

National Spending on Mental Health and Substance Abuse Treatment by Age of Clients, 1997

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Introduction

Age is one of the most revealing lenses through which one can examine spending on mental health and substance abuse (MH/SA) treatment. There are several reasons why. The epidemiology of MH disorders and SA is strongly related to age and presents distinct challenges for treatment of various age groups. Furthermore, public policy on health financing is often linked to the age of the beneficiaries. For example, the elderly and young (along with the severely disabled) have been the primary recipients of public financing of health services: about 90% of Medicare population is age 65 and older, and over 50% of the Medicaid population is younger than 18 years.

This study is one of the first to analyze the age distribution of national spending on MH/SA services and is the first to look at the full age spectrum of MH/SA clients. The study builds on the comprehensive MH/SA spending estimates developed under Substance Abuse Mental Health Services Administration (SAMHSA) Spending Estimates Project, which calculated spending on MH treatment at \$73.4 billion and on SA treatment at \$11.9 billion for 1997.¹ That study found that between 1987 and 1997, MH/SA spending had increased 3.7% annually, versus 5% for all personal health care and public health spending.* MH spending grew slightly faster, at 4%, compared to 3.4% for SA spending. Public payers reimbursed a disproportionate share of MH/SA treatment costs compared to costs for treatment of other health problems; 9.9% of public payer health spending was for MH/SA, compared to 6% of private spending. Only one other published study was found that examined MH/SA expenditures by age. Ringel and Sturm² estimated treatment expenditures for children aged 1–17 for the year 1998. They used many of the same data sources used in the SAMHSA Spending Estimates Project, as well as additional survey data. Use of the Medical Expenditure Panel Survey (MEPS), which was not available when the SAMHSA estimates were developed, allowed them to allocate spending not only by age and type of service but also by type of payer. They put total MH/SA spending for children aged 1–17 at \$11.68 billion in 1998. Adolescents (aged 12–17) accounted for 60% of the total and had the highest expenditures per child, children aged 6–11 accounted for 34% of the total, while children aged 1–5 accounted for 6% of the total. They also learned that in 1998, private insurance covered the largest proportion of spending on these youth (46%), while Medicaid (at 24%) and State and

*The national MH/SA spending includes some expenditures that are not counted in the National Health Accounts (such as custodianship of group homes), but when this article compares MH/SA spending and NHA spending it uses MH/SA NHA-equivalent estimates, which exclude those other non-health services.

local payers (at 21%) covered comparably sized shares of expenditures for children 0–17 years of age.

Prevalence of MH/SA by Age

The prevalence of MH/SA disorders differs across major age groups: children/adolescents, adults, and elders. While past-year prevalence of MH disorders is about 20% for each of the broad age groups, specific disorders have different prevalence at different ages.³ Among children and adolescents aged 9–17 years, about 1% to 4% experience a conduct disorder, while this disorder is virtually undiagnosed in adults and older adults. At the other end of the age spectrum, severe cognitive impairment is experienced by 7% of adults aged 55 and older, while very low rates are seen in children and adults.³ Anxiety disorders appear among youth, adults, and the elderly at 13%, 16%, and 11%, respectively, as do mood disorders (such as depression and bipolar disorder) at 6%, 7%, and 4%, respectively.

The abuse of and dependence on alcohol and illicit drugs is also strongly linked to age. Peak prevalence is typically seen in young adults and rapidly declines as adults age. Grant et al, using the 1992 National Longitudinal Alcohol Epidemiologic Survey, found that the annual rate of alcohol dependence or abuse was about 16% for age 18–29 years. In contrast, less than 1% of those 65 and older had alcohol dependence or abuse.⁴ Although drinking before age 21 is illegal, the 2000 National Household Survey on Drug Abuse showed that some children begin in preteen years, with about 2.4% of 12-year-olds consuming at least some alcohol in a month. This figure rises to 30% for 16–17-year-olds.⁵ Illicit drug use in the past month was about 3% for ages 12–13, rising to 20% for 18–20-year-olds, and declining to no more than 1% for those older than 65 years. According to the survey, approximately 4.1 million people required illicit drug abuse treatment in 2000, and 10 million needed treatment for alcohol use disorders (ie, were heavy users of alcohol).⁵

Because the prevalence of MH/SA disorders differ across the life cycle, one might expect the spending on MH and SA treatment to vary across broad age groups. SA disorders are highly age related, with low rates for young children, rapidly increasing prevalence from preteens to adults, the highest rates for young adults, and very low prevalence for older adults. Thus, for SA treatment expenditures, one might expect higher spending for adolescents and adults than for young children and the elderly. However, for all MH disorders combined, the prevalence patterns are relatively even across age groups. Thus, for MH treatment expenditures, one might expect fairly comparable levels across broad age groups of youth, adults, and the elderly. Spending, however, may differ for reasons other than overall prevalence rates. For example, the types of MH/SA services provided and the associated costs may differ by age and the rates of identification of disorders may also differ by age group.

