

Enhancing Patient and Family Engagement Through Meaningful Use Stage 3: Opportunities and Barriers to Implementation

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The adoption and use of health information technology (IT) can improve the quality, coordination, and efficiency of healthcare delivery.¹⁻⁴ Health IT can also promote patient involvement by providing patients with electronic access to their own healthcare information and providers⁵⁻¹⁰—something that research suggests that patients want, along with some control over sharing this information with others.^{6,8,11-14} Facilitating this access can allow patients and family members to coordinate across the care team, communicate electronically with providers, and engage in self-management of their own health conditions.⁸ Yet, most electronic health information (EHI) systems have not yet achieved the higher-level patient-centered functionalities⁷ that could truly support informed patient engagement.^{11,15}

Promoting patient and family engagement is one of the aims of the Meaningful Use (MU) initiative within the Medicare and Medicaid EHR Incentive Program under the Health Information Technology for Economic and Clinical Health (HITECH) Act.¹⁶ Patient engagement EHR functionality was a new requirement in MU Stage 2 (MU2).¹⁰ The draft objectives first proposed for MU Stage 3 (MU3) in 2013 increased expectations about patients' ability to access and control the content and dissemination of their EHR information.¹⁷ However, there are technical and resource limitations to realizing the potential of EHR technology for engaging patients,^{6,18,19} including a lack of patient awareness and tools for accessing information,²⁰⁻²² and a still-evolving technology and information infrastructure.

The early publication of draft MU3 Patient and Family Engagement objectives by the Health Information Technology Policy Committee (HITPC) provided researchers with an opportunity to evaluate implementation barriers and recommend improvements to the objectives prior to the publication of draft or final regulations.^{3,20} The challenges of MU Stage 1 (MU1) and MU2,¹³ including limited availability and suitability of certified products,²³ underscored the importance of such input to policymaking. When the draft MU3 objectives were published, many healthcare providers were still working on MU1 and others were awaiting new releases from their

ABSTRACT

OBJECTIVES: The proposed Patient and Family Engagement objectives for Meaningful Use Stage 3 (MU3) seek to provide patients with increased access to, and control over, the content and dissemination of their electronic health record (EHR) information.

STUDY DESIGN: Implementation study conducted from 2013-2014.

METHODS: In this study, 2 leading US health systems attempted to implement 4 draft MU3 objectives within their current EHR system. Senior staff provided qualitative feedback on their implementation experience; researchers used content analysis to identify major themes and implementation challenges.

RESULTS: We found that the draft objectives would support the MU3 Patient and Family Engagement goals, but that all objectives would benefit from the following: changes in policy language to promote flexibility in implementation; training and workflow adaptations, as well as patient education, by healthcare organizations; and new EHR functionalities.

CONCLUSIONS: In the short term, a semi-automated approach is likely necessary to support MU3 objective implementation. These challenges are not unique to MU3 and underscore gaps in the current health information infrastructure.

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TAKE-AWAY POINTS

Meeting the technical and operational requirements of Meaningful Use Stage 3 (MU3) patient engagement objectives will be difficult to do in a fully automated fashion.

- ▶ Electronic health platforms still need to evolve to provide a basic level of functionality for providers and patients to access and transmit health information online to meet the standards described in the MU3 proposed objectives.
- ▶ The pilot implementation experience of 2 advanced healthcare systems suggests that a semi-automated approach to information exchange—where some information is reviewed and sent out by a human rather than automatically by a system—may be necessary until functionality evolves.

EHR vendors to begin work on MU2. The Agency for Healthcare Research and Quality (AHRQ) sought input from the field concerning objective feasibility, required EHR enhancements, and how the proposed objectives could help improve care delivery. In this evaluation—which was funded by AHRQ—health systems attempted to implement the draft Patient and Family Engagement MU3 objectives. Researchers followed their progress to evaluate the feasibility of implementation within the health systems' existing EHRs.

