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Agency of Human Services
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MEMORANDUM

TO: Vermont Performance Indicator Project Advisory Group

FROM: John Pandiani
Lisa Gauvin

DATE: July 1, 1997

RE: Access Indicators

We have enclosed a copy of an article on access to mental health services that will appear in the summer 1997 issue of The Journal of Mental Health Administration.

We have also enclosed an agenda for our next quarterly meeting to be held Tuesday, July 8, at 10:00 a.m. in the Appalacian Gap Room of the Osgood Building.

We look forward to seeing you then.

Agenda

Vermont Adult Mental Health
Performance Indicator Advisory Group

10:00 a.m., July 8, 1997, Appalacian Gap Room in Osgood Building

10:00 - 10:15	Introduction, Overview, and PIP Report Card
10:15 - 11:45	Review **Access** Indicators
11:45 – 12:00	Break
12:00 – 1:00	DDMHS Brown Bag Lunch: "Hospitalization, Incarceration, and Death: Bottom Line Outcome Indicators from Existing Data Sets" Appalacian Gap Room, Osgood Building
1:15 - 2:45	Review Indicators of **Appropriateness**
2:45 - 3:00	Break
3:00 - 4:00	Work Plan for next 3 months

Articles

A Global Measure of Access to Mental Health Services for a Managed Care Environment

John A. Pandiani, Ph.D.
Steven M. Banks, Ph.D.
Lisa Gauvin, B.A.

Abstract

The growing influence of managed care in mental health services has raised important questions about access to services. This article introduces and demonstrates a global measure of access that is based on the relationship between service utilization and the need for services. This measure has become practical because of recent advances in measurement technology that provide more valid and reliable estimates of the prevalence of mental illness in general populations and of the number of people who receive mental health services across service sectors. The methodology is used to produce a report card type profile of access to inpatient mental health services (in state, general, private, and veterans hospitals) by residents of one state. This global measure can provide a powerful and efficient tool for monitoring and comparing the impact of managed care plans on access to mental health services.

Measuring access to services will be one of the most important tasks facing mental health program administrators and evaluators in the emerging managed care environment. Mental health program administrators will be called upon to provide information to both consumers and funding agencies about the degree of access provided by their own managed care programs and by the managed care organizations they contract with. Boyle and Callahan[1] identify access to care as one of the core ethical concerns regarding managed behavioral health care (along with quality of care, the physician-patient relationship, and informed patient choice). Critics of managed care allege that the economics of per capita reimbursement will exert pressure to deny services to people in need of care. Proponents of managed care argue that this new approach can increase access without raising cost by serving more people at a more appropriate level of care. Evaluation of the validity of these contradictory predictions about the impact of managed care philosophy and technology will provide one very powerful measure of the significant effect of the managed care programs that are being undertaken by mental health program administrators across the country.

This article proposes a simple global measure of access to services that overcomes many of the shortcomings in the measures that have been used in the past. The measure is person focused but is

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able to cross organizational and service sector (e.g., private vs. public) lines. The measure is able to assess service accessibility for managed care plans overall, for specific geographic areas, and for specific categories of people. It is able to measure changes in access to services over time and to compare access before and after the implementation of managed care. Most important, the measure can provide valid and reliable quantitative results and is relatively inexpensive to use. This measure is not, however, proposed as a substitute for the kinds of measures discussed below. Instead, it is proposed as a complement to these approaches.

The approach to measuring access to services in the managed care environment will need to be different from traditional approaches of mental health program evaluation in two important ways. First, the adoption of case rate or per capita funding strategies in place of traditional fee-for-service payment systems requires a shift away from measuring the volume and type of service provided and toward measuring the number and characteristics of people served. When reimbursement is based on the number of covered lives or the number of people served, both payers and providers need to know a lot more about the number of people who are being served and their clinical and demographic characteristics than they did under a fee-for-service reimbursement system. Second, the shift from service-based to person-based reimbursement will require program administrators and evaluators to broaden their focus to encompass whole service systems instead of focusing on specific provider organizations as they have in the past. As soon as a service provider or a funding agency adopts the perspective of a managed care organization, their concern is immediately expanded to include the entire range of behavioral health care providers and service sectors that might be accessed by the people on their caseload or the people in their pool of covered lives.

