

A National Study of Challenges to Electronic Health Record Adoption and Meaningful Use

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Background: Adoption and implementation of electronic health records (EHRs) has not been without challenges as it infuses technology into what has been a historically manual process of recording patient information. In an effort to identify these challenges, the Office of the National Coordinator for Health Information Technology leveraged the Regional Extension Center population of over 140,000 providers to develop a structured way to track challenges to EHR adoption and Meaningful Use (MU).

Objectives: This report summarizes challenges to EHR adoption and MU based on nationwide data supplied by 55 Regional Extension Centers reporting over 19,000 issues representing over 43,000 unique health care providers. Practices were grouped on the basis of their place in the lifecycle of EHR adoption and MU achievement.

Results: Provider engagement and administrative issues were among the more common issues reported across all cohorts. The most challenging MU measure was the clinical summaries measure, but MU Measure challenges varied by practice setting.

Conclusions: EHR adoption and MU challenges are unique to practice setting and stage of the adoption process.

Key Words: electronic health record, Meaningful Use, health care reform, health information technology

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The 2009 Health Information Technology for Economic and Clinical Health Act established the Meaningful Use (MU) electronic health record (EHR) Incentive Program for eligible providers and hospitals to adopt and meaningfully use EHRs.¹ MU was intentionally staged to enable all health

care providers to progress utilizing a series of foundational standards into more sophisticated standards. The ultimate goal of MU is better patient care and improved population health at a lower cost.²

There is a strong trend toward EHR adoption among health care providers. A 2012 study by the National Center for Health Statistics³ estimates approximately 72% of providers are using an EHR, up from 2009 estimates of 48%.⁴ In 2011, nearly half (47%) of physicians not currently using an EHR expressed intent to adopt, or had already purchased, an EHR in the next year.⁵ In addition, 65% of providers have registered with the Centers for Medicare and Medicaid Services (CMS) EHR Incentive Program and 35% have already been paid.³

The CMS EHR incentive payments often help to decrease the financial burden that impacts providers and hospitals in adopting this new technology. Research shows larger practices are substantially more likely to adopt than small practices, which may face greater challenges in adopting and meaningfully using EHRs.⁵ The Office of the National Coordinator for Health Information Technology's (ONC) Regional Extension Centers (RECs) are tasked to help these primary care providers, focusing on assisting organizations including small practices, community health centers, and practices that serve underserved populations.⁶ RECs' success in helping providers achieve MU was demonstrated in a 2012 Government Accountability Office study,⁷ which found that REC-enrolled providers are 2.3 times more likely to get paid for MU through CMS EHR incentive program. One way the RECs provide assistance to their providers is by identifying challenges to EHR adoption and MU, and developing targeted solutions to those challenges. Using a nationwide sample of 140,000 REC-enrolled providers, we examine challenges to EHR adoption and MU through descriptive analyses.

METHODS

RECs capture provider information in the ONC's Customer Relationship Management (CRM) tool, a Web-based technology hosted by Salesforce.com. In response to REC requests to have tools to better track and trend data regarding challenges to EHR adoption and MU achievement, ONC staff customized the existing database to include a component that tracks these challenges.

The ONC CRM captures data at the parent organization, or practice level, with information on each site under

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the practice (ie, a practice may be 1 site or may have multiple sites under it). Within each site, information on each provider is captured. Information on EHR adoption and MU challenges are captured at this level: sites may report single or multiple challenges. The data reported by RECs includes a description of the problem faced by the practice site. The challenge section also captures when the problem is resolved and when the site is on track to meeting its MU goal.

Initially, information was entered by REC staff using several rudimentary challenge categories, with most of the detail regarding the challenge captured in the description fields. After 2 months of this, 4 primary challenge classifications were established: Practice Issues, Vendor Issues, Attestation Process Issues, and Meaningful Use measure-specific issues (Fig. 1). For measure-specific issues, multiple MU measures can be reported within a single challenge report. An “On Track” classification was also added to indicate when a site is not experiencing any challenges. ONC staff reviewed and reclassified all challenge reports submitted before that point. After the update, REC staff selected primary and secondary categories for each challenge issue themselves.

