ORIGINAL RESEARCH

Electronic Health Record Challenges, Workarounds, and Solutions Observed in Practices Integrating Behavioral Health and Primary Care

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Purpose: **This article describes the electronic health record (EHR)-related experiences of practices striving to integrate behavioral health and primary care using tailored, evidenced-based strategies from 2012 to 2014; and the challenges, workarounds and initial health information technology (HIT) solutions that emerged during implementation.**

Methods: **This was an observational, cross-case comparative study of 11 diverse practices, including 8 primary care clinics and 3 community mental health centers focused on the implementation of integrated care. Practice characteristics (eg, practice ownership, federal designation, geographic area, provider composition, EHR system, and patient panel characteristics) were collected using a practice information survey and analyzed to report descriptive information. A multidisciplinary team used a grounded theory approach to analyze program documents, field notes from practice observation visits, online diaries, and semistructured interviews.**

Results: **Eight primary care practices used a single EHR and 3 practices used 2 different EHRs, 1 to document behavioral health and 1 to document primary care information. Practices experienced common challenges with their EHRs' capabilities to 1) document and track relevant behavioral health and physical health information, 2) support communication and coordination of care among integrated teams, and 3) exchange information with tablet devices and other EHRs. Practices developed workarounds in response to these challenges: double documentation and duplicate data entry, scanning and transporting documents, reliance on patient or clinician recall for inaccessible EHR information, and use of freestanding tracking systems. As practices gained experience with integration, they began to move beyond workarounds to more permanent HIT solutions ranging in complexity from customized EHR templates, EHR upgrades, and unified EHRs.**

Conclusion: **Integrating behavioral health and primary care further burdens EHRs. Vendors, in cooperation with clinicians, should intentionally design EHR products that support integrated care delivery functions, such as data documentation and reporting to support tracking patients with emotional and behavioral problems over time and settings, integrated teams working from shared care plans, template-driven documentation for common behavioral health conditions such as depression, and improved registry functionality and interoperability. This work will require financial support and cooperative efforts among clinicians, EHR vendors, practice assistance organizations, regulators, standards setters, and workforce educators. (J Am Board Fam Med 2015;28:S63–S72.)**

Keywords: **Behavioral Medicine; Delivery of Health Care, Integrated; Electronic Medical Records; Medical Informatics; Mental Health; Primary Health Care**

The integration of behavioral health and primary care has gained increasing attention as a means to lower costs and improve quality of care.[1] Almost half the U.S. population will meet the criteria for a mental health disorder during their lifetime.[2] However, less than two thirds of these individuals will

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receive treatment.[3] The prevalence and need for treatment of behavioral health disorders, which affect a broad percentage of the population, makes the case for integrated care.[4] This article uses definitions adapted from the work of Peek[5] and Butler et al[6] to describe this approach to care. Behavioral health care is used as a broad term to encompass care for patients around mental health and substance use conditions, health behavior change, life stressors and crises, as well as stress-related physical symptoms. The term integrated care is used to define the care rendered by a practice team of primary care and behavioral health clinicians (BHCs) and staff, working together with patients and families and using a systematic and cost-effective approach to provide patient-centered care that addresses diverse physical health and behavioral health needs.

By definition, integrated care is delivered in teams. Integrated teams depend on the exchange of complete, current, just-in-time information to enable independent and collaborative work by multiprofessional team members.[7] Electronic health records (EHRs) can help facilitate this exchange of information and support clinical activities that have the potential to improve care quality and reduce costs.[8–12] However, behavioral health and primary care differ in their language, classifications, codes, data reporting requirements, and regulations. Although EHRs can be a great enabler, they can also pose barriers to care delivery.[13–16] Evidence examining the role of the EHR in team-based care is mixed. On the one hand, EHRs may facilitate teamwork, communication and task delegation through the use of instant messaging, task management, and evidence-based templates for symptom-specific data collection.[17] In contrast, EHRs may be a barrier to other team-based care activities because many systems lack the functionality and interoperability to support care management and population-based care, such as through the use of interprofessional care plans and registry management tools.[17] Although the use of EHRs in other areas of patient care, such as management of chronic illness has been well studied,[18–20] the role that EHRs play in supporting the delivery of integrated care is not yet well understood.

