Leveraging Health Information Technology to Meet The Joint Commission's Standard for Measurement-Based Care: A Case Study

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Introduction: Three decades of research have shown that routinely collecting patient-reported outcomes throughout treatment to inform clinical decision making or measurement-based care (MBC) can improve clinical outcomes, yet widespread adoption continues to be elusive.

Approach: This article describes how a community behavioral health center addressed Element of Performance (EP) 1 of The Joint Commission's revised MBC standard using health information technology (HIT)–facilitated MBC and a comprehensive implementation plan grounded in the Consolidated Framework for Implementation Research.

Results: Across the initial 15-month implementation period, 96.8% of patients who had an intake evaluation also completed baseline measurements via an HIT known as a measurement feedback system (MFS), and 91.5% (78.6%–100%) completed at least one repeated measure.

Conclusion: MFS reduces many of the logistical barriers of MBC, but implementation of MFS–facilitated MBC requires a comprehensive implementation plan that includes strategies to address barriers across all relevant domains for successful uptake.

easurement-based care (MBC), or the systematic use of patient-reported data to monitor treatment progress and inform care decisions, has been shown to improve psychiatric treatment outcomes.^{2,3} Decades of research, including more than 20 randomized controlled trials and 10 systematic reviews, indicate that MBC outperforms usual care, particularly for treatment nonresponders. ⁴ These benefits have been found across diverse settings (inpatient, outpatient, university counseling, home-based care), populations (for example, adults and adolescents), and disorders (such as mood, anxiety, substance use, and eating), demonstrating MBC's transdiagnostic and transtheoretical flexibility. Moreover, recent evidence suggests that MBC is also associated with reduced cost of care. 4 Although more research is needed to replicate these findings with child and adolescent populations⁵ and to better understand the underlying mechanism(s) of MBC, the totality of evidence for MBC's impact on improving treatment outcomes has caught the attention of accrediting bodies, payers, and behavioral health professional organizations alike, which are now pushing for broad adoption.

In 2015 the Centers for Medicare & Medicaid Services (CMS) and two commercial payers announced value-based

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© 2020 The Joint Commission. Published by Elsevier Inc. All rights reserved. https://doi.org/10.1016/j.jcjq.2020.03.006 nificantly strengthened its MBC standard for evaluating patient outcomes in behavioral health care settings (Care, Treatment, and Services [CTS] Standard CTS.03.01.09).⁶ The wording of the standard itself stayed the same, but the revision added greater specificity to the three elements of performance (EPs) that Joint Commission surveyors use to assess whether an organization meets the standard.

Joint Commission Standard CTS.03.01.09 reads, "The

payment programs that reward the implementation of stan-

dardized measurement. In January 2018 The Joint Com-

mission, a health care accrediting body with approximately

21,000 health care organizations under its purview, sig-

Joint Commission Standard CTS.03.01.09 reads, "The organization assesses the outcomes of care, treatment, or services provided to the individual served" and contains four EPs (EP 4 applies only to organizations that provide eating disorders care, treatment, or services).⁶ Prior to January 1, 2018, original EPs 1–3 were broadly defined, without mention of how outcomes would be assessed. The revised EPs now essentially require the use of MBC to ensure care quality⁶:

[•] EP 1: "The organization uses a standardized tool or instrument to monitor the individual's progress in achieving his or her care, treatment, or service goals."

[•] EP 2: "The organization gathers and analyzes the data generated through standardized monitoring, and the results are used to inform the goals and objectives of the individual's plan for care, treatment, or services as needed."

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• EP 3: "The organization evaluates the outcomes of care, treatment, or services provided to the population(s) it serves by aggregating and analyzing the data gathered through the standardized monitoring effort."

Meeting The Joint Commission's revised MBC standard will likely constitute a significant shift in operations for most behavioral health care organizations. Recent research has shown that widespread MBC adoption continues to be limited, with reports that 61.5% of providers do not use measures consistently, 24.6% use them on a regular basis but less often than once a month, and only 8.7% use them monthly. Prior to the adoption of the stronger language, Joint Commission surveyors seldom cited organizations for compliance issues related to the outcomes standard. Since the revision, the rate of compliance issues related to the standard has increased dramatically (from 7% of full survey events from January through August 31, 2017, to 46% of full survey events from January through August 31, 2018).