Methods

The estimates presented here disaggregate the 1997 SAMHSA national estimates of spending on MH/SA treatment into 3 age groups (0–17, 18–64, and 65 and older) for various categories of service relevant for MH/SA treatment.^{1,6}

Included diagnoses

Like the SAMHSA national spending estimates, the estimates presented here include most of the MH disorders contained in the *Diagnostic and Statistical Manual, Fourth Edition (DSM-IV)*. Spending for several “groups” of diagnoses and services was excluded because policymakers and financial systems tend to treat them like other health care conditions (i.e., mental retardation, developmental disabilities, and severe cognitive impairment like Alzheimer’s and senile dementia) rather than as a distinct MH/SA disorder. The estimates presented here also do not include medical services obtained as a consequence of MH/SA (for example, accidents/trauma, liver disease, or HIV infection) or MH/SA services delivered secondary to care for other health problems. While treating these conditions costs \$57 billion annually, these conditions were excluded from these analyses because they are generally covered by general medical insurance, either private or public, unlike much of MH/SA treatment. Also, costs to society such as social services for those who are mentally ill or criminal justice costs associated with SA are excluded.

Only primary MH/SA diagnoses were considered. Thus, for example, expenditures on persons with a primary diagnosis of cancer and a secondary diagnosis of depression would not be allocated to MH. Although this may result in overly conservative estimates, there is no way to accurately determine what proportion of expenditures for treatments with MH/SA secondary diagnoses should be allocated to the MH/SA condition.

Overview of approach

The MH/SA treatment spending figures were developed from the National Health Accounts (NHA) and other data sets using 2 different methods for general health care providers and MH/SA specialty providers.⁷ The process for each type of provider is described below. The Appendix lists the data sources used to calculate each service.

General sector provider estimation

For general health care providers, such as primary care physicians, the method was to determine the proportion of the NHA (by type of provider, diagnosis, and age) spent on MH/SA treatment. Large, nationally representative data sets were used to identify the proportion of utilization (eg, visits to a physician, hospital days) of treatment of primary MH/SA diagnoses and to identify price differences between MH/SA services and other disorders. In the data sets, each encounter record (eg, a hospital discharge record) had an associated ICD-9-CM diagnosis and those pertaining to MH/SA disorders were used to identify MH/SA treatment. Age-specific utilization and age-specific price factors within each diagnosis class were calculated to develop an estimate of the total spending on a particular type of general health care service for each age group.

To provide an example: assume that the NHA indicates that \$100 billion was spent on general hospital treatment in 1997. Assume that 10% of hospital days are for persons aged 18–64 with a MH diagnosis as measured using the National Hospital Discharge Survey (NHDS). Assume that the average price per day for this group is 10% lower than the average price for persons with general health conditions as determined using the MarketScan database. Then spending for MH care in general hospitals by persons aged 18–64 would be \$9 billion, or 9% of the total NHA spending.

Data sources for utilization factors included the National Hospital Discharge Survey (NHDS), the National Ambulatory Medical Care Survey (NAMCS), the National Hospital Ambulatory Medical Care Survey (NHAMCS), the National Nursing Home Survey (NNHS), and the National Home and Hospice Care Survey (NHHCS). To reduce yearly sampling error on surveys with small samples, utilization data were averaged over 3 consecutive years closest to 1997. It should be noted that the NHAMCS data for 1996 showed significantly different results from other years because of changes in the coding of payer data; therefore, the 1996 NHAMCS was excluded from the estimation process.

The source for price factors was the MarketScan[®] database, an annual collection of private health insurance claims from large employers. Price differentials for a particular age group were computed from the ratio of the average approved amount per claim for the age group to the average approved amount for claimants of all ages. Occasionally, when price data for an age-diagnosis-service group were unavailable, or when calculations for an age group were out of line (30% above or below the price for all ages combined), the price ratio was replaced with a value of 1.0 so that the prices for all ages combined would be used for that age group.