This article describes EHR-related experiences of 11 real-world practices participating in Advancing Care Together (ACT), an initiative funded by The Colorado Health Foundation. The program has been described elsewhere, but in brief, ACT practices implemented tailored, evidenced-based strategies to provide integrated care to patients with emotional and behavioral problems in their own settings and under their local conditions.[21] Practices received a total of $150,000 over a 3-year period to offset the cost of participation in the program's evaluation and learning community. Grant funds were neither intended nor sufficient to support major technological investments, and none of the practices used ACT funds to purchase a new EHR system.

It is important to note that the majority of the ACT practices were new to integrated care and were discovering and experiencing EHR challenges at the same time as they hired new clinicians to form integrated teams, developed new approaches for screening patients for target conditions, and prepared their practices to respond to patients' needs using a new clinical approach. Balancing these demands over a period of 3 years of intense innovation resulted in practices putting in place a number of workarounds that allowed them to organize their teams and practices using the EHR and health information technology (HIT) systems they already had. Through an iterative process, ACT practices tested their EHR systems' capabilities and limitations at the same time as they learned how to deliver integrated care and worked to refine their approaches.

In this article, we focus on practices' use of existing EHR systems to deliver integrated care, and the challenges, workarounds, and movement toward HIT solutions that emerged during this process. We define a workaround as a behavior adopted by a user to overcome a perceived limitation in a technical system.[22] Although not all workarounds are inherently bad,[23–31] they point

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to mismatches between capabilities of existing HIT systems and the clinical tasks practices need to perform.[32–34]

Methods

Sample

Eight primary care practices and 3 community mental health centers (CMHCs) participated in the ACT program. ACT practices varied in type, size, and approaches to delivering and financing integrated care. For more details on practice characteristics, see Cohen et al,[35] in this issue.

Data Collection

In this study, we collected qualitative and quantitative data over the 3-year implementation period. Data included documents (eg, grant applications, semiannual reports); practice information surveys to assess practice characteristics (eg, ownership, federal designation, geographic area, provider composition, EHR system, patient panel characteristics); observation of practices; and online diaries[36] completed approximately every 2 weeks by practice members describing their experience of integrating behavioral health and primary care, including their experiences with EHRs. Two to 4 members of the study team conducted site visits with 9 ACT practices. During site visits, we observed all aspects of clinical operations including patient encounters, provider interactions, and clinical documentation processes, including the use of EHRs. During these visits, semistructured interviews were conducted with 5 to 10 clinicians and staff to understand their implementation experiences.

Data Management

Field notes were prepared, typically within 24 hours after an observation visit. Interviews were audio recorded and professionally transcribed. Practice information was collected via an paper-based survey. All data were deidentified. Qualitative data were entered into Atlas.ti (Version 7.0, Atlas.ti Scientific Software Development, GmbH) for data management and analysis. Practice information surveys were manually entered into Excel and analyzed using SAS (SAS Institute).

Analysis

A multidisciplinary team with expertise in anthropology, social and clinical psychology, communication, public health, integrated care, and primary care analyzed data using a grounded-theory approach.[37] This involved reading and reviewing qualitative data, and discussing these data as a team to identify emerging patterns. This was done in multiple immersion-crystallization cycles.[38] First, each case (eg, individual practice) was analyzed and text segments were tagged to identify passages that emerged as important to integration efforts. Through this process, general technological challenges emerged as an important area of experience for practices, and we tagged these challenges using names or codes (eg, EHR, HIT, technology, documentation). Our team conducted a second immersion-crystallization cycle where we extracted the data tagged with technology-related codes, and we identified and described a range of challenges and workarounds we observed with regard to EHR use as it related to delivery of integrated care across the practices.

Institutional review boards at Oregon Health & Science University, University of Texas Health Science Center at Houston, and University of Colorado Denver approved the study protocol.

