

Geographic Variations in Use of Medicaid Mental Health Services

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An extensive literature documents geographic variations in patterns of health services use and spending but virtually ignores mental health services. The authors assessed geographic variations in use of and spending on mental health services among adult disabled Medicaid recipients with mental illness. Data were derived from 2008 Medicaid claims in 35 states. Per capita annual inpatient days, ambulatory visits, psychotropic medication fills, and spending on psychiatric

services varied widely across regions. The proportion of total variation explained by interstate differences ranged from 43% (inpatient days) to 71% (ambulatory visits). Understanding these variations more thoroughly may help improve the effectiveness and efficiency of mental health services delivered under Medicaid.

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Since Wennberg and Gittelsohn (1) published their pioneering work on geographic variations in health care use and spending, a massive literature has examined geographic variations in health care use, spending, and quality. Most of this research has used Medicare data and has found that patterns of health care vary widely across states and health care markets, raising questions about whether much of health care spending, particularly in high-spending areas, is worthwhile (2,3). Medicare data are ideal for studying variations because program characteristics are similar across states. However, variation in use of and spending on mental health care has not been a focus of this literature, as noted by Drake and colleagues (4). This is at least partly attributable to the fact that, until recently, coverage for mental health care in Medicare was not on par with coverage for other services.

Some research has examined variations in mental health services by using data from Medicaid, which represents a growing share of federal and state budgets and is a critical source of health insurance for disadvantaged populations. Gilmer and Kronick (5) found that interstate variation in Medicaid mental health spending exceeded interstate variation in Medicaid spending for inpatient, outpatient, pharmacy, or “other acute” services. However, little is known about these variations beyond this limited evidence. Because of variation in state Medicaid programs and in provider practice patterns, geographic variations in patterns of care may be even greater in Medicaid than in Medicare. Patterns of mental health services use and spending may vary both within and across states and understanding the relative importance of these two sources of variation has important policy implications. If most variation is across states, then state Medicaid policies may be the most powerful levers to influence patterns of mental health services use by Medicaid recipients. But if most variation is within states, then more localized efforts might be

needed to influence service use patterns, such as addressing the supply of mental health providers and facilities or the practice preferences of local providers.

Mental health is a critical component of Medicaid, because Medicaid recipients—and disabled recipients in particular—are disproportionately likely to have a mental illness, and because recipients with mental illnesses are more costly than Medicaid recipients without mental illnesses (6). Medicaid is the largest payer for mental health services in the country (7), which suggests that examining variations in Medicaid mental health service use may provide important insight into how such care is delivered and how Medicaid can most efficiently deliver care to vulnerable and expensive populations.

THE MEDICAID ATLAS DATA

Our data came from the Medicaid Atlas, a data tool recently developed by the office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, in collaboration with the Urban Institute and the University of California, San Diego. The Medicaid Atlas provides aggregated area-level estimates of various measures of spending and utilization derived from the Medicaid Analytic eXtract (MAX) files. The Atlas focuses on fee-for-service, cash-assistance Medicaid-only disabled recipients (CAMODs) because their eligibility for Supplemental Security Income disability benefits makes them more comparable to each other than to other Medicaid populations and because of their relatively low levels of managed care enrollment, including enrollment in behavioral health carve-outs. In addition, the MAX data include the complete set of claims data, which is not the case for Medicaid recipients who are dually eligible for Medicare. The mental health module of the

Medicaid Atlas focuses exclusively on Medicaid recipients with mental disorders, identified on the basis of having a claim with any mental disorder diagnosis (*ICD-9-CM* 295–302, 306–314, or 648.4), a specialty mental health provider visit, or use of any psychotropic medication.

Within the adult CAMOD population with mental disorders, we primarily focused on variations in mental health service use, rather than on spending, because of state variations in the unit prices of services. We examined three specific measures of annual use of mental health services per capita: mean number of inpatient days, mean number of ambulatory visits, and mean number of psychotropic medication prescriptions. However, because Medicaid spending for people with mental illness has important policy implications, we also examined mean annual spending on psychiatric services. Psychiatric services in the MAX data include a wide range of services (for example, counseling, therapy, community support, and partial hospitalization), although adult day care is not included in the MAX's definition of psychiatric services. Distinct from our measures of service use, the mean spending measure reflects state variation in prices as well as quantities. All measures that we examined pertained specifically to services associated with a mental health *ICD-9* code. We used data adjusted for differences in case mix across regions, taking into consideration age, race-ethnicity, and sex, as well as health status as characterized by the Chronic Illness and Disability Payment System risk adjustor score (8) and whether mortality occurred in the current year or up to two years in the future.

