provided in intensive, nonresidential outpatient or community settings, and services should be sensitive to cultural differences.

Unfortunately, the large-scale implementation of the NIMH goals in statewide mental health programs has been limited by financial and political realities (Duchnowski and Friedman, 1990; National Mental Health Association, 1989). Recent studies of trends in psychiatric services for children and adolescents reveal that admissions of children and adolescents to psychiatric hospitals have increased in the last two decades (Burns, 1991; Friedman, 1986; Kiesler and Simpkins, 1991). Between 1980 and 1985, episodes of residential and inpatient care for children increased by 87%

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(Kiesler and Simpkins, 1991). Admissions to state and county psychiatric hospitals have declined somewhat, but admissions to private psychiatric hospitals have increased substantially and dramatically (Friedman, 1986; Thompson et al., 1986). Most state funds continue to be appropriated for inpatient treatment or other out-of-home residential placements (Duchnowski and Friedman, 1990). Thus, out-of-home placement is increasing for children and adolescents despite the growing consensus about the appropriateness of alternative services.

This study examines factors that are associated with the selection of children and adolescents into inpatient versus outpatient treatment. We base our analysis on the Andersen and Newman (1973) model of health care utilization in which the use of health care services are predicted by (1) illness factors, (2) predisposing factors, and (3) enabling factors. Illness factors refer to indicators of illness that signal a need for services, such as illness diagnosis and severity. Predisposing factors refer to preexisting characteristics of individuals that influence the likelihood of service use, such as demographic characteristics, illness history, and beliefs about health and services. Enabling factors refer to family and community resources that make utilization possible, and these factors include family resources and income, level of insurance coverage, availability of an adult to provide care in the home, and access to health facilities and providers in the community. This model has been supported in a number of studies on physical health utilization, especially among adults. Recently, two studies (Padgett et al., 1993; Patrick et al., 1993) have also supported this model for adolescent psychiatric utilization.

Our analysis uses nationally representative survey data collected by the NIMH in 1986, to describe the distributions of children and adolescents in inpatient and outpatient psychiatric facilities in the United States. We go beyond earlier analyses of these data (e.g., Burns, 1991) by examining the predisposing, need, and enabling characteristics of children and adolescents who receive inpatient psychiatric hospitalization versus outpatient psychiatric services. In addition, we use new sample weights that have been developed by the NIMH, which enable more accurate national estimates of the distribution of treatments than those reported in earlier studies (e.g., Burns, 1991; Manderscheid and Sonnenschein, 1990; Pottick et al., 1993).

## PREDICTORS OF PSYCHIATRIC HOSPITALIZATION

Existing research demonstrates support for the influence of illness, predisposing, and enabling factors on psychiatric hospitalization. Prior research has limitations, however. Generally, it is based on small samples within one hospital, children and adolescents are usually not compared, and few studies include multiple predictors to decompose zero-order correlational findings.

### Illness Diagnosis

In one of the few systematic studies that investigates the clinical predictors of inpatient and outpatient psychiatric care, Pfeffer et al. (1986) studied children treated in inpatient ( $n = 106$ ) and outpatient settings ( $n = 101$ ) and children from nonclinical populations ( $n = 101$ ). Children (6 through 12 years old) and parents were interviewed using a number of research instruments. Illness factors that best predicted psychiatric hospitalization were suicidal behavior, recent depression, recent aggression, poor reality-testing, and the use of ego defenses such as projection and regression. In *DSM-III-R* terms, these factors would probably be classified as affective-type disorders (suicidal behaviors, depression, projection, regression) and, to a lesser extent, psychotic disorders (poor reality-testing). Many other researchers have found that behaviors indicating danger to self or others influence the decision to hospitalize children and adolescents (Costello et al., 1991; Gutterman et al., 1993; Hillard et al., 1988; Mattsson et al., 1969). Suicidal behavior is highly related to depression, although there is some evidence of comorbidity with aggression and drug use as well (Pfeffer et al., 1986). On the basis of the research literature, and the available diagnostic variables in the data set used here (i.e., *DSM-III-R* primary diagnosis only), we propose the following hypothesis: Children and adolescents with psychiatric diagnoses of affective and psychotic disorders will be more likely to be hospitalized than those with conduct disorders, adjustment disorders, drug and alcohol abuse, or other residual disorders.