ONC REC grant milestones were used to determine the stage of EHR adoption and implementation at the time each challenge issue was created. Milestone 1 indicates the site is enrolled with an REC; a site that has not progressed beyond this milestone is placed in cohort 1 (not yet live on an EHR). Milestone 2 indicates all providers at the site are live on an EHR with e-prescribing and quality-reporting capabilities tested. Sites at Milestone 2 when the challenge issue was

created are placed in cohort 2 (EHR implementation). If a site had multiple challenge issues reported through its life-cycle, it could be assigned to different cohorts depending on when each issue was created.

This analysis is based on challenge reports created between January 1 and December 31, 2012. Provider impact for each challenge was calculated by using the number of providers associated with the site in the CRM. Unless specifically stated, results presented below are only the reported challenges, and do not include the “On Track” reports. Analysis was completed using SAS software, version 9.2 of the SAS System for Windows.

RESULTS

In 2012, there were 19,209 challenges and on track issues entered in the ONC CRM, representing 14,424 unique sites (Table 1). Twenty-two percent of sites have multiple issues reported. Thirty percent of all participating REC providers (n=143,012) have either an on track or challenge issue reported. Over a third of all sites are reported as “on track” toward EHR adoption and MU achievement (n=5584). Challenge issue reporting mirrors REC enrollment in most states (Fig. 2). Eighty-nine percent of RECs (supplementary table, Supplemental Digital Content 1, <http://links.lww.com/MLR/A617>, showing challenge issues reported by REC and REC enrollment numbers) reported at least 1 challenge or on track issue (maximum=2212, minimum=2). The median number of challenges and on track issues entered by RECs was