The Medicaid Atlas measures geographic patterns of spending and utilization at the Medicaid Atlas Local Area (MALA) level, where each MALA is equivalent to a Metropolitan Statistical Area or to the part of an interstate Metropolitan Statistical Area that is unique to a single state. We included only MALAs with at least 100 Medicaid recipients with mental illness to avoid unreliable estimates. We also excluded states in which more than half the disabled Medicaid population was enrolled in 2008 in either a comprehensive managed care plan or a behavioral health carve-out plan. After exclusion criteria were applied, 285 MALAs across 35 states remained. Because of implausible values, we also excluded two states (Idaho and Louisiana) from the measure of inpatient days, one state (Indiana) from the measure of ambulatory visits, and one state (California) from the spending measure.

The Medicaid Atlas data have some important limitations. They are limited to fee-for-service claims, and the most recent available data are from 2008. Our analysis explicitly focused on states with low penetration of comprehensive managed care and behavioral health carve-outs in the disabled Medicaid population; however, this excluded many states, and thus our results do not reflect the full degree of variation in use of services. Another important limitation is that we examined only aggregated measures of mean annual use and spending. We do not know which specific services were delivered, including their appropriateness and quality.

ANALYSIS AND RESULTS

To describe the extent of geographic variation in the four measures of service use, we created distributional plots of the MALA-level measures and described the distributions of these measures in terms of their means; 25th, 50th (median), and 75th percentiles; and their coefficients of variation (the ratio of the mean to the SD) to provide a measure of dispersion that was comparable across different variables. We also decomposed the variation in MALA-level measures into between-state variation and within-state variation by using hierarchical (also known as multilevel) linear models of MALA-level measures. We report the intraclass correlation (ICC) statistic for these models, which can be interpreted as the proportion of the total variation explained by between-state variation, a statistic with important policy implications. [A figure and table with these results are available in an online supplement.]

The mean number of annual inpatient days with a mental health diagnosis varied considerably across MALAs. The mean MALA-level number was .62 per year, with a coefficient of variation of .78. The mean number of ambulatory visits was 1.77 per year. The coefficient of variation (.90) was even higher than for inpatient days, owing to the long upper tail in the data. The mean annual number of case mix-adjusted psychotropic prescriptions varied substantially, although less so than for inpatient days and ambulatory visits. The mean number of prescriptions per year was 14.16, with a coefficient of variation of .27. We also observed a high degree of variation in MALA-level annual case mix-adjusted spending for psychiatric services [see online supplement].

How much of the total geographic variation was attributable to variation within states, and how much to variation across states? The ICC statistics differed depending on the measure. The ICC for annual inpatient days was the lowest among the four measures (.43), implying that most of the variation was found within states. In contrast, the ICCs for mean annual number of ambulatory visits and prescription drug fills and mean annual psychiatric services spending were all above .50 (.71, .65, and .70, respectively), implying that most of the overall geographic variation in these measures was explained by state-level differences [see table in online supplement].

DISCUSSION AND IMPLICATIONS

Patterns of case mix-adjusted mental health services use and spending for adult disabled Medicaid beneficiaries varied considerably depending on geography. How large were these variations? A recent study of hospital service area-level variations in service use that analyzed 2007–2009 Medicare data found much less variation than we did; coefficients of variation were .09, .20, and .18 for monthly prescription fills, annual inpatient admissions, and annual outpatient office visits, respectively (9). That study is not directly comparable because we focused on mental health services for disabled

Medicaid recipients with mental disorders and that study focused on health services for all Medicare recipients. However, given the attention and importance ascribed to geographic variations in Medicare, our results imply that such variations in Medicaid mental health care also merit research scrutiny and policy attention.

For inpatient care, the degree of variation within states exceeded the degree across states, implying that local factors play a predominant role in determining patterns of inpatient care. However, for ambulatory visits, prescription drug fills, and overall spending on psychiatric services, most variation was at the state level. This suggests that state Medicaid policies have important effects on mental health service use patterns. For instance, Medicaid prior-authorization policies and other formulary restriction policies have been shown to affect use patterns for prescription drugs and other health services (10,11). Physician and hospital fees are also set by state Medicaid programs, which may influence interstate variations in the supply of mental health services to Medicaid recipients. Our measure of annual spending on psychiatric services directly reflected interstate differences in Medicaid fees, along with variations in the specific types and quantities of these services.

Given those limitations, we found very different patterns of service use and spending among Medicaid recipients with mental illnesses across geographic areas. These variations existed both across states and within states, although the relative importance of interstate variation depended on the specific measure. Our data did not permit us to identify regions that delivered Medicaid mental health services inefficiently. But the results raise important questions. Do people in higher-utilizing and higher-spending regions have better outcomes? What is the degree of variation in evidence-concordant mental health care delivered across regions, how does it correlate with overall service use and spending, and how much of that variation is a result of local practice environments versus state policy influences? Are patterns of service use in other Medicaid mental health populations and for other payers similar to what we observed? How do states' offerings of "optional" Medicaid mental health services contribute to interstate variations? And how do non-Medicaid services (that is, state, local, or block grant funded) influence intrastate patterns of Medicaid mental health services use and spending? Answering these questions could

help guide more efficient use of public funds for delivery of mental health care in Medicaid.

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