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Aligning Measurement-based Quality Improvement with Implementation of Evidence-based Practices

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Abstract Two models for improving quality of care have been adopted by segments of the US mental healthcare system. Measurement-based quality improvement (MBQI) is routinely conducted by many provider organizations (including practices, hospitals and health plans), either at their own initiative or at the behest of payers and oversight organizations. Systematic implementation of evidence-based practices (EBPs) is being undertaken by several state mental health authorities and by other systems of care, working in collaboration with services researchers and stakeholders. Although they are distinct approaches, MBQI and EBP implementation (EBPI) overlap in their objectives and means. This article explores the degree to which these two approaches are aligned and whether further coordination between them could yield greater effectiveness or efficiency.

Introduction

Over the last few years, initiatives to expand the use of evidence-based practices (EBPs) in mental health care have emerged from partnerships among state and federal agencies, foundations and academic researchers. These activities have led to the identification of underused or incompletely implemented EBPs, the development of toolkits to support adoption of EBPs, and demonstration projects of methods supporting rigorous implementation across healthcare systems.

The movement to support EBP implementation (EBPI) has emerged separately from and largely in parallel to ongoing efforts to encourage provider organizations to conduct routine, measurement-based quality-improvement (MBQI) activities. A wide range of provider organizations in mental health care—including clinics, hospitals and health plans—conduct MBQI, either on their own initiative or in response to external requirements.

Twenty years of research studies have demonstrated that the quality of mental health care in the US varies widely (Hermann, 2005a). Findings include significant gaps between clinical practice and evidence-based treatment recommendation as well as wide variation in other clinical processes of care. EBPI and MBQI are both methods of improving quality of care. Although they are distinct approaches, they overlap in their objectives and means. This article explores the degree to which these two approaches are aligned and whether further coordination between them could yield greater effectiveness or efficiency. Specifically, we ask whether MBQI could contribute more extensively to implementation of evidence-based practices.

Evidence-based Practice Implementation

Evidence-based practices have been defined as the "treatments and services that have been scientifically

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confirmed to improve outcomes'' (Lehman, Goldman, Dixon, et al., 2004). Reports by the US Surgeon General (US Department of Health and Human Services 1999), the Institute of Medicine (2001a) and the President's New Freedom Commission on Transforming Mental Health Care (The President's New Commission 2003) each emphasize the need to expand use of EBPs in mental health care. Specific EBPs cited by these organizations are listed in Table 1. Nearly all have been shown by well-controlled clinical trials to lead to superior outcomes. However, research studies have found that adoption of EBPs, by themselves, is insufficient. For several of these interventions, the clinical outcomes achieved are strongly associated with the fidelity of the intervention to the empirically proven model (Jerrell & Ridgely, 1999; McDonnell, Nofs, Hardmann, et al., 1989; McHugo, Drake, Teague, et al., 1999). Thus, initiatives to encourage EBP use seek to encourage rigorous implementation in addition to expanded adoption.

A number of groups are working to expand adoption and implementation of EBPs. One of the most ambitious efforts is the Evidence-Based Practices Project, which has produced comprehensive toolkits encompassing training, social marketing and fidelity measurement for several EBPs (Table 1). A demonstration project currently underway in seven states is evaluating the feasibility and effectiveness of their implementation model.

provider organizations, to identify quality problems, diagnose their underlying causes and achieve improvements through changes to the content or work-processes of care (Berwick, 1989; Juran, 1988) Principles of MBQI emphasize broad participation among clinicians, managers and staff involved in delivering care, measurement and statistical analysis, problem solving through inductive reasoning, and progress through trial and error. There are a number of different models of MBQI—including Continuous Quality Improvement (CQI), Total Quality Management (TQM), and Six-Sigma—but each share common features of measurement, diagnosis and intervention (Hermann, 2005b).