The only service that was not identified using a primary MH/SA diagnosis as indicated on the encounter records was pharmaceuticals. The databases used to measure utilization of pharmaceuticals—the NAMCS and NHAMCS—provided nationally representative data on prescriptions written during physician office visits, hospital outpatient visits, and emergency room visits. The type of medication prescribed is indicated by its name and 4-digit NDC classification rather than by the indicated diagnosis. Six classifications of psychopharmacologic drugs were used in these surveys to identify MH/SA medications: (1) sedatives and hypnotics, (2) antianxiety, (3) antipsychotic, (4) antidepressant, (5) central nervous system (CNS) stimulant and anorexiant, and (6) miscellaneous CNS drugs.

Specialty sector provider estimation

For specialty providers, information on MH/SA spending was estimated directly from surveys of the universe of specialty providers. These included the inventory of Mental Health Organizations (IMHO), a census of MH service facilities in the United States, and the Uniform Facility Data Set (UFDS), a census of US substance abuse facilities.

In these data sets, aggregate information on the number of patients by class of diagnosis (MH, SA, other) was used to allocate total revenues by facility by diagnosis. Note that “other” made up approximately 2.5% of patients. These surveys asked providers about the age distribution of clients served. Data on the distribution were then used to allocate facility revenues by age group. Facilities with no client-age distribution were assigned the average distribution of comparable facilities (e.g., based on size, service type, modality, geographic region, and ownership status). Data were adjusted to account for non-response on utilization and revenue items through imputation. Variables in the regression imputation model included service type (inpatient, residential, outpatient), ownership, region of the country, client day, and type of modality (single or multiple modalities).

The most recent spending estimates that could be developed for the specialty facilities (1996 from UFDS and 1994 from IMHO) were trended forward to 1997. Projections of spending on each service used the Centers for Medicare and Medicaid (CMS) projection

method that breaks overall spending growth into components—prices, utilization, and demographic changes. They also used the historic changes in age distributions by service.

Comparison to all health care spending

The age estimates for MH/SA spending in 1997 were compared to age estimates of national spending on all health care. These health care figures by age were derived from the NHA. For all health spending, whenever the surveys mentioned previously were insufficient for deriving service unit expenditures (such as the average expense for a hospital stay) by age and payer, the 1997 MEPS was used.

In comparing the resulting national all-health expenditures to MH/SA expenditures, one other detail must be acknowledged. First, because the total MH/SA spending included some costs (such as custodianship of group homes) that are not on health services per se, and therefore would not be counted in the NHA, a second estimate of MH/SA spending—the MH/SA NHA-equivalent expenditures—was calculated for accurate comparison between MH/SA and all health care spending. Thus, in this study of spending by age of client, figures are presented for both “total MH/SA expenditures” and “MH/SA NHA-equivalent expenditures.” Only 4% of total expenditures relate to non-health expenditures by specialty MH/SA providers in these estimates.

Variation from prior national SAMHSA spending estimates

There were some differences between these age-group estimates and the prior SAMHSA estimates by Coffey et al.¹ In these estimates of MH/SA expenditures by age group, insurance administration expenses were excluded because of the lack of such data by beneficiary age. Also, in this current study of spending by age, some aspects of spending on pharmaceuticals for MH treatment that had been inadvertently excluded from the original study were included—specifically, spending on methylphenidate (Ritalin). Thus, the national estimates in this article are the revised, slightly higher, estimates of MH/SA spending. Finally, unlike the prior estimates of MH/SA for the whole US population, these estimates by age group do not divide spending by payer type because of a lack of data on the age distribution of clients by payer.

Results

Table 1 presents estimates of national spending for treatment of MH/SA by age of clients treated in 1997. For completeness, “total MH/SA expenditures” are also shown, but only “MH/SA NHAequivalent expenditures” are compared with all health care spending in Tables 1 and 2.

The majority of MH/SA spending, about 72%, supported the treatment of adults between the ages of 18 and 64 in 1997, yet only 51% of all health care spending related to adults aged 18–64. Children and youth younger than 18 comprised about 13% of MH/SA spending and about 11% of all health care spending. For adults 65 years of age and older, the reverse was true. Only 15% of MH/SA spending went toward treatment of MH/SA disorders of the elderly, while 38% of all health care spending was on elders.