### Predisposing Factors

*Treatment History.* The Andersen and Newman model ignores predisposing *service* factors, such as prior utilization of services and treatment history. However, research on adult psychiatric populations suggests that

previous hospitalization is an important predictor of rehospitalization (for reviews, see Clark et al., 1991; Gerson and Bassuk, 1980; Marson et al., 1988). Similarly, for adolescents, treatment history, including past inpatient and outpatient treatment, involvement in current treatment, and failure to improve despite outpatient treatment, predicts hospitalization (Costello et al., 1991; Hillard et al., 1988). Thus, our second hypothesis is that children and adolescents with histories of hospitalization or other mental health care will be more likely to be hospitalized than children and adolescents without such histories.

*Social Factors.* In general, sex and race have not been found to be significant predictors of hospitalization in those studies in which they were included as factors (Beitchman and Dielman, 1982; Costello et al., 1991; Hillard et al., 1988). Patrick et al. (1993) found that older children were more likely to be hospitalized than younger children in a national sample of children under the age of 17 who were insurance claimants in the Blue Cross and Blue Shield Federal Employees Program. In contrast, in a study limited to adolescents, Hillard et al. (1988) found that younger adolescents were more likely to be hospitalized than older adolescents. Because of the weak or inconsistent results regarding predisposing social factors, we explore the relationships between demographic variables and hospitalization rather than test specific hypotheses.

#### Enabling Factors

Patrick et al. (1993) demonstrated that the quantity and frequency of inpatient care provided to children and adolescents is associated with changes in benefit variations. They found that a cut in inpatient insurance benefits occurring between 1978 and 1983 resulted in significant declines in inpatient hospitalization and lengths of stay. Based on these findings, our third hypothesis is that children and adolescents with public or private insurance benefits, or who have private out-of-pocket resources, will be more likely to be hospitalized than those who have no way of paying for treatment.

## METHOD

### Data Source

In 1986, the Survey and Reports Branch of the Division of Biometry and Applied Sciences of the NIMH (Manderscheid and

Sonnenschein, 1990) administered a Client/Patient Sample Survey of Inpatient, Outpatient, and Partial Care Programs. Their sampling frame included all specialty mental health organizations in the Inventory of Mental Health Organizations and General Hospital Mental Health Services. These organizations included state and county mental hospitals, private psychiatric hospitals, Veteran's Administration medical center psychiatric services, non-Federal general hospital psychiatric services, multiservice mental health organizations, residential treatment centers for emotionally disturbed children, free-standing outpatient psychiatric clinics, and free-standing partial care organizations. The target population was all patients who were admitted to or discharged from inpatient, outpatient, and partial care programs during 1986 and who were under care in these organizations on April 1, 1986. The sample was based on a two-stage stratified design that sampled patients and treatment programs, and it is described in detail by Manderscheid and Sonnenschein (1990). The NIMH calculated weights to inflate sample counts to national estimates, which accounted for the two-stage sample design and nonresponse patterns. Admissions data were also weighted to reflect 1-year totals. The NIMH has collected more recent data on outpatient service use, but the data used here are the most recent national data available on child and adolescent psychiatric hospitalization.

### Sample

All children and adolescents aged 6 through 18 years who were admitted to inpatient hospitals or who were provided with outpatient psychiatric treatment were selected for this analysis from the total sample. We excluded individuals who were receiving partial care or day treatment or who were living in residential treatment facilities. The age range represented children and adolescents of school age who normally would have been in the first through twelfth grades when the data were collected in April. We defined the child sample to be the 6- through 12-year-olds (first through sixth grades), and the adolescent sample to be the 13- through 18-year-olds (seventh through twelfth grades). The unweighted sample consists of 2,160 individuals: 32% (684) children and 68% (1,476) adolescents.

### Measures

*Inpatient versus Outpatient Admission.* The dependent measure was whether the patient was admitted to inpatient versus outpatient treatment. It was a dichotomous variable, coded 1 for inpatient admission and 0 for outpatient admission.

*Illness Diagnosis.* An important predictor is the need for services due to illness. The data set provided 29 diagnostic groups based on *DSM-III-R* codes used in the NIMH annual census of patients in state and county mental hospitals. Also, four additional categories included "social conditions," "no mental disorder," "diagnosis deferred," and "medical diagnosis." Unfortunately, no information on the severity of the illness is available.

We constructed three linearly dependent dummy variables representing "internalizing" disorders, "externalizing" disorders, and "residual" disorders, consistent with the work of Achenbach and Edelbrock (1983, 1987). Externalizing disorders included conduct disorders, adjustment disorders, and drug/alcohol disorders; internalizing disorders included affective disorders and psychotic disorders. The residual category included all other disorders, such as mental retardation, attention deficit disorder, eating problems, and autism. The small number of individuals with no diagnosed disorder were eliminated from the analysis.