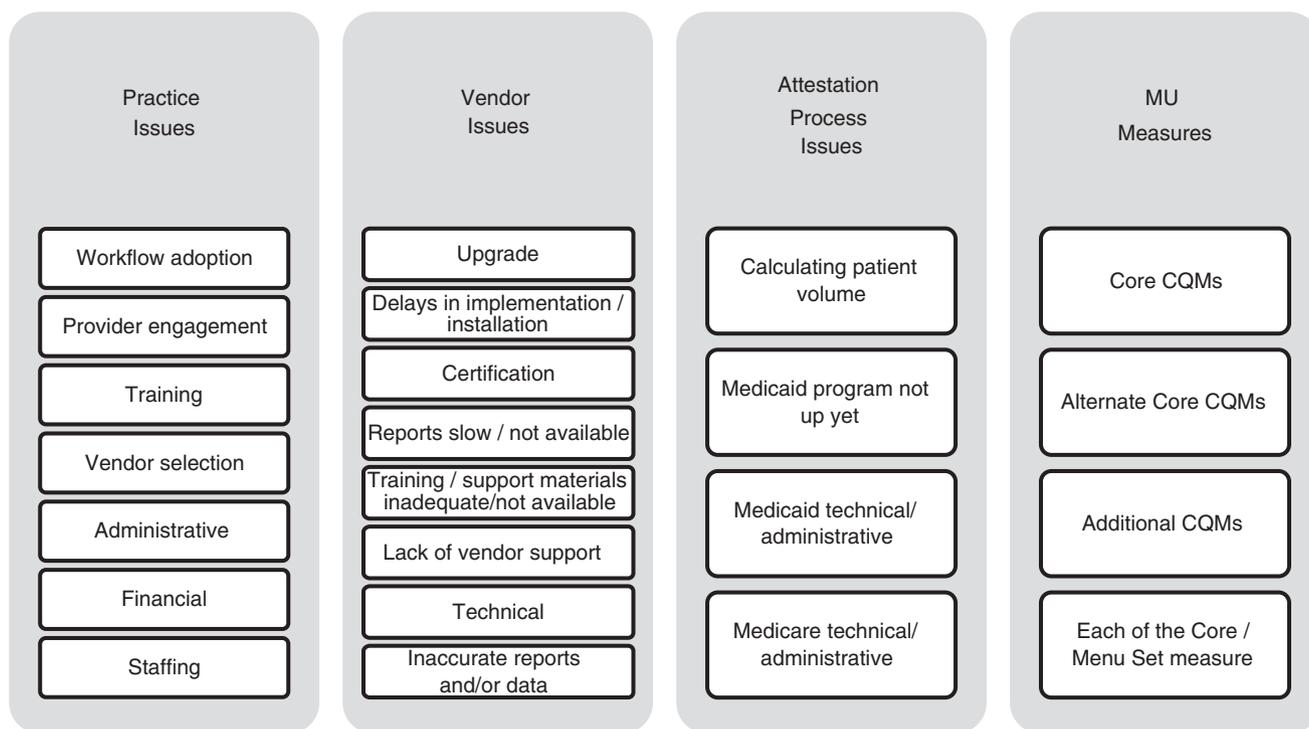


FIGURE 1. Regional Extension Center EHR Adoption and Meaningful Use achievement challenge issue categories. EHR indicates electronic health record.

TABLE 1. REC Population Representation in Challenge Reports

	With Challenge Reports	With On Track Reports	Unique Count With an On Track or Challenge Issue Report	Total REC Population
No. REC participating providers	29,618	16,456	43,019	143,012
No. REC sites	9842	5584	14,424	67,900
No. RECs	55	44	55	62

Data on Meaningful Use Measure Challenges as reported by ONC Regional Extension Centers (RECs) in 2012. Challenge issues and on track reports are recorded at the site level. Each site may have multiple challenges reported.

234, and the mean was 349. Unless otherwise indicated, data presented below do not include “on track” reports.

A higher percentage of challenge and on track issues were assigned to sites in cohort 2 (implementation stage) (58%; n=11,103). However, sites not live on an EHR (cohort 1, n=8106) were 20% more likely to have a challenge report than an on track report, compared with sites in the implementation cohort ($P<0.001$).

Although some challenge categories were more prevalent in one cohort than another, several issues appear in the top ranks for both. Provider engagement was the top challenge for sites not yet live on an EHR and third most common challenge for the EHR implementation cohort. Administrative practice issues were ranked second and third for cohorts 2 and 1, respectively. Selecting an EHR was the second most frequently reported issue for the not yet live cohort, whereas challenges with MU Measures is the most commonly reported category for the EHR adoption cohort. Table 2 provides a list of the secondary categories

with the number of providers impacted and ranking for each cohort.

Problems meeting specific Stage 1 MU measures account for 14% of the challenge reports (n=1668), impacting 5928 providers (Table 3). The top 5 most frequently reported MU Measure challenges are shown in Table 3. The MU measure that is most frequently reported as a challenge for REC-enrolled providers is the Clinical Summary measure, with 1951 providers reported as experiencing problems meeting this measure. The Stage 1 core measure for drug-drug and drug-allergy interaction checks had the fewest number of providers impacted (n=68).

Further examination of the data by practice setting offers insight into the different types of challenges posed by the varying organization types (Table 3).

Solo and small private practices, defined as practices with <10 primary care providers, are the largest practice setting type working with RECs, comprising 36% of total REC providers served.¹¹ RECs report the biggest MU challenges are the Security Risk Analysis (SRA) and recording