METHODS

Two leading health systems, Intermountain Healthcare and Geisinger Health System, attempted to implement up to 4 of the MU3 draft objectives for Eligible Hospitals in the Patient and Family Engagement domain (listed in the [Table](#)). The objective language presented in this paper reflects the most up-to-date versions of the objectives that were implemented in the study sites, representing an amalgam of language used in 3 draft MU3 language iterations. Geisinger and Intermountain were selected due to their use of enterprise EHR systems—used across inpatient and outpatient settings—as well as their history of using health IT to promote patient and family engagement, and their experience customizing commercial EHR systems.²⁴⁻²⁸ Each system also had administrators and programmers on staff with the ability to design custom programming to write the objectives' functionality into their EHRs with little to no support from EHR vendors; some functionality had been built prior to the evaluation as part of previous system-specific enhancements.

From September 2013 to May 2014, each organization began, continued, or accelerated their implementation efforts for all or a subset of the 4 objectives in their organization's EHR. Two senior health IT officials from each health system provided qualitative feedback on a biweekly basis during semi-structured 90-minute telephone interviews that took place over the course of 5 months. The interviews focused on their implementation experience, including the feasibility of programming the objectives given their EHR's capacity, limitations in exchanging and collecting information, and any workarounds explored. An interviewer coded each of the interview transcripts (with 2 researchers coding initial interviews to ensure consistency) and synthesized findings into a thematic framework.

The framework, which lists major themes and implementation challenges, was reviewed by our implementation sites to ensure they represented the correct themes discussed. All 4 senior health IT officials reviewed the cumulative findings summarized in a final report released by AHRQ in May 2014.²⁹

Because Intermountain Healthcare and Geisinger Health System have comparatively advanced health IT infrastructures that enabled them to implement certain proposed

MU3 objectives, researchers also solicited input from a panel of senior health IT professionals from hospitals and healthcare systems working on MU1 and MU2 that relied on commercial EHR products; this panel met 1 time by teleconference. Additionally, we conducted a focused literature review on patient engagement and EHI-sharing to evaluate the face validity of our findings. This review comprised a key word search and synthesis of recent research findings and analyses.

Subsequent to our evaluation, in March 2015, the “Notice of Proposed Rule-Making” (NPRM) for the MU3 objectives was published and included 2 objectives in the Patient and Family Engagement domain.³⁰ Therefore, we reviewed the NPRM's patient engagement objectives and noted where the new language affected the applicability of our original findings.

RESULTS

Below, we detail the essential functionalities we believe will be necessary for any health system's IT infrastructure to support the MU3 objectives based on the findings reported by Intermountain and Geisinger. Then, based on the most salient findings from the implementation experience across both organizations, we briefly outline how each of the draft MU3 objectives evaluated in our study could be enhanced to allow patients and their families to more meaningfully use their EHI and how policy makers and healthcare organizations can best support the implementation of MU3. Despite the restructuring in the March 2015 NPRM, our underlying findings still apply, particularly regarding the need to supplement automated solutions with manual processes and oversight of data exchange from designated data entry staff (a “semi-automated” solution).

Essential Functionalities

The MU3 patient engagement aims depend on a few basic functionalities, namely the ability to accurately identify patients and their clinicians, distinguish data entered by providers and patients, attest to treatment relationships, and confirm authorization for sharing EHI. The implementation pilot underscored gaps in these functionalities that have limited the first 2 MU stages and that will continue to challenge MU3.

TABLE. Proposed Meaningful Use Stage 3 Patient and Family Engagement Objectives Implemented in Evaluation Study