*Predisposing Treatment History.* Predisposing treatment history was measured with two dichotomous variables. One variable measured whether or not the patient had previously received inpatient mental health care, and a second variable measured whether or not the patient had received any mental health care other than inpatient care. Both variables were coded 1 for prior services received and 0 for no prior services.

*Predisposing Social Factors.* Sociodemographic characteristics of sex, age, and race were coded dichotomously: girls versus boys; children aged 6 through 12 versus adolescents aged 13 through 18; and whites versus African-Americans, each coded 0 and 1, respectively. The data set also has information on educational progress. We created a dichotomous variable to represent whether children and adolescents were in the normal grade level for their age or were behind at least one grade level for their age. This variable was coded 0 for being in the appropriate grade level and was coded 1 for being in a lower grade level.

*Enabling Factors.* The data set contains a measure of the principal source of payment for services. Four linearly dependent dummy variables were created: public insurance (Medicaid, Medicare, social service funds, or other public sources), private insurance (Blue Cross, other commercial health insurance, Civilian Health and Medical Program of Uniformed Services, or other private insurance sources), private payment (out-of-pocket), and no payment (no payment, charity and clinic patients). The first three of these variables were coded 0 for no coverage and 1 for coverage or private payment, while no payment was coded 1 for no payment and 0 for any payment.

### Analysis Strategy

The analysis involved two steps. We applied the NIMH weights to the sample to generate national estimates of children and adolescents in inpatient and outpatient care. The weighted estimate of the national population between ages 6 and 18 receiving inpatient or outpatient treatment is 676,284: 38% (255,408) children and 62% (420,876) adolescents.

Then we used the unweighted sample data to identify the predictors of selection of patients into inpatient versus outpatient care using logistic regression. This analysis goes beyond the prevalence estimates by examining how multiple predictors are associated with inpatient versus outpatient care, but provides results that are not necessarily nationally representative. This analysis on the unweighted sample data used listwise deletion of missing values, and 266 cases were dropped because they had missing values on one or more variables. This analytic subsample consisted of 1,894 cases.

For psychiatric diagnosis we included the externalizing and the residual dummy variables. Internalizing diagnosis was the reference category. For payment source, we included dummy variables for public and private insurance and private payment. No payment was the reference category.

## RESULTS

### National Estimates of Admissions to Inpatient and Outpatient Care

Table 1 presents the estimated distributions of children and adolescents admitted to outpatient and inpatient facilities using data weighted to represent the

United States population. Overall, the 1986 data reveal that, over the course of the year, well over half a million youths receive psychiatric services in inpatient and outpatient facilities. Sixty-two percent ( $n = 420,876$ ) of them are adolescents, and 38% ( $n = 255,408$ ) are children. Thus, the majority of psychiatric service use is by adolescents rather than children. Of youths admitted to inpatient and outpatient facilities, only a small percentage (20%) receive inpatient services, whereas the vast majority receive outpatient care (80%). However, adolescents are more likely than children to be admitted as inpatients: 30% of the adolescents receive inpatient services, whereas only 5% of the children receive inpatient treatment.

### National Characteristics of Inpatient and Outpatient Populations

The characteristics of children and adolescents admitted to inpatient or outpatient care, presented in Table 2, are based on sample data weighted to represent the United States population. The percentages represent the estimated proportions of youths admitted for inpatient or outpatient care with each of the measured characteristics.

*Illness Diagnosis.* Results show that diagnosis is associated significantly with inpatient versus outpatient treatment. Individuals with internalizing disorders are much more likely to receive inpatient treatment than outpatient treatment (44% versus 16%). In contrast, those with residual disorders are less likely to receive inpatient treatment than outpatient treatment (14% versus 36%). Youths with externalizing disorders are more likely to receive outpatient treatment than inpatient treatment (48% versus 42%, respectively).

*Predisposing Treatment History.* Prior treatment also is associated significantly with inpatient versus outpatient treatment. Thirty-four percent of youths who are hospitalized had prior hospitalizations, while fewer than 6% of youths in outpatient treatment were hospitalized previously. In addition, nearly 48% of hospitalized youths received prior mental health services other than hospitalization, while only 29% of outpatient youths received such services.