Results

As described in Table 1, practices varied in ownership, size, geographic location, use of 1 or 2 EHRs (eg, 1 for primary care and another for behavioral health care), and clinicians' level of access to electronic records. Most practices used commercially available EHRs. One practice used a custom-built EHR, and 1 practice did not have an EHR and instead used a document management system and a clinical database. We directly observed and heard from clinicians and staff about their EHR-related experiences, and following, we describe the challenges, workarounds, and HIT solutions that emerged as these practices implemented their tailored integrated care approaches.

EHR Challenges

We identified 3 EHR challenges common among practices integrating care. First, practices hired new types of clinicians, such as psychologists in primary care practices and nurse practitioners in community mental health centers, who generated data not previously documented or tracked by existing EHR systems (eg, patient health questionnaire [PHQ9] scores, behavioral health visit notes, consultation

Table 1. EHRs and Access to Clinical Information in ACT Practices (n = 11)

Practice ID	Federal Designation	Ownership	Geography	EHR(s)	Shared EHR	Access to Clinical Information
7	None	Clinician	Suburban	e-MDs V7.2	Yes	Full
9	None	Clinician	Rural	GE Centricity V9.5	Yes	Full
10	None	Clinician	Suburban	eClinical Works V10.0	Yes	Full
13	None	Clinician	Urban	Allscripts TouchWorks V11.4	Yes	Full
14	None	Hospital System	Suburban	Health Connect (EPIC) V Summer 09	Yes	Partial
4	FQHC	Private, not for profit	Suburban	eClinical Works V10.0	Yes	Full
12	FQHC	Hospital System	Suburban	NextGen V5.8	Yes	Full
16	FQHC	Hospital System	Suburban	Siemens EDM V24 Siemens LCR V2.2 Document management system and clinical database (not an EHR)	Yes	Full
17	CMHC	Private, not for profit	Rural	Unicare Profiler V15 (BH) AdvancedMD (PC)	No	Restricted
18	CMHC	Private, not for profit	Urban	Netsmart TIER (BH) GE Centricity (PC)	No	Restricted
19	CMHC	Private, not for profit	Rural	Qualifacts Systems, Inc. Carelogic V5 (BH) Intergy (PC)	No	Full

Access to Clinical Information Abbreviations: Full, access to all parts of the record granted to primary care providers (PCPs) and behavioral health clinicians (BHCs); Partial, access to only relevant parts of the record granted to PCPs and BHCs; Restricted, restricted access to the record granted to PCPs and BHCs, such that needed clinical information was inaccessible at the point of care; BH, behavioral health; CMHC, community mental health center; EHR, electronic health record; FQHC, federally qualified health center; PC, primary care.

notes, referrals to outside services). EHRs generally lacked standard templates to document these additional inputs in structured data fields. This limitation made it difficult for practices to find, extract, and track relevant behavioral health and physical health information to monitor quality and improve the delivery of integrated care. Second, integrated teams had specific communication and care coordination needs, such as use of shared care plans to coordinate tasks for patients receiving integrated care services, and reported needing the ability to see when each other's tasks were completed. EHRs typically did not have templates that supported shared care plans for both primary care and behavioral health needs. However, EHRs that had tasking functions were helpful in enabling some types of communication and coordination between team members. Third, EHRs were not interoperable with other EHR systems or with tablet devices used by practices to administer behavioral health screening surveys. This lack of system interoperability created further barriers to document patient encounters, access needed information at the point of care, and easily and consistently communicate information between primary care and BHCs.

EHR Workarounds

We observed 4 EHR workarounds used by practices in response to the challenges described above: 1) double documentation and duplicate data entry, 2) scanning and transporting documents, 3) reliance on patient or clinician recall for inaccessible clinical information, and 4) use of freestanding tracking systems.

Double Documentation and Duplicate Data Entry

Practices that used 2 different EHRs (eg, one for primary care and another for behavioral health care), often double documented their work in the 2 separate systems. For example, a BHC typed encounter notes into the mental health EHR and then copied and pasted the same note into the primary care EHR, as illustrated below:

> So that is what we do during an (integrated care) appointment—how to document and bill for that? It could be about health behavior change and taking metformin . . . or about PHQ9 and parent conflict. And I've been documenting those separately . . . but it's

> been changing. . . I've decided it is not okay to document separately. It is only half of the appointment. I document in both systems exactly the same (BHC diary note, Practice 19).