Background

Concern about access to mental health services is not new. It has been an important topic of discussion at least since the early days of the community mental health movement. Beginning in 1975, the National Institutes of Mental Health (NIMH) required that all community mental health centers evaluate their programs in terms of acceptability, availability, accessibility, and awareness. Accessibility was defined to include the dimensions of temporal, geographic, financial, psychological, and sociocultural accessibility.[2] Access to mental health services reemerged as a major concern in the national health care reform debate of the early 1990s.[3] More broadly defined at this time, access tended to have two components. First, as in the broader health care arena, there was an overarching concern for universal access to behavioral health care. This concern manifested itself in specific calls for equal access to services regardless of health status, economic condition, or location of residence. Traditional equal opportunity categories (age, sex, race, religion, national origin, and sexual preference) were frequently mentioned with regard to access to services as well. A second access concern in the health care reform debate focused on the ability of people to choose their own service provider and the type of service they would receive. Access to services continues to be a major concern in the current discussion of managed care in mental health. The Mental Health Statistics Improvement Project (MHSIP) Consumer Oriented Mental Health Report Card,[4] for instance, lists access to services as the first of four major domains of accountability (access, appropriateness, outcomes, and prevention). The Report Card includes 12 distinct measures of access to services. Access to services is also a prominent feature of the combined position statement of the National Association of State Mental Health Program Directors (NASMHPD) and the American Managed Behavioral Healthcare Association (AMBHA), who clearly assert that "[t]he goal of public-private collaboration in State Medicaid reform is to assure that the ability to access quality mental health services is maintained or increased."[5]

Research on access to services has used a variety of methodological approaches over the years. Research in response to the community mental health mandate tended to be organizationally focused and to depend on opinion surveys or qualitative methodologies.[6,7] These approaches can provide

very valuable feedback for administrators of specific programs, but they have limited utility for measuring accessibility across organizations or service sectors as is necessary in the emerging managed care environment. Survey methodologies have very limited utility in this context because of the difficulties involved in identifying and reaching those people who do not have access to services. Qualitative methodologies are of limited utility for comparing the access to services provided by different service organizations, insurance plans, managed care organizations, or service sectors.

Most recommendations for measuring access to services in the new managed care environment depend on a combination of survey methodologies and the use of increasingly available administrative data. The MHSIP Report Card depends on responses to consumer surveys to measure half of its 12 access measures, whereas enrollment, encounter, and expenditure data from administrative data sets are used to provide the other measures. The NASMHPD-AMBHA recommendations focus primarily on temporal measures of access (telephone response time, time to first visit, etc.) that rely on administratively generated data. These methodologies provide important measures of provider performance in specific areas that are related to concerns about access, and they also provide direct measures of overall access to services.

Conceptually, the task of measuring access to services is not difficult. The basic elements include only a measure of the need for mental health services in a population and a measure of the utilization of mental health services by that population. The ratio of these two measures (people served/people in need) is a direct and reliable measure of the overall access to service by the population under examination. Such a measure does not provide information about the factors that underlie the resulting accessibility ratio (administrative, geographic, sociocultural, etc.), but it does provide a global measure of overall performance in this area and can point to areas where further investigation is warranted. Up until now, the development of this kind of objective quantitative measure of access to service has been hampered by limited ability to measure either the number of people who need services or the number of people who receive services across organizations and service sectors.

Fortunately, recent methodological advances have made it possible to derive reasonable estimates of both the number of people in need and the number of people who receive services. First, the measurement of the need for mental health services in populations with known attributes has been greatly advanced by the Epidemiologic Catchment Area (ECA) studies.[8] Building on the EPA studies and the comorbidity studies[9] have developed a simple algorithm that uses census-type data to estimate the prevalence of severe mental illness in a population. The kinds of data used in this procedure are also widely available for insured populations. Second, a statistical procedure developed by the authors provides reliable estimates of the number of people who are represented in data sets from any number of service organizations or service sectors, even when these data sets do not contain unique client identifiers. Together, these two statistical tools can provide a powerful global measure of the amount of access to mental health services that is provided by specific managed care organizations, or in geographic regions (e.g., states or counties). Although these methodologies do not provide the kind of case-by-case matching that would support clinical intervention, they do provide the kind of valid and reliable population-based measures that are necessary for program administration and evaluation.

In the paragraphs that follow, this articl will describe this methodology and use the methodology to measure access to inpatient mental health care for one state. Access to inpatient mental health services across facilities (including private psychiatric, state, veterans, and general hospitals) will be measured for the adult population of the state as a whole and for age and gender subpopulations.