Table 1 also reveals the MH/SA spending estimates by diagnosis for MH, SA, and both combined. For each of these diagnoses, the percentage spent across the age groups also is

displayed. Table 2 examines MH/SA spending as a percentage of all health care spending by age group.

Table 1. Estimated “Revised” Spending on Mental Health and Substance Abuse (MH/SA) Treatment by Age and Diagnosis Compared to All Health Care Spending, 1997

Client age group	Total MH/SA spending (millions)	MH/SA NHA Equivalent spending (millions)		MH NHA Equivalent spending (millions)		SA NHA Equivalent spending (millions)		All health care spending (millions)	
		Amount	%	Amount	%	Amount	%	Amount	%
Total	\$82,437	\$79,433	100.0	\$68,465	100.0	\$10,968	100.0	\$1,057,494	100.0
Younger than 18	\$10,975	\$10,646	13.4	\$10,042	14.7	\$604	5.5	\$116,150	11.0
18–64 years	\$59,072	\$56,796	71.5	\$46,949	68.6	\$9,846	89.8	\$537,609	50.8
65 and older	\$12,390	\$11,991	15.1	\$11,474	16.8	\$518	4.7	\$403,735	38.2

Source: SAMHSA Spending Estimates Project. These “revised” dollar estimates differ slightly from prior estimates in Coffey et al1 because pharmaceutical expenses for MH treatment were revised. Estimates exclude administrative insurance expenses. The \$84,243 million above is 0.007% higher than the \$81,849 million estimate previously given for total MH/SA spending, and the same increase occurred for MH/SA NHA-equivalent spending, which was \$78,845 million in the earlier report.

There are material differences in the age patterns of spending for MH and SA treatment. Youth and older adults accounted for larger proportions of spending on MH services (15% and 17%, respectively) than of spending on SA services (6% and 5%, respectively) in 1997. Adults aged 18–64 accounted for 69% of spending on MH, and 90% of spending on SA services. The lower rate of spending on SA services among clients younger than 18 and older than 64 probably reflects the lower treatment prevalence of SA disorders among these 2 age groups compared to adults aged 18–64.

As Table 2 shows, overall MH/SA spending constituted about 8% of all health spending in 1997. For children and adolescents, MH/SA spending represented more, 9% of all health care spending. For adults aged 18–64, MH/SA spending represented even more, 11% of all health care spending, while for adults ages 65 and older, MH/SA spending was a much smaller proportion of all of their health care spending, only 3%. The age patterns were most pronounced for SA treatment expenses, with over 3 times the share of all health spending occurring for adults (2% of all health care spending was for SA treatment) as compared with youth (0.5%) and elders (0.1%). In contrast, MH spending constituted a similar proportion (9% and 11%) of all health spending for youth and adults younger than 65, respectively, although it represented a smaller proportion for those 65 and older (only 3%). The fact that children are relatively healthy and have relatively low general health service use and that elders are much higher users of general health services helps to explain the larger proportion of MH/SA among children than among the elders. In addition, it should be remembered that the proportion of SA spending on youth reflects the low prevalence of SA among very young children and the much higher level of SA among adolescents. Breakouts by smaller age groups were not possible in this study.

Table 2. Estimated “Revised” Spending on Mental Health and Substance Abuse (MH/SA) Treatment, by Age and Diagnosis, 1997

Client age group	MH/SA NHA-Equivalent spending (millions)			All health spending	Percentage of all health spending		
	MH/SA	MH	SA		MH/SA	MH	SA
Total	\$79,433	\$68,465	\$10,968	\$1,057,494	7.5%	6.5%	1.0%
Younger than 18 years	\$10,646	\$10,042	\$604	\$116,150	9.2%	8.6%	0.5%
18–64 years	\$56,796	\$46,949	\$9,846	\$537,609	10.6%	8.7%	1.8%
65 and older	\$11,991	\$11,474	\$518	\$403,735	3.0%	2.8%	0.1%

Source: SAMHSA Spending Estimates Project. These “revised” dollar estimates differ slightly from prior estimates in Coffey et al. 1 because pharmaceutical expenses for MH treatment were revised. Estimates exclude spending on insurance administration. The \$79,433 million above is 0.007% higher than the \$78,845 million estimate previously given for total MH/SA spending, and the same increase occurred for MH/SA NHA-equivalent spending, which was \$78,845 million in the earlier report.