MBQI has been widely adopted by hospitals, health plans and other organizations that provide mental healthcare. A national survey of 1,928 hospitals found that as of 1998 more than 90% of US hospitals had formal quality improvement programs (Shortell, Zazzali, & Dubbs, 1999). Adoption of MBQI has been driven in part by the urgings of influential national bodies (Institute of Medicine, 2001a, 2001b; President's Advisory Commission, 1998) and partially in response to requirements imposed by payers, accreditors and other oversight groups. The investment of resources in MBQI—time, money, information-systems support—has been considerable. Hospitals surveyed estimated their direct costs at an average of $200,000 per year.

Measurement-based Quality Improvement

MBQI incorporates routine measurement of structures, processes and outcomes of care, typically by

Commonalities and Differences

EBPI and MBQI share common features. Yet they also differ in ways ranging from minor to substantial. Ini-

Table 1 Evidence-based practices proposed for expanded adoption and implementation

Evidence-based practices	Evidence-based practices project**	SAMHSA evidence-based practice toolkits***	President's New Freedom Commission****
Assertive community treatment	X	X	X
Family psychoeducation	X	X	X
Training in illness self-management	X	X	
Supported employment	X	X	
Integrated dual disorders treatment	X	X	
Medication management*	X		X
Cognitive & interpersonal therapies*			X
Medication algorithms			X
Collaborative treatment in primary care			X
Preventive interventions for children at risk			X
Treatment foster care			X
Parent-child interaction therapy			X
Multi-systemic therapy			X

* for specific conditions and outcomes; **Implementing Evidence-based Practices Project, 2006; ***Substance Abuse and Mental Health Services Administration, 2006b; ****The President's New Freedom Commission, 2003

tiatives to implement EBPs currently focus on a relatively small number of "practices", mostly interventions that involve multiple components and a mix of providers. Examples include assertive community treatment, supported employment and integrated treatment for comorbid mental and substance-use disorders (Drake, Goldman, Leff, et al., 2001). MBQI has been applied to broader range of clinical "processes". These include components of multi-faceted programs as well as point processes that address singular elements of care, such as detection rates of frequently undiagnosed conditions, waiting times for services and adherence rates to specific types of medications. In contrast to EBPI, MBQI addresses a wider range of clinical processes—in addition to treatment, MBQI has been applied to detection, access, assessment, continuity, coordination and safety of care. These processes may lack explicit research evidence demonstrating links to improved outcomes, but many have been recognized as vital components of high quality care (Hermann, 2005b).

Measurement is fundamental to both MBQI and EBPI. MBQI can be based on measures of structures of care (characteristics of clinicians, facilities and systems associated with quality), technical processes (objectively evaluated attributes of interactions between patients and the healthcare system), interpersonal processes (attributes of interactions from the perspective of patients and families), and outcomes (the results of these interactions on patients, including their symptoms, functioning, behaviors and quality of life). In practice, MBQI activities in mental health care have tended to focus on technical processes and, to a lesser extent, on interpersonal processes and clinical outcomes (Hermann, 2005b). In EBPI, measurement is used routinely to assess the fidelity of implementation. It has also been used to examine adoption rates of EBPs and outcomes of patients receiving evidence-based services.