Given the importance of accreditation, behavioral health care organizations will have to determine how best to implement MBC and meet the Joint Commission standard. We submit a case example of how a comprehensive community behavioral health center addressed EP 1 using a commercially available measurement feedback system (MFS)—a class of health information technology (HIT) designed to support the collection, scoring, and tracking of patient-reported outcomes and provide feedback on treatment progress. Included is a discussion of relevant barriers and facilitators and strategies used to address identified issues, followed by reporting of initial implementation results and discussion of lessons learned. Although MFS can be an effective strategy for addressing a number of MBC implementation barriers, the successful deployment of any HIT (including MFS) requires its own targeted implementation strategies. 10 Moreover, when implementing MBC with an MFS, strategies that promote the use of both must be considered in tandem. Thus, unless otherwise stated, implementation in this paper refers to the implementation of MFSfacilitated MBC.

APPROACH: MBC IMPLEMENTATION IN A COMMUNITY BEHAVIORAL HEALTH CENTER

Inova Kellar Center (IKC) is a large community-based provider of behavioral health services for youth and families in the suburban Mid-Atlantic United States and offers a full continuum of ambulatory services, including psychological and psychiatric assessment, outpatient psychotherapy (OP), medication management (MM), adolescent Intensive Outpatient Programs (IOPs), and Partial Hospitalization Programs (PHPs). In 2017 IKC provided services in more than 38,000 mental health, substance use disorder, and special education encounters to more than 1,200 patients. In 2015 IKC made a strategic decision to access

new funding to support program evaluation and research, including implementation of MBC, to meet the increasing demand by payers and referral sources to demonstrate the efficacy of interventions. This decision led IKC to evaluate options for implementing HIT–facilitated MBC. This case study describes IKC's process, progress, and lessons learned in the first 15 months of MFS–facilitated MBC implementation.

The following discussion of influential factors relevant to the current implementation is organized à la the Consolidated Framework for Implementation Research (CFIR), which categorizes determinants of implementation (in other words, barriers and facilitators) in five domains (intervention characteristics, outer setting, inner setting, individual characteristics, and implementation process). ¹¹ Implementation strategies for addressing identified barriers are identified using consensus terminology from the Expert Recommendations for Implementing Change (ERIC). ¹² * See Table 1 for details.

Intervention Characteristics

This CFIR domain describes key attributes of the intervention itself (MFS–facilitated MBC) that can influence the success of its implementation. To assess the *relative advantage* of implementing MFS–facilitated MBC, IKC evaluated options for implementing MBC via building a unique MFS or adopting a commercially available MFS over traditional paper-and-pencil methods. Similar to other build vs. buy evaluations, ¹³ a commercially available MFS was selected based on multiple factors, including *cost* analysis, end-user functionality, time to implementation, and degree of postimplementation technical support and maintenance provided by the third-party MFS.

The selected cloud-based, HIPAA-compliant MFS[†] is specifically designed to support MBC. Several features of the MFS contributed to its *relative advantage* compared to alternatives, including its ability to send texts or e-mails inviting patients and caregivers to complete progress measures, automatically score completed measures, provide immediate results to clinicians, and generate graphs to support progress monitoring and collaborative treatment planning, while also providing data for administrative oversight. These features automate many steps of the MBC process and greatly reduce the *complexity* often associated with paper-and-pencil MBC.

The *adaptability* of the MFS, or the degree to which it could be tailored to meet IKC's needs, was optimized by features that support various intake and screening workflows and a digital library of more than 100 evidence-based patient-reported outcome measures. These features allowed IKC to develop intake/discharge measure bundles, or stan-

^{*} To highlight consistent terminology, *CFIR* terms are bolded and italicized, and *ERIC* terms are italicized throughout the article.

[†] Owl Outcomes MFS (Owl Insights, Inc., Portland, Oregon).