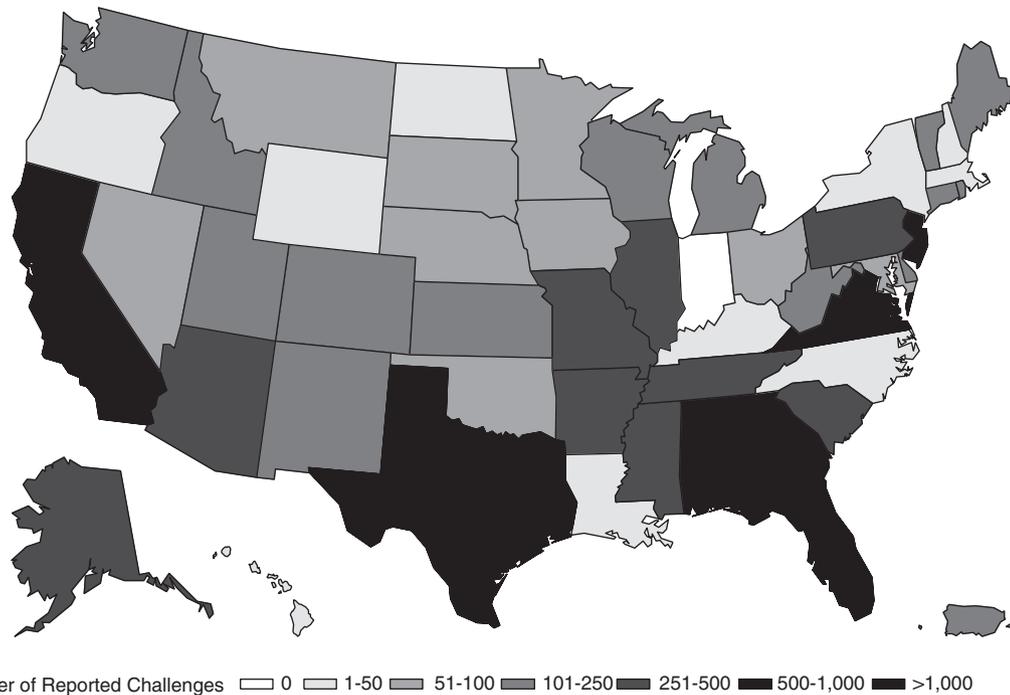


FIGURE 2. Regional Extension Center EHR Adoption and MU achievement challenges reported in 2012 by practice state. EHR indicates electronic health record; MU, Meaningful Use.

TABLE 2. Challenge Issues Reported by Regional Extension Centers in 2012 Adoption/Implementation Cohort

Primary Category	Secondary Category	Not Live With EHR		EHR Implementation		Total
		Count	Rank	Count	Rank	
Practice issues	Provider engagement	1226	1	619	3	1845
Practice issues	Vendor selection	768	2	108	17	876
Practice issues	Administrative practice issues	703	3	786	2	1489
Vendor issues	Delays In implementation/installation	475	4	207	11	682
Practice issues	Practice workflow adoption	364	5	533	4	897
Practice issues	Financial (vendor fees, capital availability, lack of or limited incentive eligibility)	345	6	174	13	519
MU measures	MU measures	285	7	1383	1	1668
Practice issues	Practice staffing issues	273	8	154	14	427
Practice issues	Practice staff training	267	9	334	6	601
Vendor issues	Other technical vendor issues	157	10	198	12	355
Vendor issues	Vendor certification	148	11	33	19	181
Attestation process	Medicaid technical issues	113	12	442	5	555
Vendor issues	Vendor reports and/or data are inaccurate	87	13	247	8	334
Vendor issues	Vendor reports slow/not available	84	14	279	7	363
Attestation process	Problems calculating patient volume	80	15	143	15	223
Attestation process	Medicaid program not up yet	75	16	241	9	316
Vendor issues	Vendor upgrade	66	17	127	16	193
Vendor issues	Vendor lack of support	52	18	66	18	118
Attestation process	Medicare attestation issues	44	19	215	10	259
Vendor issues	Vendor training/support materials insufficient	5	20	9	20	14
	Total challenge issues	5617		6298		11915
	Total on track issues	2083		4261		6344

This table presents challenges to EHR adoption and Meaningful Use achievement, by adoption stage cohort, as reported by Regional Extension Centers in 2012. Shaded cells indicate the top 5 reported challenge issues for either cohort. A total of 950 challenge issues (406 in the not yet live cohort; 544 in the EHR implementation cohort) did not include a secondary category and are not listed in this table.

EHR indicates electronic health record.

patient smoking status. Providers in small private practices require assistance along all steps of the SRA process, as they usually do not have in-house IT, vendor or privacy and security expertise. Practice staff typically need education and training on privacy and security compliance, how to perform the SRA, and how to implement mitigation of issues identified in the SRA. Challenges in recording smoking status within their EHR may be resolved through training of practice staff, such as knowing where in the vendor product to capture smoking status as structured data. For others, challenges reside in modifying workflows to ensure that the data are captured for all patients and may require more in-depth practice coaching support.

Frequently reported among other underserved setting types are problems associated with fully understanding and achieving the summary care records measure. Challenges arise in workflow redesign to facilitate the capture of appropriate information and exchange of these data.

E-prescribing is often identified as a challenge for REC-enrolled Federally Qualified Health Centers (FQHCs) and Lookalikes (methods for identifying FQHCs described previously⁸). Among FQHCs, the issues may lie in the lack of an interface with an internal pharmacy. These organizations may also have financial problems in being able to afford a system to electronically accept prescriptions. Alternately, some FQHCs meet challenges in doing e-prescribing for medications their patients may receive subsidies for.