EBPI and MBQI diverge in the locus of where interventions are developed. In general, EBPI can be considered a top–down process, while MBQI is often conducted from the bottom up. Consider this idea in the context of the IOM's depiction of different levels of the health care system in quality improvement (QI) activities (Fig. 1) (Berwick, 2002; Institute of Medicine, 2001a). Closest to the delivery of care is the *microsystem*, "a small team of people, combined with their local information system, a client population, and a defined set of work processes" (Berwick, 2002). Examples include an inpatient psychiatric unit or multidisciplinary outpatient team. At an intermediate level, the local *provider organization*—for example, a hospital or
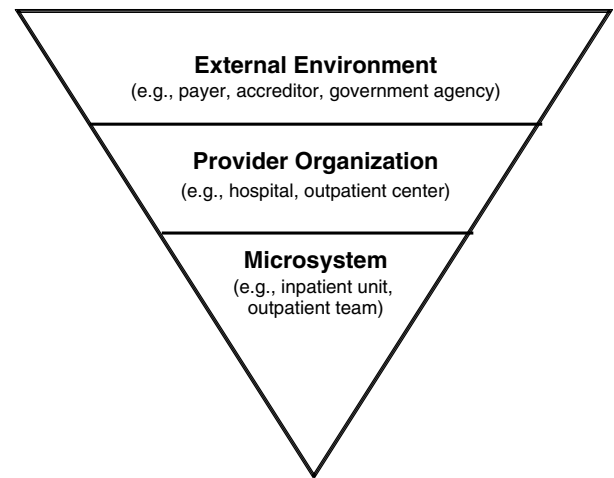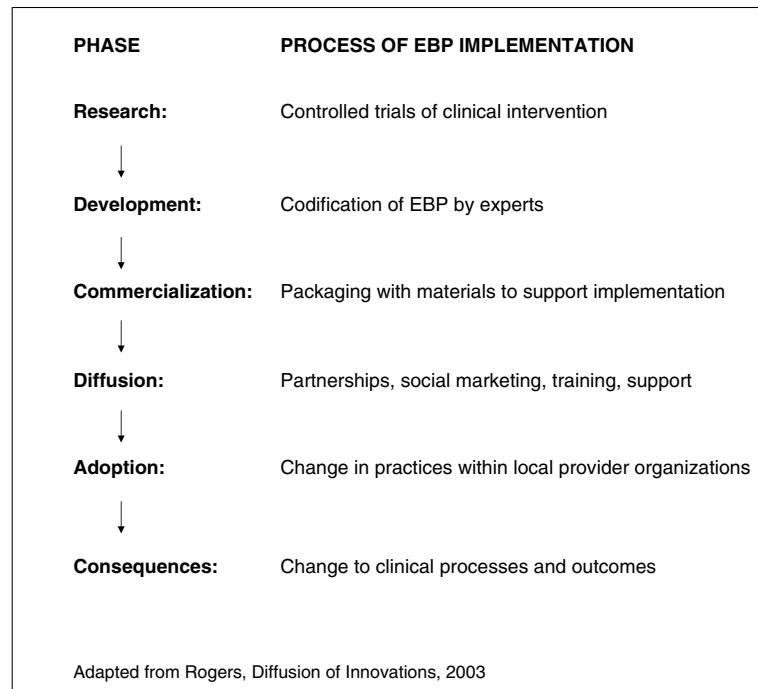

Fig. 1 Levels of the healthcare system participating in quality improvement

outpatient center—is comprised of component microsystems and often directs, coordinates and/or supports their QI activities. The *external environment* is comprised of groups that influence providers' conduct of QI, including clinical researchers, guideline developers, clinician and consumer organizations, payers, accreditors and other oversight agencies.

In many respects, implementation of EBPs follows Roger's model of innovation diffusion (Fig. 2) (Rogers, 2003). This is a top–down model in that an EBP is defined, codified and packaged within the external environment by researchers, often with extensive input from other stakeholders. The EBP diffuses into provider organizations through activities that can range from educational to managerial, or to incorporating social marketing, government regulations or financial incentives. Within a provider organization, the EBP is implemented by mangers, clinicians and staff. Implementation, ideally, leads to changed clinical processes and improved patient outcomes. In contrast, MBQI represents a bottom–up approach to organizational change. MBQI begins with a local process of inquiry within the provider organization or a component microsystem. Ideally, problems are identified, underlying causes hypothesized, and interventions are developed. Approaches to improving care can be drawn from internal and external sources, but are filtered through a local process of problem solving and testing through implementation. Solutions that appear effective in one microsystem may subsequently be adopted elsewhere in the organization or by peer organizations. In this way, diffusion proceeds from the bottom up. Research is at an early stage as to whether local development of QI interventions is more or less effective than more centralized, expert-driven development (Rubenstein,

Fig. 2 EBP implementation as a top-down process of innovation diffusion

PHASE	PROCESS OF EBP IMPLEMENTATION
Research:	Controlled trials of clinical intervention
↓	
Development:	Codification of EBP by experts
↓	
Commercialization:	Packaging with materials to support implementation
↓	
Diffusion:	Partnerships, social marketing, training, support
↓	
Adoption:	Change in practices within local provider organizations
↓	
Consequences:	Change to clinical processes and outcomes

Adapted from Rogers, Diffusion of Innovations, 2003

Parker, Meredith, et al., 2002; Zaltman, Duncan, & Holbek, 1984).