Table 1. Determinants of Implementation Organized by Consolidated Framework for Implementation Research (CFIR) and Strategies to Address Barriers Described Using Consensus Terminology from the Expert Recommendations for Implementing Change (ERIC)*

CFIR Constructs	Inova Kellar Center's Approach
I. Intervention Characteristics (of MFS-facilitated MBC)	
Relative advantage (using an MFS vs. paper-pencil, MFS	Selected an MFS with a number of unique features not offered by other
vs. internal build)	available MFS, and was easier than an internal organizational build
Adaptability: the degree to which MFS-facilitated MBC	Created organization-specific measure bundles, workflows, and
can be tailored to fit the needs of IKC	screening processes
Trialability : the degree to which MFS-facilitated MBC	Staged implementation scale up: MFS-facilitated MBC was first piloted
could be piloted before agencywide adoption	with small clinical programs (PHP/IOP) prior to decision for full adoption
Complexity of MFS-facilitated MBC	and rollout to larger clinical programs (for example, outpatient). MFS-facilitated MBC significantly reduced the logistical complexity of administering and tracking paper-pencil measures for MBC.
Cost of implementing MES facilitated MBC including	Evaluated the cost of building an internal MFS vs. purchase of a
Cost of implementing MFS–facilitated MBC, including	
subscription fees, training, maintenance, etc. (relative to	commercially available MFS, with the findings in favor of using an
alternative solutions)	existing, commercially available MFS
II. Outer Setting	
External policy and incentives : Joint Commission standard, CMS incentives/disincentives	Tracked external policies and recognized industrywide shift toward tracking treatment outcomes; decided on implementing MFS-facilitated MBC just in time (re: new Joint Commission standards)
III. Inner Setting	wit 3-lacilitated MDC just in time (i.e. new 30int Commission standards)
Implementation Climate	
Goals and feedback (MBC adoption goals, feedback on	Mandated MFS-facilitated MBC; facilitated the relay of
goal attainment)	data/information back to service lines
Organizational incentives and rewards for conducting MFS–facilitated MBC	Altered incentive structures by integrating MBC use into annual reviews and by professional recognition (identified champions)
Readiness for Implementation	
Leadership Engagement	Leaders modeled and stimulated change; program directors identified
	program-specific needs and participated in local consensus discussions
Available Resources	Conducted ongoing trainings; developed an academic partnership;
	MFS vendor provided centralized technical assistance
IV. Individual Characteristics	
Knowledge and beliefs (about MFS-facilitated MBC)	Increased clinician and staff MBC knowledge with initial and ongoing
	trainings; developed and distributed educational materials
Clinician self-efficacy (for using an MFS to conduct MBC)	Provided scripts, documentation templates, and job aides; centralized
	technical assistance
V. Process	
Planning	Completed CFIR-informed preimplementation survey to develop
•	comprehensive implementation plan
Engaging (stakeholders)	Conducted local consensus discussions; staged the implementation
	scale up
Executing	Formally appointed implementation leadership (executive owner of
Executing	project), external change agents (faculty consultant, MFS customer, and
	centralized technical assistance team); identified and recognized MBC
	-
	champions
Reflecting and evaluating	Implementation progress monitoring; audit and provide feedback; culminated in this report
MFS, measurement feedback system; MBC, measurement-ba	ased care; IKC, Inova Kellar Center; PHP, Partial Hospitalization Program
IOP, Intensive Outpatient Program; CMS, Centers for Medicar	
* ERIC strategies are italicized.	

dard measure sets, which best captured target symptoms for patients in each service line.

IKC leveraged the *trialability* of MFS–facilitated MBC using a *staged implementation scale up* that began with smaller clinical programs and adding larger programs only after adequate feasibility and acceptability were established. This strategy also allowed IKC to focus on program-specific issues and *conduct cyclical small tests of change* to facilitate

necessary workflow adjustments without affecting more patients and families.

Outer and Inner Setting

The CFIR outer setting domain refers to the broader context (for example, economic, political, social) within which an organization resides, while inner setting refers to the structural, political, and cultural aspects of the organization itself.¹¹ The primary outer setting factors driv-

ing this implementation project were The Joint Commission's revised MBC standard and the CMS incentive/disincentive programs for tracking treatment outcomes. The inner setting factors of implementation climate and readiness refer to an organization's receptivity and commitment to implement an intervention. 11 IKC created an implementation climate conducive to MBC implementation by establishing clear goals and feedback and incentives and rewards. Specifically, following the pilot phase, senior leadership mandated the implementation of MBC across all clinical areas of the organization by a clearly communicated deadline. Leadership also required patient measure completion as a condition of treatment, which was met with virtually no patient/family resistance based on informal feedback and initial uptake data (see Results). Monthly MBC-implementation leadership meetings facilitated the relay of data and feedback to the respective clinical program leads for dissemination. Moreover, IKC altered incentive structures such that staff and clinicians' MFSfacilitated MBC uptake was integrated into performance evaluations. High-volume users were identified as MBC champions and lauded for their efforts.