Table 3 examines MH/SA spending estimates by type of service, using the “total MH/SA spending” estimates (rather than MH/SA NHA-equivalent estimates). Overall, 74% of MH/SA spending was with specialty MH/SA providers. This figure would have been even higher if psychotropic medications could have been associated with the specialty of the professional prescribing the medication (for example, psychiatrist or non-psychiatrist physicians) or were wholly counted in the specialty sector. Clearly, specialty providers deliver a preponderance of MH/SA care, although general service providers are seeing and treating an appreciable number of MH/SA patients.

Across the 3 age groups some distinct differences emerged in where patients received their MH/SA care. About 85% of spending for youth was with specialty MH/SA providers, compared to 76% for younger and middle-aged adults and 51% for older adults. There were 2 major differences in patterns of care between youth and other adults. First, youth had a much lower share of spending from prescription pharmaceuticals (6%) than did adults aged 18–64 (14%). Second, children and adolescents were more likely than the other age groups to have gotten care from organized MH/SA providers such as MH clinics and residential treatment centers in contrast to independent MH/SA practitioners such as psychiatrists, psychologists, counselors, and social workers. Twenty-five percent of total MH/SA expenditures on children were for care in multi-service MH organizations as compared to 14% and 8% for adults and older adults.

One of the most significant differences across the age groups in the service received was that 33% of MH/SA spending for older adults went to nursing home care, compared to essentially nothing for the other age groups. Prior analyses found that total nursing home MH/SA expenditures were unchanged in nominal dollars between 1987 and 1997, and declined as a share of total MH/SA expenditures from about 10% to 6%. During this time period, Federal law required nursing home residents to be screened for mental illness and placed in appropriate settings. However, it appears that mental illness was still the primary or first-listed diagnosis for about 6% of nursing home expenditures.

Overall, 13% of MH/SA spending was in either specialty psychiatric or SA hospitals (the payments for the 3 age groups were 14%, 13%, and 10% respectively). The pattern of variation was reversed for spending in specialty MH/SA treatment units affiliated with general hospitals (16% overall and 19%, 16%, and 15% for the 3 age groups). Less than

3% of MH/SA spending was related to services being delivered in hospital units that did not specialize in the treatment of MH/SA.

Table 3. Mental Health and Substance Abuse (MH/SA) Expenditures by Age Group and Provider, 1997

Type of provider	Total MH/SA spending (millions) by service type	Percentage of MH/SA spending on each age group by service type			
		MH/SA clients, all ages	Younger than 18 years	18-64 years	65 and older
General service providers (total)	\$21,863	26.5	15.1	24.0	48.6
Non-specialty hospital care [†]	\$2,331	2.8	2.3	2.9	2.7
Non-psychiatrist physicians	\$4,718	5.7	6.4	5.5	6.3
Freestanding home health	\$428	0.5	0.2	0.4	1.6
Freestanding nursing home	\$4,722	5.7	0.0	1.1	33.0
Retail prescription drugs [‡]	\$9,664	11.7	6.2	14.2	5.0
Specialty providers (total)	\$60,574	73.5	84.9	76.0	51.4
Specialty hospitals [§]	\$10,746	13.0	14.3	13.4	10.0
Specialty units of general and VA hospitals	\$13,371	16.2	18.7	16.0	15.0
Psychiatrists	\$7,396	9.0	7.6	9.9	5.8
Other MH/SA professionals ^{**}	\$10,147	12.3	9.8	13.1	11.0
Residential treatment centers (formerly for children only)	\$2,807	3.4	6.8	3.1	1.7
Multi-service MH organizations ^{††}	\$12,135	14.7	25.1	14.3	7.6
Specialty SA centers ^{‡‡}	\$3,974	4.8	2.5	6.2	0.3
Total expenditures	\$82,437	100.0	100.0	100.0	100.0

Source: SAMHSA Spending Estimates Project. These “revised” dollar estimates differ slightly from prior estimates in Coffey et al. 1 because pharmaceutical expenses for MH treatment were revised. Estimates exclude insurance administration expenses. The \$82,437 million above is 0.7% higher than the \$81,849 million estimate previously given for total MH/SA spending, and the same increase occurred for MH/SA NHA-equivalent spending, which was \$78,845 million in the earlier report.

[†]“Nonspecialty hospital care” includes care provided in general hospitals outside of specialized psychiatric and SA units.