*Predisposing Social Factors.* Although predisposing social factors are associated significantly with type of mental health treatment overall, it seems that this result is due to the effect of age. Of those receiving inpatient care, only 9% are children, while approximately 45%

**TABLE 1**  
Distribution of Children and Adolescents Admitted to Outpatient and Inpatient Psychiatric Services:  
1986 National Estimates

	Children* (Aged 6–12)		Adolescents* (Aged 13–18)		Total*	
	No.	%	No.	%	No.	%
Outpatient	242,469	95.0	295,615	70.0	538,084	80.0
Inpatient	12,939	5.0	125,261	30.0	138,200	20.0
Total	255,408	100.0	420,876	100.0	676,284	100.0

\*  $\chi^2$  test between inpatient and outpatient utilization is significant,  $p < .05$ .

of those receiving outpatient care are children. Sex, race, and educational progress appear to be weakly associated with type of care.

*Enabling Factors.* Insurance is very strongly associated with type of treatment. Almost 65% of hospitalized youths are covered by private insurers, while only 24% of outpatient youths have private insurance. In contrast, far fewer inpatient youths than outpatient youths have private resources (6% versus 33%). Finally, inpatients are less likely to have public insurance or to have no payment resources.

#### Predictors of Inpatient versus Outpatient Admission

Logistic regressions were used to determine the relative effects of all predictors on admission to inpatient versus outpatient care, using unweighted sample data. These results are shown in Table 3. Each partial logistic regression coefficient represents the change in the log odds of hospitalization versus outpatient treatment associated with a one-unit change in a given predictor, holding other predictors constant. Because inpatient admission was coded 1 and outpatient admission was coded 0, positive logistic regression coefficients indicate a greater likelihood of inpatient admission than outpatient admission, and negative coefficients indicate the opposite. The odds ratio represents the odds of hospitalization with the predictor present, divided by the odds of hospitalization with the predictor absent. If the odds ratio is greater than 1, then the presence of the predictor increases the probability of hospitalization. If the odds ratio is less than 1, then the presence of the predictor decreases the probability of hospitalization. The significant model  $\chi^2$  ( $\chi^2 = 825.92$ ,  $df = 11$ ,  $p < .001$ ) indicates that the equation with the predictors fit the data significantly better than the equation without the predictors and is analogous to the overall  $F$  test for ordinary least-squares regression.

*Illness Diagnosis.* The first hypothesis, that children and adolescents who have internalizing disorders (affective or psychotic diagnoses) will be significantly more likely to be hospitalized than those with either externalizing disorders (conduct or adjustment diagnoses or drug/alcohol abuse) or residual disorders, is supported. The odds of hospitalization of children and adolescents with internalizing disorders are approximately three times the odds of those with externalizing disorders and approximately five times the odds for those with residual disorders. In contrast, youths with externalizing or residual disorders are more likely to receive outpatient treatment than those with internalizing disorders.

**TABLE 2**  
Characteristics of Inpatient and Outpatient Populations  
of Children and Adolescents in the United States:  
1986 National Estimates

	Outpatient ( $N = 538,084$ )	Inpatient ( $N = 138,200$ )
Illness level factors*		
Externalizing disorders: yes	48.4	42.2
Internalizing disorders: yes	16.1	43.9
Residual disorders: yes	35.5	13.9
Predisposing treatment history*		
Prior hospitalization: yes	5.6	34.0
Prior mental health services: yes	28.8	47.9
Predisposing social factors*		
Sex: female: yes	42.0	49.6
Age: children (aged 6–12)	45.1	9.4
Race: African-American	13.6	11.9
Behind educationally: yes	13.1	18.2
Enabling factors*		
Private insurance: yes	24.0	64.9
Public insurance: yes	30.5	23.6
Private payment: yes	32.8	6.2
No payment	12.7	5.3

Note: Values are percentages.

\*  $\chi^2$  test between inpatient and outpatient utilization is significant,  $p < .05$ .

**TABLE 3**  
Logistic Regression of Inpatient Psychiatric Hospitalization  
versus Outpatient Treatment: Unweighted Sample Estimates

	Logistic Coefficient	Odds Ratio
Illness diagnosis <sup>a</sup>		
Externalizing disorders	-1.11*	0.33
Residual disorders	-1.61*	0.20
Predisposing treatment history		
Prior hospitalization: yes	1.54*	4.65
Prior mental health services: yes	0.88*	2.40
Predisposing social factors		
Sex: female	0.08	1.08
Age: adolescents (aged 13-18)	0.23*	1.26
Race: African-American	-0.26	0.77
Behind educationally: yes	0.36*	1.43
Enabling factors <sup>b</sup>		
Private insurance: yes	2.40*	11.01
Public insurance: yes	1.42*	4.13*
Private payment: yes	-0.01	0.99

Note: Model  $\chi^2 = 825.92$ ,  $df = 11$ ,  $p < .001$ ; sample  $n = 2,160$ ; listwise missing data = 266; analysis  $n = 1,894$ .