These distinctions between EBPI and MBQI are by no means absolute. When provider organizations implement EBPs, they may address obstacles using participatory problem-solving, testing and reassessment—processes characteristics of MBQI. Similarly, in addressing a local problem via MBQI, inpatient staff would ideally consult the research literature to see if evidence-based approaches to addressing the problem have been established. Although EBPI begins with externally developed interventions, provider organizations may need to customize it to address local circumstances. Similarly, while provider organizations and microsystems make many of the formative decisions in the course of an MBQI initiative, their priorities are sometimes shaped by requirements from external groups to address specific measures.

Is MBQI Aligned with the Goals of Evidence-based Practice Implementation?

As two major approaches to improving the quality of mental healthcare, greater alignment between MBQI and EBPI may be desirable. Quality problems are prevalent, resources for QI are limited, and providers face growing expectations from many quarters to improve care. Under these conditions, examining areas of overlap in means and goals could provide a path toward greater effectiveness and efficiency of these activities. There are many potential indirect links between MBQI and EBPI; for example, gains in organizational leadership, structures and functioning attained through the MBQI would likely enhance the organization's readiness to adopt and implement EBPs. There are also opportunities for more direct convergence. MBQI contributes to implementation of EBPs to the extent that provider organizations choose to address evidence-based processes via MBQI and that these activities result in meaningful improvement in care and outcomes. Accordingly, in this section, we address the following three questions:

(1) Do provider organizations select objectives and measures for MBQI that address evidence-based processes of care?
(2) Do external organizations that establish standardized measures for MBQI emphasize evidence-based care?
(3) Do local provider organizations and their component microsystems execute MBQI effectively?

Do Provider Organizations Select Objectives and Measures for MBQI that Address Evidence-based Processes of Care?

In some cases, provider organizations are free to select the measures that shape and guide their MBQI activities. To the extent that they select measures addressing

underuse, overuse and misuse of EBPs, their activities potentially contribute to advancing evidence-based mental health care. Despite the national investment in MBQI, we have limited information on what topics mental health provider organizations address. A national inventory of quality measures proposed for MBQI in mental health found that as of 2001, only 7% of technical process measures examined processes supported by randomized controlled trials—the typical threshold for establishing an "evidence-based practice". An additional 22% were supported by less rigorous studies, such as retrospective analyses of observational data. 61% lacked any basis in research evidence (Hermann, 2005b). The implication—that evidence-based processes of care may not play a major role in MBQI in mental health—is further supported by an analysis of inventory data finding that measures lacking research support were more likely to be used in routine MBQI activities (Hermann, Leff, Palmer, et al., 2000). An intervening factor was that measures of evidence-based processes imposed a higher data-collection burden, often requiring information from medical records or patient surveys rather than relying only on pre-existing administrative databases. A more definitive understanding of the objectives of mental health providers' MBQI activities would require information directly from provider organizations—the subject of a study in progress that we describe further below.

Do External Organizations that Establish Standardized Measures for MBQI Emphasize Evidence-based Care?

In recent years, external organizations have come to require provider organizations to adopt specific measures for MBQI and report their results. Groups mandating these measures—e.g., payers, accreditors and government agencies—employ a range of mechanisms to encourage improved performance: providing feedback comparing an organization's performance to its peers; establishing numerical expectations for improvement; linking financial incentives to performance; and disseminating results to consumers and/or purchasers. As the number of required measures has grown, external groups have begun working together to select and implement standardized "core measures" for specific sectors and settings of care. Core measures are intended to reduce reporting burdens on providers, promote comparability of results though uniform specifications, and generate data from large samples to permit further testing and development (Hermann, 2005b; Hermann & Palmer, 2002; Hermann, Palmer, Leff, et al., 2004).