Three practices (Practice ID 7, 9, and 19) used tablet devices to automate patient screening that had been previously done using paper and pencil or through verbal screening by clinical staff. Tablets administered behavioral health questionnaires, automatically scored them, and used conditional branching to administer additional questions/screens based on patient responses (eg, positive PHQ2 automatically triggered PHQ9). Practices reported that tablets provided a convenient and efficient way to screen patients as they waited to be seen, but these devices did not have the necessary interfaces to automatically upload screening data to EHRs. Therefore, duplicate data entry by staff was required to transfer this information into the EHR. Practice 19 developed a separate HIT interface that was programmed to extract specific data fields from 2 EHRs and the tablet screening tool, and to produce a summary report that patients and clinical providers could view on a shared screen in the examination room. However, this interface was limited to prespecified data selected for extraction (eg, PHQ2 score, but not smoking history), and the information exchange was not bidirectional. That is, screening information still needed to be manually entered into the EHR. Practice 7 opted for working directly with the tablet and EHR vendors to build the necessary interface for automatic upload of screening data from the tablet devices into the EHR, as described below:

> The data are not bidirectional. It is going into a file where the MA [medical assistant] staff in the back sees it and manually transfers it (to) other flow sheets (in the EHR). They (practice staff) want the information from the tablet to automatically go into the EHR. They are working on making it bidirectional with [the tablet vendor] and also working on pushing the relationship between the EHR vendor and [the tablet vendor]. (Primary Care Physician diary note).

Scanning and Transporting Documents

Practice 18 integrated a physician assistant and medical assistant from a partnering federally qualified health center (FQHC) into a CMHC to provide on-site primary care. The CMHC and FQHC used 2 different EHRs that were not interoperable. To overcome this limitation, they printed daily medication lists from the mental health EHR for patients coming in for primary care visits. These printed lists were used by the physician assistant to review and manually update medications on paper. Medication changes and updates were later scanned into the primary care EHR at the FQHC and also manually entered into the mental health EHR at the CMHC.

These workarounds required additional staff time and effort, disrupted clinical workflow, and created delays in getting data back into the EHR for future access. In addition, because this information was entered into the system as scanned data, it often required extra "clicks" to find it, and although it was available for viewing, the information was not usable for further manipulation and reporting.

Reliance on Patient or Clinician Recall for Inaccessible Clinical Information

Patients and clinicians were sometimes asked to recall information about past screening results, scheduled tests, and treatment recommendations to fill in gaps about information that was not available or could not be accessed from the EHR at the point of care. Workarounds related to reliance on individuals' recall were problematic because patients and clinicians did not always remember information accurately or completely, and had to provide the same information repeatedly. One BHC, who was working from a separate behavioral health EHR, described this limitation as "both types of providers are flying a little blind when they cannot access patient information and the patient is the only source of current information" (Diary note, Practice 13). This was particularly problematic when handing off patient care from one clinician to another without immediate access to information needed to determine or execute the next appropriate step in a planned course of care, as illustrated in this example:

> I just finished meeting with a family for an intake appointment for a 7-year-old

> boy. I had spoken to [the medical doctor] briefly about the referral a few weeks ago but a lot of days and nights and patients have passed by since then. So I was not able to remember the specifics about her reasons for the referral. The family was fuzzy about why they were here and since I do not have access to the primary care record [from the examination room], I could not access [the medical doctor's] notes about the referral. I did remember that they had attempted to complete a Vanderbilt Rating Scale but I did not have access to that. I went to do the releases of information . . . the family said they already did them with [the medical doctor], but they were not in the electronic document library that I have access to, so I had them do them again. (BHC interview, Practice 19)

Freestanding Tracking Systems

Practices developed home-grown, freestanding spreadsheets and databases to manually enter and track information relevant to patient care, such as appointments, screenings, referrals, followups, prescription fulfillment, health care utilization practices, and other care processes. For example, a BHC working in Practice 9 kept a registry of adolescent patients taking selective serotonin reuptake inhibitor medications and a list of patients referred outside of the practice for specialty mental health care. Both were kept in Excel spreadsheets and were used by the BHC to facilitate close monitoring of these patients. Manual tracking systems were widely used by practices, but they required considerable staff time to maintain and did not integrate well with the practices' EHRs, which resulted in information sometimes not being available at the point of care, or made harder to find by clinicians.