<sup>a</sup> Dummy variables: the reference category is internalizing disorders.

<sup>b</sup> Dummy variables: the reference category is no payment resource.

\*  $p < .05$ .

*Predisposing Treatment History.* The second hypothesis, that children and adolescents with a prior hospitalization or other previous mental health services will be significantly more likely to be hospitalized, also is supported. A prior hospitalization makes the odds of hospitalization approximately 4.65 times the odds without prior hospitalization. Children and adolescents who have a mental health service history, other than hospitalization, have odds of hospitalization nearly 2.5 times the odds of those without such a history. In contrast, individuals without a prior history of treatment are more likely to receive outpatient treatment.

*Predisposing Social Factors.* No hypotheses were suggested for predisposing social factors because of the inconsistent results in the research literature. However, we found modest significant effects for age and for educational progress, controlling for other predictors. The odds of hospitalization for adolescents are 1.26 times the odds of hospitalization for children, who are significantly more likely to be placed in outpatient care. In addition, the odds of hospitalization of youths who are behind schedule educationally are 1.43 times the odds for those who are on schedule. Sex and race do not predict inpatient versus outpatient care.

*Enabling Factors.* We expected that children and adolescents with insurance coverage or private resources would be more likely to be hospitalized than youths with no way of paying for inpatient treatment. This hypothesis is partially supported. If a child or adolescent has private insurance, the odds of hospitalization are 11 times the odds of hospitalization for those who have no payment resources. Public insurance increases the odds of hospitalization 4 times over not having any resources. In contrast, youths with no resources are significantly more likely to receive outpatient treatment than those with public or private insurance. Individuals with private, out-of-pocket resources and those with no way to pay do not differ in their selection into inpatient versus outpatient treatment.

## DISCUSSION

The three hypotheses are supported. First, children and adolescents with internalizing psychiatric disorders are more likely to be hospitalized than those with externalizing disorders or residual disorders. Second, children and adolescents with histories of hospitalization or other mental health care are more likely to be hospitalized than children without such histories. Third, children and adolescents with public or private insurance are more likely to be hospitalized than those without any insurance.

The strongest influence on the sorting process that leads to inpatient or outpatient psychiatric care is insurance coverage, especially private insurance coverage. This enabling factor is more important than illness factors, or predisposing treatment and social factors. This result replicates other studies that have found that insurance coverage affects psychiatric utilization. Using insurance claims from the Blue Cross and Blue Shield Federal Employees Program on children under the age of 17, Patrick et al. (1993) found that reductions in benefit coverage between 1978 and 1983 were associated with a significant drop in the rate of psychiatric hospitalization and with a substantial decrease in average number of days in the hospital. Their study was the first to document that the rate and amount of inpatient care may respond to variations in private benefit coverage. Our study extends this result by showing that inpatient care is positively associated with public, as well as private, insurance coverage. Insurance coverage can be modified. With health reform on the

policy agenda, it is crucial to begin to understand how different financing strategies affect utilization and outcomes.

Predisposing treatment history also has a significant association with inpatient versus outpatient care. For adult psychiatric patients, previous hospitalization is associated with readmission. Researchers of traditional acute medical care also have found similar results. In a study of 4219 adult medical-surgical patients discharged from a large community hospital, Corrigan and Martin (1992) found that patients who had longer prior lengths of stay in the hospital were more likely to be rehospitalized than patients who had shorter prior lengths of stay. They suggest that length of stay may be a proxy for severity of illness. In addition, they believe that patients who remain in the hospital longer than others may be those who do not have a strong informal support system to assure aftercare.

Similar interpretations may apply to our results. Physicians, case workers, parents, and other gatekeepers may assume that youths who have been previously hospitalized are more seriously ill or more chronically ill than those who have not been hospitalized before. Also, youths with prior mental health service histories may have less family support than other youths. Patrick et al. (1993) found that one of the top three predictors of inpatient psychiatric hospitalization among children and adolescents was whether anyone else in the family had been previously hospitalized for a mental health problem. We do not know exactly how vulnerability for mental illness may be transmitted across generations. We speculate that these families probably suffer high levels of stress, which predisposes their younger members to experience discontinuities in development. A third possibility is that prior use of, and familiarity with, the mental health care system may increase subsequent utilization behavior.