Subjects

The analysis that follows will focus on all episodes of inpatient mental health care to adult residents (aged 18 and over) of Vermont that occurred in Vermont or neighboring New Hampshire

during 1994. Data from Massachusetts and New York were excluded from this analysis because the month and day of birth of patients served by hospitals in these states was not included in the data set available to the research team. These two states, however, account for less than 2% of the mental health inpatient admissions for residents of Vermont during 1994. The institutions that are the focus of this study include 15 general hospitals in Vermont, 12 general hospitals in New Hampshire, the Vermont State Hospital, Vermont's one private psychiatric hospital, and its one Veteran's Administration Hospital. These institutions provided 58,948 days of inpatient mental health care in 3,089 episodes of hospitalization during the year. To address issues of geographic accessibility, general hospitals have been categorized as "local" (located in the same county as the patient) or "other" (located outside of the patient's county of residence).

Data on psychiatric hospitalization that occurred in Vermont's general hospitals and Veteran's Hospital as well as hospitals in neighboring states were obtained from a statewide hospital discharge data set that is maintained by the Vermont Department of Health. Records that describe episodes of hospitalization categorized under the Mental Health Major Diagnostic Category (MDC) were abstracted by Health Department staff and provided to the research team. Each record included the date of birth and gender of the patient, beginning and end dates for each episode of hospitalization, a facility identifier, and diagnostic codes associated with each episode. The records do not include a unique patient identifier. The general hospital data set includes information about 1,256 episodes of hospitalization (12,562 patient days) in local Vermont general hospitals, 1,073 episodes (12,325 patient days) occurring in other general hospitals, 553 episodes (5,874 patient days) in Vermont, and 520 episodes (6,451 patient days) in New Hampshire. This data extract also included 178 episodes (3,242 patient days) occurring at the Vermont Veteran's Hospital.

Data on psychiatric hospitalization of adults that occurred at the Vermont State Hospital (the state's only public psychiatric facility) were obtained from a standard State Hospital Inpatient Episode Data Set[10] that is maintained by the Vermont Department of Developmental and Mental Health Services. This data set contains information about the date of birth and gender of each patient, the beginning and end dates of each episode, and diagnostic codes. The Vermont State Hospital data set also includes a unique patient identifier that was used to validate the estimation procedures described below. The state hospital data set includes information about 402 episodes of hospitalization (27,823 patient days) that involve 342 unique individuals.

Data about episodes of hospitalization in the state's only private psychiatric hospital were obtained from a database extract provided to this project by that institution. This data set contains information about the date of birth and gender of each patient, the beginning and end dates of each episode, and diagnostic codes. The private psychiatric hospital data set also includes a unique patient identifier that was used to validate the estimation procedures described below. The private psychiatric hospital data set includes information about 180 episodes of hospitalization (2,996 patient days) that involve 146 individuals.

Method

The methodology used to measure access to inpatient mental health care involves a three-step process. First, an estimate of the prevalence of serious mental illness in the total population and for specific age and gender subpopulations was derived using Kessler's estimation procedure. Second, estimates of the total number of people who received inpatient mental health care and the number of people served by specific types of facilities were derived using probabilistic population estimation. Finally, a global measure of access to inpatient mental health care was derived by combining the prevalence and utilization measures.

The age and gender-specific estimates of the 12-month prevalence of severe mental illness among nonmetropolitan residents that were provided by Kessler and his colleagues[11] are used to arrive at approximate measures of the number of people at risk of psychiatric hospitalization during a year.

Kessler's age and gender-specific rates of severe mental illness for nonmetropolitan areas were used in conjunction with 1994 population estimates for the state of Vermont to estimate the number of people with severe mental illness during the year for each of six age-gender categories. These numbers provide the base to which we will compare inpatient mental health service utilization rates. In the future, the more detailed models being developed by Kessler and his colleagues will provide researchers with prevalence estimates that are sensitive to a wide range of universally available census variables at the tract level (e.g., ethnicity, income, marital status, and education).

Estimates of the number of people represented in the data sets that describe episodes of inpatient mental health care but do not contain a unique person identifier were derived using a statistical procedure based on the solution to the classic mathematical "coupon collector" problem.[12,13] The coupon collector problem was to determine the number of randomly distributed collector cards that needed to be acquired to complete a set. Feller's solution was based on the fact that the probability of adding a new card to the collection changes whenever a new card is added. In the problem being addressed here, the number of unique individuals is analogous to the number of collector cards necessary to complete the set, and the number of dates of birth is analogous to the number of different collector cards in the collection.