Emerging Solutions

Emerging solutions to the HIT problems described above were observed late in the ACT program, generally after 2 to 3 years of experimentation and learning, and are briefly described below from least to most complex. These include customized EHR templates, EHR upgrades, and unified EHRs.

Customized EHR Templates

Many practices created specific data fields and templates within their existing EHRs to more easily document and track relevant behavioral health and physical health information related to screenings, referrals, treatment, and followup. Creating customized EHR templates was time consuming and required dedicated HIT staff working collaboratively with BHCs and primary care providers. Practices that did not have access to these resources were not able to create customized templates as readily, or had to pay EHR vendors to do so. One practice capitalized on the skills and time of a member of their clinical team to create well-customized templates, as observed during a site visit.

> There seems to be a good amount of free text/narrative as well as discrete field options in the EHR, and many fields can be structured as either free text, discrete, or both, including current medications, past medical history, allergies, social history, family history, vitals, examination, assessment, procedures, drug/alcohol use, next appointment, just to name a few. The PHQ9 can be entered as a flow sheet with a tracking system available to look at change over time. Some measures can be exported to Excel to create a graph if so desired. It seems that a lot of this was customized and built for the clinic by the [nurse]. (Field notes, Practice 10)

EHR Upgrades

Five practices upgraded their EHRs, noting in part the benefit of these upgrades to obtain improved screening templates, reporting interfaces for behavioral and medical treatment, and interoperability with other electronic devices. Upgrades also provided opportunities for practices to make more comprehensive system improvements, as well as more extensive customizations to optimize documentation, tracking, and reporting of relevant information and care processes related to integration. EHR upgrades required practices to make considerable financial investments, which were not covered by ACT grant funds. Practice 13 used financial incentives from their participation in the Comprehensive Primary Care Initiative[39] to cover the costs

of the upgrade. Unfortunately, not all practices had access to practice transformation incentive funds, which made it difficult for many to afford costly EHR upgrades.

Unified EHR

At the beginning of the program 4 practices (ID No. 13, 17, 18, and 19) were using 2 different EHRs, one for behavioral health information, and one for primary care information. By the end of the program, Practice 13 had begun a transition to a unified EHR, Practice 17 was planning a transition to a unified EHR, Practice 18 was seeking solutions through the state's health information exchange, and Practice 19 had built an HIT interface that pulled selected data from different electronic systems and made continuity of care data available for viewing via a touchscreen monitor. While adopting a unified EHR was not easy or inexpensive, it made it possible for integrated team members in Practice 13 to have full access to view and document relevant behavioral health and physical health information in one system. A template was built into the primary care EHR that walked BHCs through a series of point-and-click questions to record length and type of visit (eg, warm handoff, crisis intervention, consultation, and referral outside the practice, phone, in person, coconsult, initial or follow-up visit), and also included templated behavioral health notes and free text, as described below:

> As we've gone through this process and with our expanded relationship with [psychology practice], we have created templates in our EHR where those discrete data points are now entered. We've not used our [free-standing tracking] spreadsheet now since the first of the year. BHCs go in now and they pull up their template and click, click, click, there's data fields and now we can report on it. We can extract all the data and blend it with demographics, PCP [primary care physician], age, diagnosis, insurance. (Clinic administrator interview)

Discussion

Practices working to integrate behavioral health and primary care experienced 3 common challenges with existing EHR capabilities to 1) document and track relevant behavioral health and physical health information, 2) support communication and coordination of care among integrated teams, and 3) exchange information with tablet devices and other EHRs. In response to these challenges, practices used a number of workarounds, including double documentation and duplicate data entry, scanning of paper documents, reliance on patient or clinician recall for inaccessible clinical information, and use of freestanding tracking systems. These findings are consistent with other studies that have documented similar EHR barriers and workarounds in ambulatory care and other clinical settings.[23–34] However, the challenges and workarounds described in this article are specific to practices that were new to behavioral health and primary care integration and tested their EHR systems at the same time they worked to refine their care delivery approaches over a 3-year period. These practices' experiences can help shed light on challenges other practices under similar circumstances may also experience when starting the integration journey, and may help more quickly guide them to viable solutions.