To what extent do national core measures for mental health care assess evidence-based processes of care? Table 2 lists technical process measures included in three prominent core measure sets: NASMHPD Research Institute's (NRI) Performance Measurement System for public psychiatric hospitals (NRI, 2005), National Committee for Quality Assurance's (NCQA) HEDIS measures for health plans (NCQA, 2005), and the Joint Commission on Accreditation of Healthcare Organization's (JCAHO) Hospital-Based Inpatient Psychiatric Services Candidate Core Measure Set (JCAHO, 2006). Drawing from methods and results from the national inventory (Hermann, 2005b), Table 2 reports the evidence basis of these measures. Few of the core measures assess evidence-based processes of care. Of 23 measures, only 2 (9%) are supported by rigorous evidence linking the process with patient outcomes. Five additional measures (22%) are supported by less rigorous evidence. Moreover, little overlap in topics is seen when comparing the core measures in Table 2 with the list of EBPs in Table 1 that organizations have designated as underused.

This observation in no way diminishes the value of current core measures for mental healthcare, many of which address critically important processes with known quality deficits. However, these findings further suggest that MBQI in mental health care is decoupled from initiatives to implement EBPs. One other core measure set, currently under development, has recognized this gap and begins to bridge it. SAMHSA's National Outcome Measures (NOMs) will be reported by state mental health authorities (SMHAs) that receive Federal block grant funds for mental health services. NOMs includes a measure that begins to quantify the use of EBPs with the intent of encouraging increased use: "the number of persons receiving evidence-based services/number of evidence-based practices provided by the state (Substance Abuse and Mental Health Services Administration, 2006a). It is a promising first step toward finer-grained assessment of underuse, overuse and misuse.

Do Local Provider Organizations and their Component Microsystems Execute MBQI Effectively?

Controlled trials of MBQI in provider organizations (mainly hospitals) have provided some evidence of effectiveness, but not consistently. Systematic reviews of these studies found "pockets of improvement" rather than widespread changes across the organization (Blumenthal & Kilo, 1998; Shortell, Benett, & Byck, 1998; Shortell, O'Brian, Carman, et al., 1995;

Table 2 Evidence basis of quality measures from standardized core measure sets for mental health care (JCAHO, 2006; NRI, 2005); NCQA, 2005

Quality measures	Evidence rating
% patients with 12-week continuation after initiation of antidepressant for major depression	A
% patients with 6-month continuation after initiation of antidepressant for major depression	A
% patients with 3 follow-up visits during 12-week acute treatment of depression	B
# elopements among inpatients hospitalized for psychiatric disorder per 1000 inpatient days	B
# medication error events among inpatients hospitalized for psychiatric disorder per 100 episodes of care	B
% inpatients discharged on multiple antipsychotic medications	B
% patients with AOD disorder who receive 2 additional AOD services within 30 days of treatment initiation	B
% patients with AOD dependence initiating treatment within 14 days of diagnosis	C
% inpatients diagnosed as having co-occurring psychiatric and substance-use disorders who attend a treatment intervention for SUD	C
% inpatients hospitalized for psychiatric disorder readmitted within 30 days of discharge	C
# injury events among inpatients hospitalized for psychiatric disorder per 1000 inpatient days	C
# injury events among staff on inpatient psychiatric service per 1000 inpatient days	C
Mean # scheduled medications per inpatient on the last day of the reporting period or the last day of the episode	C
% inpatients hospitalized for psychiatric disorder who were restrained during hospital stay	C
% inpatients hospitalized for psychiatric disorder who were secluded during hospital stay	C
% episodes with changes in scheduled psychotropic medication regimen during the last 3 days of the episode	C
% inpatients hospitalized for psychiatric disorder and receiving antipsychotic medication who received a second-generation antipsychotic	C*
% inpatients with assessment of risk, substance abuse, trauma and patient strengths	C
% inpatients with discharge information provided to community providers	C
% children treated with ADHD medication with follow-up visit during 30-day initiation phase	C
% children treated continuing on ADHD medication with 2 additional visits in 9 months following initiation phase	C
% inpatients with a follow-up visit within 7 days after hospitalization for mental disorder	C
% inpatients with a follow-up visit within 30 days after hospitalization for mental illness	C