Objective Name	Objective Language
Patients can designate recipients of their care summaries (SRGP 204A)	Provide 50% of patients with the ability to designate to whom and when (ie, pre-set automated and on-demand) a summary-of-care document is sent to a patient-designated recipient. For example, a 1-time request to send information from specialist to primary care, or a standing request to always send an updated care summary when certain events arise, such as a change in medication or the completion of new tests or procedures.
Patients can send requested health information electronically to providers (SGRP 204B)	Eligible professionals and eligible hospitals receive provider-requested, electronically submitted, patient-generated health information through either (at the discretion of the provider): <ul style="list-style-type: none"> ▶ Structured or semi-structured questionnaires (eg, screening questionnaires, medication adherence surveys, intake forms, risk assessment, functional status), or ▶ Secure messaging
Patients can request an amendment to their record online (SGRP 204D)	EHR technology should have the functionality to allow providers to receive, review, respond (acknowledge), and record patient-generated health data, including amendments and corrections (recommended as certification criteria only)
Patient-specific education materials in preferred language (SGRP 206)	Eligible providers and hospitals use CEHRT capability to provide patient-specific educational material in a non-English-speaking patient's preferred language, if material is publically available, using preferred media (eg, online, print-out from CEHRT)

CEHRT indicates certified electronic health record technology; SGRP, the Meaningful Use Stage 3 objective subgroup and number.

Source: Health Information Technology Policy Committee Meaningful Use Stage 3 Final Recommendations.¹⁷

Identifying the intended patient and clinician. Verifying a patient's identity is critical to ensure that information entered into or extracted from the EHR is associated with the correct person and to share patient-generated data securely (eg, logging into remote access points). Positive identification supports modifying EHR content and providing educational materials based on patient preferences and healthcare conditions. Determining to whom patient-directed information should be sent and who will be responsible for acknowledging, reviewing, and responding to this information requires accurate provider identification. The lack of a national patient identifier makes it difficult to identify patients with certainty for secure access and information sharing.¹⁹ The absence of a national provider directory with accurate, secure provider e-mail addresses makes it difficult to electronically locate a recipient and promote care coordination through data sharing. Despite robust health information exchanges (HIEs) in some communities, all healthcare organizations eventually encounter external partners with whom information cannot be shared because providers' secure e-mail addresses are incomplete or incorrect.

They also run the risk of creating duplicate patient records or inadvertently merging records from distinct patients because they lack a communitywide master patient index. Healthcare organizations are forced to create customized, sometimes labor-intensive, solutions to these identification challenges.

Both Intermountain and Geisinger maintain master patient indexes and use matching algorithms to verify patient identity; however, these are not always sufficient to identify duplicates and reconcile identity information. These healthcare organizations rely on manual processes to find, update, and reconcile provider Internet addresses, and must manage substantial error logs. The "Direct" secure e-mail or another sponsored system could serve as a national provider directory, but will require maintenance as providers relocate and change affiliations and e-mail addresses. Otherwise, every organization will need to maintain an internal directory and ensure correct addresses for communicating with clinicians outside its network.

Defining patient-clinician relationships and authorizing information sharing. Sharing information requires declaring a treatment relationship between a patient and an individual clinician or group of clinicians (and ending the relationship when a patient changes providers or moves). Patients must

authorize sharing their health information, when and with whom; these authorizations must be managed for accuracy. For patients to control communication with their providers, they need flexibility in defining the patient-provider relationship for a given encounter or care episode. EHRs or other data-sharing platforms should facilitate patient selection of providers as EHI recipients and update these relationships over time. Currently, there are no standard methods for recording and retrieving patient authorization to share EHI, querying this information, or managing authorization changes. Geisinger and Intermountain were managing these processes manually.

Varying state regulations complicate sharing of records. Recording patient authorizations, often with signatures, is a manual process; maintaining a current list for each patient is a substantial challenge. Verifying authorization for sharing can be semi-automated, but although some EHRs and HIEs have this functionality, others do not. Currently, in most healthcare organizations, patients are asked to authorize information sharing (or not) for any and all providers—they cannot specify which providers should be able to view their information or which specific types of information each may access.

Specially-protected information (eg, mental health, substance abuse, HIV status) raises an additional barrier, because sharing it requires specific patient authorization. Automated systems, such as one used by Geisinger, that can identify and sequester specially protected information and prevent access or transmission without authorization, are only beginning to emerge. Finally, a patient's ability to request that certain types of information be automatically "pushed" out to provider-recipients (not merely made available) may be possible within a healthcare organization, but much harder to automate to external parties.