To measure the number of people represented in a data set that does not contain a unique person identifier, a probabilistic determination is applied. The original data set is aggregated into a data set that consists of gender/year-of-birth records. Each record includes the number of birthdays for the given gender/year-of-birth cohort. The number of people necessary to produce the observed number of birthdays is calculated using the following formula:

$$P_j(I) = \sum_{i=1}^{I} \frac{365}{365 - i},$$

where "P_j" is the population determination for cohort "j," and "I" is the number of days observed in the year. Confidence intervals for the estimate may be calculated using a similar procedure. Measurement of the total number of people represented in the complete data set and the confidence intervals for this estimate are obtained by combining the results for every year of birth and gender cohort in the original data set.

This statistic, known as *probabilistic population determination*, allows researchers to answer a basic question that has frequently remained unanswered because existing data sets lack unique person identifiers: How many people are served by the organization or service system? The ability to measure (with known confidence intervals) this basic parameter of service systems is particularly valuable where issues of confidentiality or organizational complexity limit the availability of unique identifiers. This *probabilistic population determination* has been tested in data sets from state hospitals, correctional programs, and child-protective services that contained unique client identifiers. Analyses of data sets found that confidence intervals include the true value at the predicted rate.[14]

A simple and powerful measure of access to services may be obtained by dividing the number of people who receive services (utilization) by the number of people who have a potential need for the services (prevalence). The results of this calculation will be referred to as the access ratio. Where unduplicated counts of the number of people served are available (e.g., people covered by a single insurer) utilization can be directly measured without the use of probabilistic population estimation. Where integrated data sets with unique client identifiers do not exist such as when services that are not covered by an insurance plan are an issue or when the policy questions involve cross sector utilization, however, probabilistic population estimation is a critical element in this procedure.

Access ratios may be calculated for a population as a whole and for specified demographic subpopulations, as will be demonstrated below. Access ratios may also be calculated for clinical subpopulations (people with severe depression or substance abusers, for instance). Access ratios may be calculated for members of different managed care plans. When historical data on utilization

Table 1

Access to Inpatient Mental Health Care by Age and Gender Vermont, 1994

		Prevalance		Utilization		
	Total Population[a]	SMI[b] Rate[c]	People With SMI[d]	No. of People Hospitalized[e]	Rate per 100,000 Population	Access Ratio[f]
Total	434,647	0.0477	20,724	2,155 ± 16	496 ± 4	.10
Gender						
Male	210,188	0.0380	7,986	940 ± 10	447 ± 5	.12
Female	224,459	0.0567	12,738	1,215 ± 12	541 ± 6	.10
Age						
18-34	144,849	0.0589	8,530	691 ± 9	477 ± 7	.08
35-54	174,210	0.0508	8,858	926 ± 12	532 ± 7	.10
55+	115,588	0.0289	3,336	538 ± 5	465 ± 4	.16

a. 1994 Vermont adult population estimates from the Department of Health.

b. SMI = severe mental illness.

c. Estimates of the number of people with severe mental illness based on prevalence estimates from Kessler et al. (1996 **[1995? REFERENCE 11? IF NOT, PLEASE PROVIDE COMPLETE REFERENCE INFORMATION.]**).

d. (SMI Rate) × (Total Population).

e. Based on probabilistic population estimates.

f. (Number of People Hospitalized) / (People With SMI).

are available, access ratios can be calculated for different time periods (e.g., before and after implementation of managed care) so that the impact of policy changes on access can be clearly measured.

Results

During 1994, a total of 2,155 (±16) Vermonters received inpatient mental health services in Vermont or New Hampshire. During this same period, an estimated 20,724 Vermont residents experienced a serious mental illness. The ratio of utilization to prevalence, the access ratio, in Vermont during this period was .10.

The access of women to inpatient mental health services was lower than the access of men (.10 versus .12) despite substantially higher utilization rates by women. Women's per capita utilization was more than 20% greater than that of men (541 ± 6 vs. 447 ± 5), but the estimated prevalence of serious mental illness was almost 50% greater for women than for men (.0567 versus .0380). There were substantial differences in access to inpatient mental health services between the different age groups. Young adults (18-34) had the lowest access ratio (.08). Middle-aged adults (35-54) had greater access (.10). Older adults (55 and over) had substantially greater access to inpatient mental health care (.16) than the other age groups. Again, the access ratios provide a very different picture than the simple utilization rates. The utilization rates for the three age groups are fairly similar, whereas the access ratios indicate wide discrepancies in the access to inpatient mental health services by people who have potential need for inpatient care in these three age groups.