* Evidence base with regard to atypical versus traditional antipsychotics is mixed and still evolving. (Gardner, Baldessarini, & Waraich, 2005; Lieberman, Stroup, McEvoy, et al., 2005)

Key: ADHD = Attention Deficit Hyperactivity Disorder; AOD = Alcohol and other Drug; SUD = Substance Use Disorder

Note: AHRQ rating categories were used to assess the research evidence supporting the association between the underlying clinical process and patient outcomes: (A) good research evidence such as well-designed randomized controlled trials; (B) fair research-based evidence such as retrospective analyses of observational data; (C) no research evidence, principally clinical consensus or opinion. Methods for the evidence-rating process and research citations for individual measures have been published previously.(Hermann, 2005b; Hermann, Palmer, Leff et al., 2004)

Shortell, Levin, O'Brian, et al., 1995). Most reports focused on general medical care rather than mental healthcare; the few studies addressing mental health report similarly mixed results (Brown, Shye, McFarland, et al., 2000; Goldberg, Wagner, Fihn, et al., 1998; Pellegrin, Carek, & Edwards, 1995). Less is known about the effectiveness of *routine* MBQI–conducted outside of the strictures of controlled trials. Case reports have reported successful outcomes, yet anecdotal evidence suggests that some proportion of MBQI activity is intended primarily to satisfy oversight requirements rather than to achieve meaningful change (Hermann, 2005b). Little improvement has been observed in the evidence-based processes that have been the subject of national performance monitoring in recent years (Druss, 2004; National Association of State Mental Health Program Directors Research Institute 2006a, 2006b).

Modifying MBQI to Advance Implementation of EBPS

Although more data are needed, collectively these findings suggest that MBQI has limited direct impact on evidence-based mental health care. What steps would allow MBQI to contribute more substantially? First, evidence-based care would need to be a more significant factor in the selection of quality measures for national core sets. Second, we need to identify and address impediments to effective MBQI.

Selecting Measures

With increasing consolidation and standardization of quality measures, there are expanded opportunities to steer provider organizations towards evaluating and improving evidence-based care. There is no shortage of

measures or methods to support these activities. The National Guideline Clearinghouse includes 140 practice guidelines summarizing research evidence and expert consensus in support of specific mental health practices (Agency for Healthcare Research and Quality, 2006). Systematic methods are available to develop measures of guideline conformance (Mittman, Hilborne, & Brook, 1994; Palmer & Banks, 1995). Dozens of studies have demonstrated the reliability and utility of measures that assess underuse, overuse and misuse of mental health treatment (Hermann, 2005a).

Furthermore, each of the major initiatives to identify and implement standardized core measures include "evidence basis" as one of the desired attributes that guide their selection of measures. Why, then, do so few of the resulting core measures address evidence-based care? Largely because this attribute conflicts with other goals of measure selection, including representation of a broad range of interventions, conditions and populations, and minimizing the burden of data collection (Hermann & Palmer, 2002). Selecting core measures necessarily requires trade-offs among these considerations and decisions are made through consensus among diverse stakeholders with different, often competing priorities. Thus, while psychiatrists may call for measures of appropriate medication use, clinicians from non-prescribing disciplines may favor a focus on other therapy and other psychosocial interventions, consumer groups may advocate for measures of participatory decision-making or recovery, payers may be interested in efficiency, and facilities charged with reporting measure results may want to limit their burden to measures that can be constructed from pre-existing administrative data. While this is a simplification, what is noteworthy is that amid the give and take among stakeholders, evidence-based practice has thus far not prevailed.

One step would be for core-measure initiatives to include explicit evidence ratings for each measure under consideration and to assess the distribution of measures comprising a proposed core set by evidence level. This approach was taken by a multi-stakeholder panel that employed a formal consensus development process to balance competing considerations. Among the 28 core measures selected by the panel, 57% were based on research evidence (Hermann et al., 2004).