Objective-Level Recommendations

Patients can designate recipients of their care summaries (objective 204A). Allowing patients to determine who should be able to view their care summaries and other health information, and when, is central to promoting patient engagement and patient-centered care. In this study, Intermountain and Geisinger found that managing patient-directed dissemination of health information will require the following: more specific guidance to define potential recipients, EHR functionality to designate recipients and the information they can receive, and organizational policies about acknowledging and using this information.

Objective 6 in the March 2015 NPRM promotes patient-driven coordination with providers and other members of the patient's care team, including authorized representatives. Intermountain and Geisinger found that greater specificity is needed regarding "to whom" and "when" patient information should be sent or made available for review by family members or other providers. If patients can direct information sharing with clinicians, healthcare organizations will need to set expectations about when and with whom data is shared. This will also require defining what types of information individual clinicians can reasonably be expected to review and address in a timely manner. Furthermore, most EHR systems have limited ability to segregate information for partial sharing, customize viewing privileges, or record patient direction on who should receive what information and when. These limitations should be communicated to patients.

Patients can send requested health information electronically to providers (objective 204B). As the MU3 NPRM underscores, patient-generated information should be captured in a clear and structured way to support informed care. Intermountain and Geisinger found that additional vendor functionality is needed for patients to easily provide self-generated information, such as health histories, symptoms, or substance use. They should have access to their health records through multiple modes, be asked for relevant content, and know how this information will be used. Other recent reviews of the MU program have identified the need for flexible patient engagement modalities.³¹ Existing patient-facing tools, such as patient portals and secure messaging, can be better leveraged to collect more pertinent patient information.³²

The MU3 NPRM proposes multiple modes for patients to submit information, including via medical device or home health monitoring data, or to consent to data extraction from existing documents. However, information sent in free-text or non-EHR form, such as through an SMS or secure e-mail message, will be more difficult to integrate and query in an EHR than structured data.³³

The NPRM expanded the options for patients and providers to communicate: they can access application-program interfaces to download, transmit, or share data with another authorized party. We found that patient-generated health information is most valuable when the requested information supplements existing EHR content; new tools should focus on patient accessibility and not require data re-entry by either a patient or provider. The design and implementation of modalities to collect patient-generated data should balance the feasibility of leveraging these data with ease of entry. Finally, both Intermountain and Geisinger have found that "tagging" patient-generated data is essential to distinguish information provided by patients and that entered by clinicians. Patient-generated information may conflict with other information in an EHR, requiring review and reconciliation of all patient-generated information. Both organizations manually review and import patient-entered data because the functionality to automatically tag and integrate patient-provided content into the EHR is not available.

Patients can request an amendment to their record online (objective 204D). In addition to adding self-reported data to their EHRs, the draft objectives also proposed that patients should have the ability to correct record content. However, our health systems partners found that patient-facing data summaries were often not transparent or simple enough for patients to understand and use; therefore, our partners could not evaluate their accuracy. Information presented in a patient-friendly manner, including annotation with contextual or explanatory information (eg, definitions for medical terms programmed to appear in a pop-up window in an electronic care summary) is more likely to be understood and used.⁶⁷ In pilot testing this objective, Intermountain and Geisinger faced workflow barriers in importing, integrating, and addressing patient-supplied data and corrections, and reconciling the information with other medical record content. Because EHRs do not have rules-based logic that can validate patient-provided information against data in the record and identify inconsistencies, this process must be performed manually. Even if EHR vendors fully automate the ability to tag, segregate, reconcile, and integrate information from patients, there may be inconsistencies and conflicts, which will require human review to decide which information is "correct."

Evaluation participants agreed that patient requests to amend their records have the potential to improve the accuracy and completeness of EHRs, but current functional limitations mean that implementation is not practical in the near term. Consistent

with our findings, stakeholder feedback to the HITPC about the feasibility challenges of this objective in the near term led to its being dropped.