[‡]“Retail prescription drugs” refers to drugs obtained through retail (pharmacy or mail order) distribution. Inpatient drug treatment and facilities that dispense drugs through public programs, such as methadone clinics, are not included in this category, but rather are included with the specific facility expenditures.

[§]“Specialty hospitals” include psychiatric and SA hospitals, which specialize in MH or SA treatment, and all of their hospital-based services.

^{**}“Other MH/SA professionals” includes psychologists, counselors, social workers, and nurse practitioners.

^{††} “Multiservice MH organizations” includes a variety of providers such as community MH centers, residential treatment facilities for the mentally ill, and partial care facilities.

^{‡‡}“Specialty SA centers” includes freestanding SA centers and units of other facilities. Thus, for example, it includes methadone maintenance clinics, other facilities that primarily serve persons with SA problems, and units of public health clinics, charitable organizations, correctional facilities, and other entities. Some of these organizations have SA as their primary mission and others treat SA as a secondary function.

Less than 6% of MH/SA spending was for services provided by non-MH/SA-specialty physicians, with each age group spending about the same percentage for these providers.

Implications for Behavioral Health Services

This analysis provides new data on national spending on MH/SA treatment by 3 client age groups for 1997: youth (0–17 years), adults (18–64 years), and older adults (65 years and older). In the next round of estimates, spending by age groups over a 10-year period will be derived. Also, methodological improvements will be undertaken to allow estimation of source of payment for MH/SA services by age. With these advances, the effect of program changes on services to specific age groups, such as the State Child Health Insurance Program, could be evaluated. In addition, this analysis could not refine the age estimates for children, for example, examining estimates for young children and adolescents separately. Future analyses may be able to discern trends among subgroups of youth.

There is one other study that has produced MH/SA spending estimates for a specific age group.² That study estimated that MH/SA spending on youth aged 1–17 was \$11.68 billion in 1998. This figure is very close to the \$10.98 billion estimate for the year 1997 for youth aged 0–17 presented in this analysis. The difference is comparable to the rate of medical care price inflation between the 2 years. On one hand, the similarity is not surprising given that many of the same data sets were used in both studies; on the other hand, the similarity is unexpected given the complexity of the estimation process, the potential for different methods, and the newer data sources used in the later study by Ringel and Sturm. The similar findings serve as a partial corroboration of the study methods.

The data presented in this article have a number of important potential uses and implications. They provide a baseline against which future estimates can be compared. For example, the pace of MH/SA expenditure growth during the 1980s was of concern to private employers, particularly expenditures on children and adolescents.⁸ Such concerns, however, were based on data from one employer or convenience samples. In the future, one should be able to use the estimates presented here to examine trends in MH/SA expenditure growth by age group and to address directly the adequacy of spending and cost containment concerns for these age groups.

Expenditure data by age is also important for planning and evaluation of public programs. One implication of this study for public payers, such as state Medicaid programs, is that policymakers need to pay attention to MH/SA service planning and evaluation specifically aimed at children since more than 1 in 11 dollars of all MH/SA expenditures are likely to be spent on services to children. The share-of-spending estimates can also be used as benchmarks for state-level estimates. A Medicaid program, for example, that spent less than 5% of its medical expenditures on MH/SA may have created barriers to access of MH/SA services. Expenditure distributions by provider also suggest that planning and evaluation of MH/SA for different age groups should focus on different services. For the elderly, for example, efforts might focus on care in nursing homes, while for children efforts might focus on multi-service MH organizations.

The results of this study of 1997 data show that significant differences existed across major age groups in spending on MH/SA. Adults received a mix of services across the specialty and non-specialty sectors. One question raised by these expenditure distributions is whether the mix is appropriate. For example, 14% of expenditures were for prescription medications, is this level of medication use appropriate? Is it supplanting or augmenting behavioral treatment?

Data from this study indicated that although MH/SA service expenditures were highest among adults aged 18–64, expenditures on children were also significant—exceeding \$10 billion. Indeed, a number of MH/SA research, treatment, and financing issues are unique to children and adolescents. Given that 9% of medical care expenditures on youth went to MH/SA treatment, efforts must be made to ensure that psychiatric and SA treatment research focuses on youth and does not merely attempt to transfer results from adults to the youth population. For example, the most recent comprehensive epidemiologic survey measuring the prevalence of MH disorders—the National Comorbidity Survey—was limited to individuals aged 15–54. Similarly, clinical trials of medications often exclude children despite the fact that a growing aspect of MH/SA treatment on youth involves medications.