Foremost among measures that should be considered are those that assess EBPs that have been identified as underused or inadequately implemented, including those listed in Table 1. One type of measure of EBPs assesses "practice penetration", the proportion of individuals eligible for an EBP that receive the intervention (Torrey, Finnerty, Evans, et al., 2003).

For example, a measure proposed to evaluate assertive community treatment (ACT) use examines the proportion of individuals with multiple hospital admissions and/or ER visits for schizophrenia over a 12 month period who were enrolled in an ACT program (APA Task Force on Quality Indicators, 2002). Although neither fully sensitive nor fully specific, such a measure can preliminarily identify regions or systems of care with low penetration rates. More-detailed evaluation could subsequently identify barriers to greater penetration, which may include lack of availability of ACT, waiting lists for enrollment, failure of inpatient or ER staff to identify and enroll eligible candidates, or poor acceptance of ACT by patients. Another type of measure assesses the average fidelity score of programs that have implemented EBPs. Standardized rating scales have been developed for many of the interventions in Table 1 that assess their fidelity to empirically based models. Findings of low fidelity scores among facilities, SMHAs, or geographic regions should prompt further assessment of implementation and spur improvement activities.

Candidate core measures should not be limited to formally designated EBPs but should encompass a broader array of evidence-based processes that have been subject to underuse, overuse or misuse. Research studies reporting wide variations in quality of mental health care such as the Schizophrenia PORT, RAND's quality of care studies, and studies of care for co-occurring medical and substance-use disorders—provide a rich trove of potential measures to guide future improvements in care.

The burden of data collection for these measures is a legitimate concern, but should prompt parsimony rather than exclusion. Just as other medical disciplines have reached into medical records to implement core measures of evidence-based treatment for myocardial infarction and diabetes, mental healthcare should similarly invest in quality measurement to demonstrate and improve evidence-based practice. It has been suggested that these activities should await adoption of electronic medical records (EMR), but their diffusion is proceeding slowly. In the meantime, intermediate steps toward making our paper-based records more structured and consistent would facilitate data abstraction for quality-assessment purposes.

Understanding and Enhancing the Effectiveness of MBQI

Also needed is a more comprehensive understanding of factors that influence the effectiveness of MBQI. Researchers have begun to examine mental health

clinicians' attitudes toward MBQI (Valenstein, Mitchinson, Ronis, et al., 2004) and evidence-based practices (Aarons, 2004; McGovern, Fox, Xie, et al., 2004; Rees, Sipos, & Harrison, 2002) as well as provider organizations' readiness to change (Lehman, Greener, & Simpson, 2002). From studies conducted in the general medical sector, we know something about organizational and external characteristics associated with greater QI implementation. For instance, hospitals having "group cultures" (emphasizing teamwork and support) and "developmental cultures" (emphasizing risk taking and developing workers' potential) have been associated with greater implementation while hierarchical cultures are associated with lesser implementation. Hospitals with strategic approaches to QI that balance preparation with the ability to take advantage of emerging opportunities have also achieved greater levels of implementation (Shortell, O'Brian, Carman, et al.,1995). Several studies have found leadership to be critical to the success of QI, including participation of senior managers and physicians in QI activities and the role of "opinion leaders" in championing change (Lammers, Creiten, Gilman, et al., 1996; Parker, Wubbenhorst, Young, et al., 1999; Soumerai, McLaughlan, Gurwitz, et al., 1998). Among external factors, studies have demonstrated that providing clinicians with feedback on their performance in comparison to their peers can lead to improved performance (Jamtvedt, Young, Kristofferson, et al., 2003). Kiefe et al. (2001) has shown that providing

feedback in comparison to results achieved by the best-performing providers can be more effective than providing feedback comparing individual to average results (Kiefe, Allison, Williams, et al., 2001). Studies and demonstration projects currently underway are examining whether MBQI is more effective when results are linked to financial incentives (Rosenthal, Fernandopulle, Song, et al., 2004).