Patient-specific education materials in preferred language (objective 206). Patient engagement opportunities may be constrained if educational materials are not accessible in preferred languages.³⁴ The MU3 objectives proposed in the NPRM³⁰ eliminated language from the earlier draft that materials intended for patient consumption must be available in languages other than English. This policy change is consistent with our finding of substantial barriers to implementing this objective. In our study, Geisinger and Intermountain raised concerns that generic education materials not tailored to individual patient circumstances may have little value, especially when clinicians do not speak the patient's language. Additionally, the limitation of educational materials to published references must be balanced against personalized educational materials that offer an actionable, meaningful care plan.

In attempting to create a database of patient education materials in other languages, Intermountain had been challenged by the paucity of even generic content. EHR vendors could eventually design “smart” systems that store and pull documents customized for particular patients, based on needs, diagnoses, language, and communication mode preferences. These findings about the feasibility of this objective will not eliminate the need for healthcare organizations to provide interpreters to assist with patient–clinician communication; instead, they support policy changes that promote the eventual availability of appropriate patient-facing materials in non-English languages.

Limitations

This study of 2 health systems with a long-standing history of EHR innovation illustrates many of the challenges inherent in MU3; however, the semi-automated solutions they adopted may not be practical for all. Our partners are more advanced along the MU continuum than many other healthcare organizations, but they too can only achieve the full range of MU3 capabilities if their peers have sufficient capabilities to trade information. This will depend on policies applied uniformly across settings, supporting basic MU standards and requirements. Manual review of patient-generated data, algorithms to accurately identify patients and establish treatment relationships, and provider directory maintenance are resource-intensive activities that may be hard to replicate. Nonetheless, all providers can be attentive to these challenges in working with vendors, patients, and clinicians on pursuing MU3 functionality.

CONCLUSIONS

The MU Patient and Family Engagement objectives are intended to give patients and their families increased access and ownership of their EHI. Through pilot testing, we found that health systems

successfully furthering these objectives will require specific EHR enhancements and operational support from healthcare organizations. These include the basic ability to identify patients and their clinicians, define their treatment relationship, and confirm authorization to share information. Without investment, these infrastructure gaps will pose challenges to implementing the enhanced aims of MU3 with a semi-automated solution, where data entry staff oversee data exchange and manipulation. The study sites are further along the MU continuum than many other healthcare organizations, but they are still relying on a semi-automated approach to achieving MU. Furthermore, they can only achieve MU3 if their peers have sufficient capabilities to trade information. Therefore, this requires uniformly applied policies that support basic MU standards and requirements.

Other changes in federal policies to support MU3 will need to align certification requirements for EHR systems with interoperability functionalities that accommodate for organizational consent; establish standards for the life-cycle management of patient–provider relationships—including ownership, timeline for attestation, and discontinuing the relationship—and establish standards for medication, allergy, and other notations to facilitate reconciliation. The 2 Patient and Family Engagement objectives in the 2015 MU3 NPRM consolidate elements of previous existing and proposed objectives, decrease the number of associated measures, and ease reporting requirements, thus reflecting the recognized need for greater program flexibility. Policy makers also need to ensure that objectives are aligned with other measurement and reporting requirements, especially as health systems prepare to implement the Merit-Based Incentive Payment System and/or alternative payments models for eligible providers under the Quality Payment Program.

At the time of publication, HHS is revising the MU program, eliminating some MU3 objectives that required patient input, reducing measure thresholds for successful attestation, and shortening reporting periods.³⁵ These evolving requirements are consistent with many of our recommendations. Still, meeting these requirements will be difficult without infrastructure improvements to ensure a basic level of functionality and access for providers and patients alike. The pilot implementation experience of the 2 advanced healthcare systems suggests that, at least in the short term, a semi-automated approach will be necessary to meet many of the MU3 Patient and Family Engagement objectives, given the lack of infrastructure, standards, and functionality for full automation. ■

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