The ability to meet the immunization reporting requirement is a commonly reported issue for the rural health clinic setting type. Providers in this setting often indicate

they are waiting on either a vendor interface to facilitate reporting or the local health department for testing. Identifying financial resources to pay for the interface or to facilitate reporting capabilities is also a common problem.

In both Critical Access Hospitals (CAHs) and rural hospitals (RHs), staff are in need of additional education related to the patient reminder measure. This education may also help combat resistance encountered from providers in making the necessary workflow changes.

DISCUSSION

New challenges emerge as providers progress toward MU, creating opportunities to preempt large-scale issues with timely interventions. These interventions must take into account organizational and cultural dynamics, increasing the need to identify multiple, often setting-specific, solutions. If identified quickly and a timely response is provided, problems may be halted before becoming widespread or impeding progress. For example, initial rollout of the CMS registration process initially posed challenges to many providers. RECs collectively organized and addressed these by building tools and processes that were proactively shared with providers, ultimately leading to more timely attestation and payment.⁹ To address the large number of challenge reports around the Clinical Summaries MU measure, ONC and the RECs developed a variety of tools then tested in the field by RECs (Supplemental Digital Content 2, <http://links.lww.com/MLR/A618>, case study highlighting Clinical Summary measure challenges and solutions development).¹⁰

TABLE 3. Top 5 REC-reported Stage 1 Meaningful Use Measure Challenges by Practice Setting

Regional Extension Center Overall Top 5 Challenges	Small Private Practice (≤10 Providers)	Other Underserved Settings	Federally Qualified Health Centers and Lookalikes	Rural Health Clinics	Critical Access Hospitals and Rural Hospitals
Clinical summary (500/1951)	Clinical summary (231/636)	Clinical summary (106/664)	Security risk analysis (33/112)	Clinical summary (12/41)	Clinical summary (33/188)
Security risk analysis (263/822)	Security risk analysis (163/394)	Patient reminders (91/506)	Immunization (31/94)	Immunization (8/13)	Medication reconciliation (24/135)
Medication reconciliation (187/822)	Immunization (139/289)	Summary care record (89/508)	eRx (28/102)	Smoking status (8/13)	Summary care record (24/145)
Summary care record (171/756)	Electronic exchange (116/288)	Medication reconciliation (60/467)	Electronic exchange (23/70)	Medication reconciliation (7/17)	Patient reminders (22/148)
Patient reminders (166/753)	Smoking status (96/228)	Educational resources (60/342)	Clinical summary (21/116)	Educational resources (7/11)	Educational resources (20/129)

Data on Meaningful Use (MU) measure challenges as reported by ONC Regional Extension Centers (RECs) in 2012. Values in parentheses represent the number of reports/number of providers. The column on the far left reflects the top 5 MU measure challenges across all REC providers. The columns to the right of that include selected practice settings within the REC-enrolled population, with the overall top 5 measures shaded when they reappear in the setting-specific columns. Small private practices are defined as having ≤10 primary care physicians in the practice. Other underserved settings are generally defined by RECs as other ambulatory settings that predominantly serve uninsured, underinsured, and medically underserved populations.

Another example of evidence-based, proactive tool development is creation of a toolkit for CAHs and RHs. RECs partnered with 2 EHR vendors that hold significant market shares for health IT solutions dedicated to CAHs and RHs and developed product-specific toolkits to provide an implementation path to MU. The task force developed the toolkits after testing and collecting feedback from 11 CAHs and RHs across 3 states.

RECs are working with 44% of all primary care providers in the United States.¹¹ However, given the REC focus on primary care providers, challenges reported here may differ from those faced by other provider populations. In addition, as not all RECs are using the CRM challenge reports to capture data, or are using the reporting system differently, all parts of the country may not be represented equally. Despite these limitations, REC reports do represent a significant portion of primary care providers and serve in understanding challenges faced by some populations struggling with EHR adoption and MU achievement.

Challenges to EHR adoption, implementation, and MU achievement are widely known, but this is the first nationwide assessment of these challenges. This work has identified and categorized those challenges so best practices, tools, and resources can be developed and targeted to groups who need the most assistance.

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