As practices gained experience with integration, they began to move beyond workarounds toward more permanent solutions, including customized EHR templates, EHR upgrades, and unified EHRs. Although these emerging solutions proved useful in helping practices optimize EHR systems and eliminated the need for some workarounds, challenges remain. EHR systems are not yet optimally designed to meet the needs of practices integrating behavioral health and primary care. Similar to prior research,[17] our study found that EHRs generally lack features essential to support key integration functions such as documenting and tracking longitudinal data, working from shared care plans, and template-driven documentation for common behavioral health conditions such as depression. EHRs also had poor registry functionality and could not be electronically linked with freestanding registries, making it difficult for practices to monitor and track patients with specific behavioral health conditions, medication regimens, and those receiving specialty mental health services outside the practice. In the future, HIT systems should be intentionally designed, in cooperation with clinicians; to support and enable these integrated care functions, as well as the different modes of com-

munication and care coordination tasks that occur between multi-professional members of integrated teams.

An important factor in optimizing use of EHRs is the availability of resources to customize and upgrade systems to support integrated care delivery, tracking, and reporting. Practices that lack dedicated HIT resources to pay for new template development and system upgrades may need financial incentives to facilitate this work. Documentation of patient care in the medical record is the foundation of national quality and incentive programs such as the National Committee Quality Assurance Patient-Centered Medical Home Recognition Program, Health care Effectiveness Data and Information Set quality measures, and the Centers for Medicare and Medicaid Services (CMS) EHR incentive programs.[40] Yet these programs do not address shortcomings in available technology to accurately capture and use essential data for integrated care. For example, EHRs certified for CMS's meaningful use incentive programs inadequately account for all the basic data elements and reporting functions needed for effective integrated behavioral health and primary care.[41,42]

Integrating behavioral health and primary care is not a one-size-fits-all endeavor. It requires substantial practice reengineering and a period of experimentation and learning. Likewise, tailoring an EHR system to meet evolving practice needs is an ongoing activity that we have observed practices with extensive integration experience continually pursue.[43] Practices that are new to integration may benefit from an early assessment of their specific clinical information needs, existing EHR capabilities, and changes in clinical workflow necessary to support integration in their settings. An early practice assessment can help inform initial decisions about EHR customizations and upgrades to meet the demands of integrated teams in a way that is consistent and compatible with what supports and enhances their work. Technical assistance organizations that train and deploy practice facilitators should be aware of the specific EHR challenges faced by practices integrating care. Practice facilitators can assist practices in conducting early assessments and making decisions about potential EHR solutions.

The study's findings also point to the need for agreement and guidance about which data are essential for integrated care teams to share and track together, and about appropriate confidentiality and consent protocols. For example, sharing of mental health and substance use records are subject to state laws and special protections under the Health Insurance Portability and Accountability Act (HIPAA). These rules and regulations are in desperate need of harmonization to enable the delivery of integrated care.

The study had some limitations, including the small number of participating practices with limited integration experience and lack of dedicated resources for HIT improvements. This was also a strength inasmuch as these circumstances are similar to those of other practices that are at the start of their integration efforts. However, these findings may not be generalizable to practices that are further along in their integration work or those that have access to dedicated HIT resources. Lastly, the study is not able to link practices' use of EHRs to clinical or financial outcomes.

Conclusion

Integrating primary care and behavioral health present substantial EHR data documentation and use challenges that are yet to be fully resolved. Diverse practices imagined and implemented ways to deal with these challenges until definitive solutions mature, but these workarounds and early solutions further burden practices and patients and beg for relief. Relief will require financial support and cooperative efforts among clinicians, EHR vendors, practice assistance organizations, regulators, standards setters, and workforce educators.

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