The patterns of accessibility to inpatient mental health services that are evident on a statewide basis were not always reflected in the different types of facility. Men had much greater access to the

Table 2

Access to Inpatient Mental Health Care by Hospital Type and Gender Vermont, 1994

		Utilization		
	People With SMI[a]	No. of People Hospitalized[b]	Rate per 100,000 Population	Access Ratio[c]
Total	20,724	2,155 ± 16	496 ±4	.10
Local general hospitals	20,724	955 ± 7	220 ± 2	.05
Male	7,986	375 ± 4	179 ± 2	.05
Female	12,738	580 ± 6	258 ± 3	.05
Out-of-county general hospitals	20,724	807 ± 7	186 ± 2	.04
Male	7,986	254 ± 3	121 ± 1	.03
Female	12,738	552 ± 6	246 ± 3	.04
State hospital	20,724	342	79	.017
Male	7,986	216	103	.027
Female	12,738	126	56	.010
Private psychiatric	20,724	146	34	.007
Male	7,986	52	25	.007
Female	12,738	94	42	.007
Veterans Administration[d]	20,724	138 ± 2	32 ± 0	.007
Male	7,986	135 ± 2	64 ± 1	.017
Female	12,738	3 + 0	1 + 0	.000

a. Estimates of the number of people with severe mental illness (SMI) based on prevalence estimates from Kessler et al. (1996 [1995?]).

b. General hospital, Veterans Administration, and total utilization based on probabilistic population estimates. State hospital and private psychiatric utilization are "actual," based on unique identifiers. The "actual" utilization rates fell within the probabilistic population estimates in every case.

c. (Number of People Hospitalized) / (People With SMI).

d. Veterans Administration Hospital in Vermont.

state hospital and to the veterans hospital than women, whereas women had greater access to general hospitals.

The state hospital and the private psychiatric hospital were about equally accessible to people in each of our age groups. Vermont's Veterans Hospital had very little access by people under 35 years of age and was somewhat less accessible to veterans in the 35-54 age group (Vietnam-era veterans) than to older veterans. Both local and other general hospitals were more accessible to older people (55 and over), but the difference was much greater for local general hospitals than for general hospitals outside of the patients' county of residence.

Discussion

The findings of this study of access to inpatient mental health care in one state provide an objective quantitative measure of access and identify patterned variation in access that can be used as comparative benchmarks for future work in this area. The overall findings indicate that 1 out of

Table 3

Access to Inpatient Mental Health Care by Hospital Type and Age Vermont, 1994

	People With SMI[a]	Utilization: No. of People Hospitalized[b]	Utilization: Rate per 100,000 Population	Access Ratio[c]
Total	20,724	2,155 ± 16	496 ± 4	.10
Local general hospitals	20,724	955 ± 7	220 ± 2	.05
18-34	8,530	306 + 4	211 + 3	.04
35-54	8,858	366 ± 6	210 ± 3	.04
> 55	3,336	283 + 3	245 + 3	.08
Out-of-county general hospitals	20,724	807 ± 7	186 ± 2	.04
18-34	8,530	286 ± 4	197 ± 3	.03
35-54	8,858	363 ± 5	208 ± 3	.04
> 55	3,336	158 ± 2	137 ± 2	.05
State hospital	20,724	342	79	.017
18-34	8,530	131	90	.015
35-54	8,858	160	92	.018
> 55	3,336	51	44	.015
Private psychiatric	20,724	146	34	.007
18-34	8,530	51	35	.006
35-54	8,858	61	35	.007
> 55	3,336	34	29	.010
Veterans Administration	20,724	138 ± 2	32 ± 0	.007
18-34	8,530	8 + 0	6 + 0	.001
35-54	8,858	86 + 2	49 + 1	.010
> 55	3,336	44 + 1	38 + 1	.013

a. Estimates of the number of people with severe mental illness (SMI) based on prevalence estimates from Kessler et al. (1996 [1995?]).