IKC also directly addressed two factors contributing to readiness for implementation—leadership engagement and available resources. Specifically, clinical leaders modeled and stimulated change by conducting MFS—facilitated MBC in their own clinical practice and discussing use at case conferences. Time was also allocated to discuss MBC implementation during regularly scheduled staff meetings, allowing for additional MBC education and training without disruption to normal workflow. Further, IKC developed an academic partnership with a local university and identified a faculty member (~0.1 full-time equivalent) to provide consultation and oversight of program evaluations and the MBC implementation process.

Individual Characteristics

This CFIR domain describes the characteristics of individuals who are involved with delivering the implementation process (in other words, clinicians and staff).¹¹ IKC proactively addressed two factors in this domain—clinician and staff knowledge and beliefs and self-efficacy. In collaboration with their academic partner and the MFS vendor, IKC provided a variety of ongoing trainings and centralized technical assistance. All staff received three hours of protected time to attend mandatory trainings, including initial in-person onboarding, webinars, and consultation/troubleshooting with the MFS technical support team. IKC also developed and distributed educational materials for staff and clinicians, including scripts and job aides, for introducing MBC and the MFS to patients and families. Templates and smart phrases were created within the electronic medical record system to minimize time needed for documentation of results in patient records.

Process

This CFIR domain refers to the essential components of the implementation process itself, most often broadly conceptualized as planning, engaging, executing, and reflect*ing and evaluating*. ¹¹ As part of the planning process, IKC completed a CFIR-informed preimplementation questionnaire developed by authors of this paper [F.L., C.F.] in collaboration with the MFS company. The questionnaire was designed to identify potential barriers and facilitators in each CFIR domain and help IKC select appropriate implementation strategies (such as developing goals and setting incentives and rewards). An implementation plan was developed based on these results. Accordingly, monthly leadership meetings were held to tailor strategies to continuously refine workflows and set training time lines for each service. Staff and clinician stakeholders were engaged throughout the initial workflow development and implementation process (for example, by conducting local consensus discussions). The plan was executed through a staged implementation scaled up to different services over time. Leadership also formally appointed an executive owner of the project. This leader worked closely with the identified MBC champions and external change agents—the faculty consultant and the MFS technical support team—to carry out the implementation plan. Finally, reflecting and evaluating was done throughout the implementation process to monitor progress.

RESULTS

IKC began the first phase of the implementation process with PHP (pilot) followed by IOP, and then OP and MM service lines. Adoption was also begun with new patients who initiated care after MBC implementation, and existing patients (in OP and MM) were subsequently integrated. Using a multiphasic implementation schedule and the previously outlined strategies, IKC administered the standardized measure bundles, as well as individual assessments, to patients through the MFS. See Appendix 1 (available in online article) for a list of standardized measures used in each program.

We present implementation outcomes data (for example, rates of measure completion) for IKC's PHP and IOP service lines, the first two services that deployed MBC. (Data for OP and MM were not available at the time of this writing.) Across the initial 15-month implementation period, 96.8% of patients who had an intake evaluation also completed the baseline measurement bundle via the MFS. This represents an increase of 28.6 percentage points from the 71.4% rate in April 2017 to more than 95% the next month, essentially plateauing at 100% by August. Similarly, on average, 91.5% (78.6%–100%) completed at least one repeated measure (readministration of specific measure[s] or the discharge bundle). See Figure 1 for monthly measures

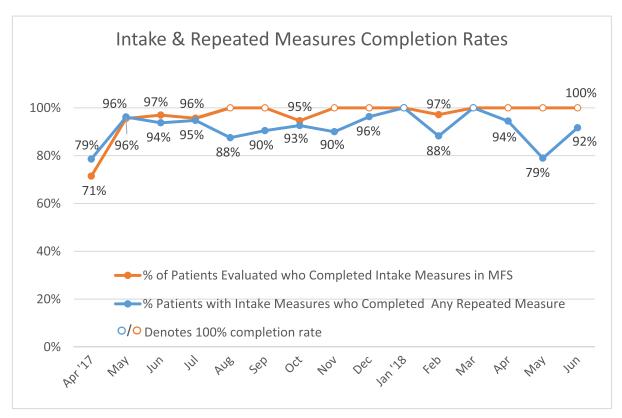


Figure 1: This chart shows the Inova Kellar Center measurement completion rates during MFS-facilitated MBC implementation period. MFS, measurement feedback system.

completion rates across the 15-month implementation period.