Institutional hospital services were a larger share of expenditures on youth younger than 18 than of adults aged 18–64. More than 35% of expenditures on children’s MH/SA treatment were for care in hospitals. For children, expenditures on residential services were second only to those for the elderly. Aggressive managed care has limited access to and ultimately the supply of inpatient and residential treatment opportunities over the past 10 years.^{6,9} This analysis illustrates that these policies may have had more of an impact on youth than on other age groups since they are heavy users of inpatient and residential services. Whether the decline in institutional use was beneficial and whether current levels of institutional care use by youth are appropriate clearly need further elucidation.³ In addition, whether inpatient services can be provided in community settings has important implications for quality of life as well as cost-effectiveness. As President Bush’s New Freedom Commission on Mental Health recently documented, there are numerous barriers and gaps that prevent children and adults from receiving effective community treatment (<http://www.mentalhealthcommission.gov/reports/reports.htm>).

One limitation of this analysis was that because it is consistent with the approach taken in the national health accounts it may exclude spending on school-based MH/SA services where children may receive a significant share of their MH/SA care. Future studies need to document expenditures on MH/SA treatment in schools and its relationship to services provided in other settings.

Among senior adults, MH/SA spending was a less significant portion of total health care spending but an important dimension nonetheless. MH/SA spending constituted only about 3% of all health

care spending for those 65 and older. This lower share of spending on MH/SA treatment in senior adults as compared to younger groups certainly is related to the substantial expenditures on physical health that occur in the last decades of life for most adults and to the fact that dementia is excluded from the spending estimates shown here because it is

a disorder typically covered under medical insurance rather than the MH/SA portion of the benefits. However, the finding that 33% of this older-adult MH/SA spending was for nursing home care (excluding dementia patients) merits the attention of financing specialists and providers, especially because public policies have attempted to move such care into community settings.

Overall, the low MH/SA spending proportion for the elderly raises questions since it is known that roughly 20% of the older adult population needs MH care—very similar to the proportion of children and adults with such requirements.³ Because older adults may present with different clinical symptoms than do other adults, such as more somatic complaints and comorbid medical conditions, detection of MH/SA conditions by non-specialists may be particularly difficult and require extra efforts.

In summary, analyses of the economic size of the MH/SA treatment system by age group can provide important information to policymakers and program planners charged with making decisions about resource allocation. Such information can also make clear to researchers and providers the importance of age considerations in the design of studies and interventions so that important segments of the population in specific treatment settings are not ignored.

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Appendix

Data sources for estimating MH/SA providers/services *

Provider/service	Utilization	Average payments	Payment channels
Nonspecialty care in general hospitals	NHDS, NHAMCS	HCUP, MarketScan [®] , Medicare claims, Medicare statistics	NMES, MarketScan [®]
Psychiatrists	NAMCS, HCFA Medicare statistics	MarketScan [®] , Medicare statistics	NMES, MarketScan [®]
Nonpsychiatrist physicians	NAMCS, HCFA Medicare statistics	MarketScan [®] , Medicare statistics	NMES, MarketScan [®]
Other nonphysician professionals	MEPS	MarketScan [®]	NMES, MarketScan [®]
Freestanding nursing homes	NNHS		
Freestanding home health	NHHCS	MarketScan [®]	NMES, MarketScan [®]
Retail prescription drugs	NAMCS, NHAMCS, IMS	MarketScan [®] , Medicaid drug rebate data	NMES, MarketScan [®]
Residential treatment centers	IMHO		
Specialty hospitals	IMHO/UFDS		
Specialty units of general hospitals and VA hospitals	IMHO/UFDS		
Specialty substance abuse centers	IMHO/UFDS		
Multiservice MH organizations	IMHO/UFDS		

*NHDS indicates National Hospital Discharge Survey; NHAMCS, National Hospital Ambulatory Medical Care Survey; HCUP, Healthcare Cost and Utilization Project; NMES, National Medical Expenditure Survey; NAMCS, National Ambulatory Medical Care Survey; NNHS, National Nursing Home Survey; NHHCS, National Home Health Care Survey; IMHO, Inventory of Mental Health Organizations; UFDS, Uniform Facility Data Survey; HCFA, Health Care Financing Administration.