b. General hospital, Veterans Administration, and total utilization based on probabilistic population estimates. State hospital and private psychiatric utilization are "actual," based on unique identifiers. The "actual" utilization rates fell within the probabilistic population estimates in every case.

c. (Number of People Hospitalized) / (People With SMI).

d. Veterans Administration Hospital in Vermont.

every 10 Vermonters who have a severe mental illness received mental health care in an inpatient setting during 1994. Future research will indicate whether this access ratio is higher, lower, or about the same as for other geographic regions. Future research will also indicate whether the 1990s were a period of increasing access, decreasing access, or stable access, compared to the years that came before and the years that follow. Fortunately, the widespread availability of the data necessary and the relative efficiency of the statistical procedures used to produce access ratios can facilitate the accumulation of comparative information about access to services. Future researchers, however, will need to be sensitive to the possibility that advances in prevalence estimation techniques may have an influence on the measurement of access ratios.

The results of this study also indicate that there are patterned differences in access to inpatient mental health care overall and that accessibility varies among the different types of facility. In Vermont, older people have substantially greater access, whereas young adults have less access to inpatient care relative to their level of need. Women have less access to the state hospital but more access to out-of-county general hospitals than men. Men in the age group than includes most Vietnam-era veterans have less access to inpatient mental health care in the veterans hospital than older men. Future research should attempt to understand the reasons for these differences. Are the needs of the underserved populations being met by functionally equivalent alternatives? Are the differences in access related to economic factors (e.g., insurance coverage), psychological factors (e.g., the rates at which people seek inpatient care), social factors (the degree to which people are encouraged to use inpatient services), or institutional factors (the degree to which inpatient facilities are willing to serve people in different demographic categories)? Some of these questions, and others that will be raised by future research on access to mental health services, can be addressed by more detailed analysis of access patterns found in administrative data sets. Other questions, will be best addressed using more traditional survey and qualitative methodologies that can shed light on the specific mechanisms that produce the patterned variation in access to care.

Future research should also focus on the access of people in other demographic categories such as ethnic and income groups, and people in various clinical categories. Increasing availability of information about the prevalence of specific disorders (e.g., depression, schizophrenia and other psychoses, substance abuse) should encourage more clinically oriented measures of access to care. Finally, the concurrent evaluation of the impact of clinical and demographic factors on access to care can provide a powerful portrait of the dynamics of mental health service systems.

Implications for Mental Health Services Delivery

Implementation of managed care programs in mental health service systems will be accompanied by increased pressure on mental health administrators to produce reliable comparative measures of access to care. Demands for such measures can be expected to come from consumers and family members, other advocates, and funding agencies. The access ratio provides a powerful global measure of access to services that can help mental health administrators evaluate their programs and meet external demands for accountability in this important area.

The access ratio may be used to evaluate the impact of managed care in a number of ways. The statistic can be used to compare the level of access to care that is provided by different managed care organizations. Levels of access to care provided under managed care can be compared with levels of access that were provided in the same geographic region under previous service system models. Perhaps most important, the degree of access to care can be efficiently measured on a routine basis and the results can be used to measure changes in levels of access to care. These results can be used for program management and can become part of public "Report Card" documents.

Although the access ratio was applied to inpatient care in the example presented above, the procedure can also be applied to measuring access to any service components (e.g., partial hospitalization, vocational programs, psychosocial programs, or consumer-operated services) for which comprehensive data sets are available. The measurement of overall access to generic outpatient services is probably not feasible at this time because comprehensive data sets do not exist. The measurement of access to a combination of service components, however, can provide a substantially broader measure of the degree of access to mental health care that is available to general populations, demographic and clinical subpopulations, and to people in different regions of a service area.

The appropriate use of this and other quantitative measures of service system performance is key to their contribution to the improvement of systems of care. In and of themselves, quantitative indicators tell mental health administrators the degree to which a phenomenon exists and whether

it is greater or lesser than in some other time or place. Quantitative indicators do not, in and of themselves, tell administrators what is desirable, undesirable, or optimal. One framework for the use of quantitative indicators in mental health program administration is provided by the Total Quality Improvement model.[15] Under this model, quantitative indicators are used to identify areas for more detailed examination, rather than evidence that a problem exists. When the practice implications of policy are clear, quantitative indicators are used to measure movement toward (or away from) desired states. Used appropriately, quantitative indicators of system performance, such as the global measure of access to mental health services that was introduced here, can be an invaluable tool for improving systems of care.

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