MBQI may also be influenced by finer-grained factors. Building on previous work, we have developed a model hypothesizing that MBQI effectiveness is associated with the fit between a provider organization and the clinical objectives and measures it adopts (Fig. 3). Funded by the National Institute of Mental Health (R34 MH074788), we are testing the model in a study of inpatient MBQI activities conducted by 32 hospital psychiatry departments in Massachusetts and California. First, we will examine characteristics of the QI objectives and measures adopted by psychiatry departments: what structures, processes and/or outcomes do they seek to improve? To what extent do these activities address evidence-based processes of care? Second, we will examine the fit between these objectives/measures and the department's culture, leadership, structure and resources. We will then determine whether fit influences progress toward achieving measurable improvement. For example, goals of an individual QI objective may or may not be concordant with the department's culture or its clinicians' beliefs and knowledge. Do clinicians believe the

Fig. 3 Organizational predictors of the effectiveness of measurement-based quality improvement
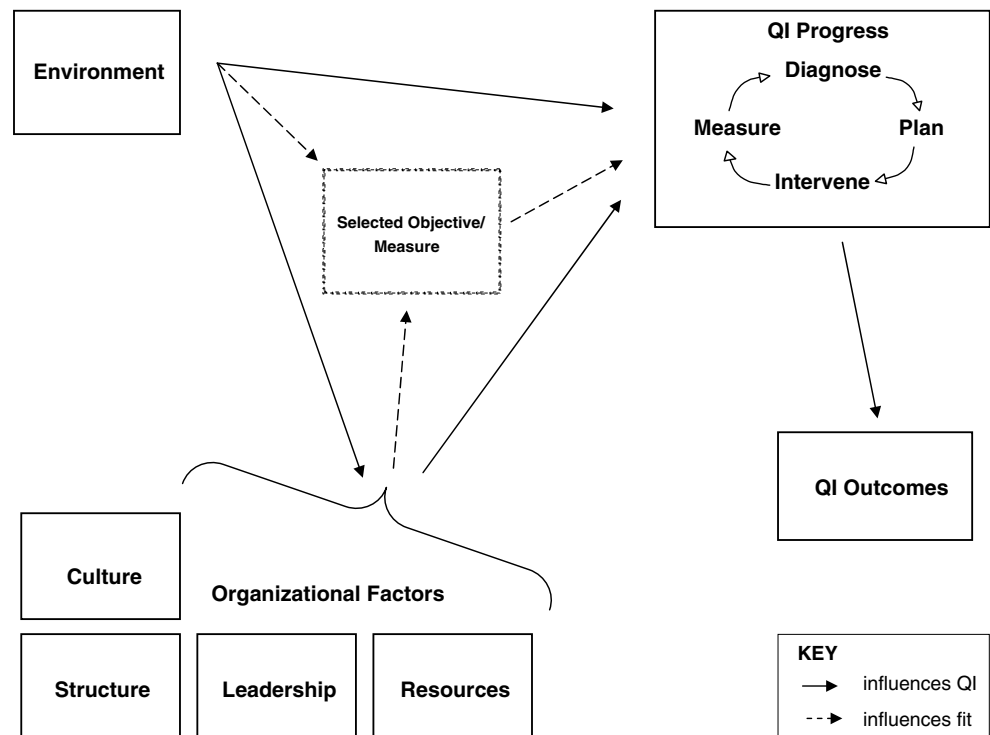
proposed QI activity will contribute to better patient outcomes? Are they familiar with research evidence supporting the objective's intent? Do they believe it is relevant to their patient population? Similarly, what is the relevance of the QI objective to the department's leadership? Do they consider it a priority for the organization? Does their perspective influence their oversight or willingness to provide resources for the activity? In addition, we will learn about the resource requirements of different types of QI activities: to what extent are these resources currently available in psychiatric departments or provided by external organizations seeking change?

Conclusion

In summary, creating better alignment between MBQI and the goal of improving evidence-based practice may require changes at multiple levels of the healthcare system. We need to place more emphasis on research evidence when identifying quality measures for national initiatives, though not to the exclusion of other important processes of care. Requirements that provider organizations address specific objectives for QI may need to be reviewed based on what we learn about the concordance of these objectives with the values, priorities and resources of local organizations. Identification of areas lacking agreement may suggest directions for new strategies to improve these aspects of care.

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