In May 2018 IKC, already experiencing successful use of standardized measures via MFS to monitor treatment, underwent its first Joint Commission on-site survey since the revised MBC standard was released. At the time of the site review, the surveyor recognized IKC for its use of standardized measures to provide quality care, its cohesive leadership, and its approach to performance improvement. (See Appendix 2 for Joint Commission accreditation survey sample questions and answers.) Ultimately, IKC received full accreditation with no findings (a positive result) related to the revised MBC standard.

DISCUSSION AND KEY LEARNINGS

MBC, an evidence-based practice, has been shown to improve psychiatric treatment outcomes. 4,5 Despite this evidence, the majority of mental health providers do not consistently use MBC due to a number of common barriers. 4,6 This case study demonstrates how a community behavioral health center successfully implemented MFS–facilitated MBC and met EP 1 of The Joint Commission's revised MBC standard. IKC *identified barriers and facilitators* through the use of a CFIR–informed implementation readiness survey, which facilitated the development of a comprehensive implementation plan. This allowed IKC

to effectively leverage MFS as an implementation strategy to reduce commonly reported barriers to MBC uptake, including the time burden of administering, scoring, and tracking measure results. ^{14,15} The authors believe the following factors allowed IKC to implement MBC in a reasonably short period with higher-than-expected MBC uptake rates, as compared to the literature⁷:

- Use of a theory-driven, evidence-based (CFIR) preimplementation assessment to inform development of a comprehensive implementation plan
- Meaningful leadership engagement (such as leading by example)
- Clear communication of goals, behavior expectations, and incentives
- Mandated MFS–facilitated MBC
- Use of a multiphasic, *staged implementation scale up* schedule to enhance *trialability* and allow *cyclical small tests of change*
- Dedication of adequate resources (for example, time, training, technical assistance, incentives)
- Provisions for training for clinicians and staff to enhance knowledge and self-efficacy

Limitations and Future Directions

The results of this project may not be generalizable across the continuum of behavioral health organizations. Resources including time, leadership, and capital are required to implement evidence-based practices in any care setting. IKC accessed new funding through a grant to support this implementation initiative. This may be less feasible in many low-resource community health settings. Finally, it is not possible to know whether IKC would have been cited for compliance issues related to the revised standard without this implementation effort, though Joint Commission surveyors repeatedly commended IKC for its use of HIT to facilitate MBC and optimize care. Although this case study describes an excellent start, ongoing effort is needed to sustain these early successes.

The next steps for IKC include expanding MFS—facilitated MBC functions toward full implementation of EP 2 and EP 3 of The Joint Commission's revised MBC standard. These efforts will include setting goals and developing implementation strategies for increasing repeated measures administration at regular intervals throughout treatment to support treatment planning, as well as strategies for analyzing aggregate data to guide program evaluation and quality improvement.

CONCLUSION

MFS reduces many of the logistical barriers of MBC, but implementation of MFS–facilitated MBC requires a comprehensive implementation plan that includes strategies to address barriers across all relevant domains. Despite the inherent challenges of systemwide implementation of any clinical practice, successful MBC implementation is possible with stronger leadership and adequate resources, guided by a theory-driven implementation framework.

Conflicts of Interest. Dr. Black is a clinical advisor to and has a significant financial interest in Owl Insights, a company that may have a commercial interest in the results of this research and technology. This potential conflict of interest has been reviewed and managed by Oregon Health & Science University. Dr. Liu once served as the principal investigator on a subcontract to Dr. Fagan's Small Business Technology Transfer Research grant funded by the National Institute of Mental Health (R41MH112230), which tested the usability and feasibility of implementing the technology described in this manuscript in the school mental health setting. Dr. Fagan is the cofounder of Owl Insights and as such holds an equity stake in the company. The other three authors report no conflicts of interest.

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SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jcjq.2020.03.

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