Internalizing diagnoses may predict hospitalization because they may indicate to psychiatric gatekeepers higher levels of illness compared with externalizing diagnoses. Depression accompanied by suicide attempts, for example, may be viewed as a high-risk medical disorder, which requires medication and around-the-clock monitoring. By contrast, externalizing disorders or other residual disorders may be viewed as socialization problems that can be treated effectively in outpatient mental health settings or in other youth service systems. In addition, patients with internalizing

disorders may be less disruptive on the unit than patients with externalizing disorders.

Our finding that older children are more likely to be hospitalized replicates the results of Patrick et al. (1993). Parents and gatekeepers might be more reluctant to remove young children from home than they are to make out-of-home placements for adolescents. Moreover, adolescence is traditionally a developmentally unstable time, with potentially volatile parent-child relationships. Parents may view hospitalization for their adolescent as a temporary timeout from strained, repetitive relational patterns.

A major strength of this analysis is that we generated nationally representative estimates of the prevalence of inpatient and outpatient treatment for children and adolescents. A limitation of the analysis was that the exploration of the correlates of inpatient versus outpatient treatment was based on the unweighted sample data, and these results are not necessarily representative. Also, these correlational results cannot be used to make causal inferences about the decision-making process that results in selection into inpatient versus outpatient treatment. We need a true longitudinal study to illuminate these processes. Also, the data set is limited because it includes only the primary diagnosis, and the literature strongly suggests that children and adolescents with mental health problems frequently are burdened by more than one problem. We speculate that comorbidity may increase the likelihood of inpatient treatment. Finally, other factors not measured in this data set may influence rehospitalization, including socialization to hospitalization or staff interest in known patients.

None of the existing studies, including ours, can answer four important policy questions that confront us. First, it is critical to know to what extent insurance coverage is facilitating necessary and appropriate use of services, on the one hand, or fostering unnecessary, inappropriate service use, on the other. That is, does coverage provide appropriate access to needed services that would otherwise be unaffordable or does it provide hospitals with incentives to provide more expensive services, such as hospitalization, when they may not be sufficiently warranted?

Second, do public and private insurance coverage have similar effects? Given equal illness levels, for example, patients with public insurance may be underhospitalized, while those with private insurance may be overhospitalized. Third, it is necessary to know how

different financing strategies affect the mental health outcomes of children and adolescents. We need to investigate the relative costs and benefits of inpatient versus outpatient treatment for specific subgroups of children and adolescents. Finally, research on the cost of different financing patterns on mental health service use and on long-term clinical outcomes is critical.

Further research is needed to explore the role of insurance in mental health sorting processes. There is some evidence that profit-making hospitals and non-profit hospitals respond differently to insurance benefits. In a national study, Culhane and Hadley (1992) found that nonprofit psychiatric hospitals serve more of the underinsured and provide more services, while profit-making hospitals serve the better insured, concentrate on inpatient services, and serve more children, adolescents, and substance users. Thus, organizational factors may inadvertently, but powerfully, drive recruitment practices. Moreover, systematic, controlled research is needed to determine how different financing strategies affect mental health outcomes of children and adolescents. One randomized, experimental study (Wells et al., 1990) compared the mental health outcomes of adults in a prepaid group practice (health maintenance organization [HMO]) versus a comparable fee-for-service plan. The less intensive style of treatment in the prepaid group practice was not associated with worse mental health outcomes. Wells et al. concluded that while HMO participants received a much less intensive form of psychotherapy than fee-for-service participants, over a several year period, a larger proportion of HMO participants received some outpatient mental health treatment relative to fee-for-service participants. Thus, they reasoned, the greater access to mental health treatment may have had a counterbalancing effect on mental health outcomes. However, the study was based on one, single, well-established HMO so that the results might not be generalizable to newer HMOs. Moreover, the study did not include measures of specific psychiatric disorders. Thus, Wells et al. (1990) could not determine the effects of insurance coverage on the course of psychiatric illness or on clinical outcomes such as remission.

The literature reveals that we know very little about the impact of hospitalization on children and adolescents because of methodological limitations of published studies (Pottick et al., 1993). To date, we also have no empirical information on outcomes of children

who are diverted from hospitalization and who receive alternative forms of care. Our research strongly suggests that we need systematic, controlled, well-researched studies on insurance coverage strategies and their impact on service use and individual outcomes to develop cost-effective and clinically helpful psychiatric programs.

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