

Multigrantee Technical Assistance Meeting—Practical Approaches to Using Electronic Health Records for Research: Challenges and Mitigation Strategies

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HEALTH IT

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Chapter 1. Meeting Summary

The multigrantee meeting entitled “Provider Practical Approaches to Using Electronic Health Records for Research: Challenges and Mitigation Strategies” was held on March 15, 2011, from 12 noon to 2 p.m., EST. Its purpose was helping grantees learn about—

- The challenges of working with vendors when research studies require the use of EHR or health IT technology.
- Mitigation strategies for these challenges, including real-world examples of successful vendor engagement.
- Optimization of EHR and HIE data for research studies.

The Webinar included content related to the following questions on the challenges of and mitigation strategies for working with vendors for research studies.

- **Challenges of working with EHR and HIE vendors**
 - *Question #1:* What specific challenges may be encountered when working with vendors?
 - *Question #2:* What can be expected in terms of charges for services when working with vendors?
 - *Question #3:* Have there been issues when communicating and contracting with vendors?
- **Mitigation strategies for key challenges**
 - *Question #1:* What specific strategies are used for successful engagement with vendors?
 - *Question #2:* Are there approaches to contracting with vendors that may enhance the researchers’ work?
 - *Question #3:* How do you work with providers and patients when technology becomes a barrier to progress in the research study?
- **Considerations for using EHR and HIE data for research studies**
 - *Question #1:* What challenges are inherent in the use of data for research studies?
 - *Question #2:* What strategies have been employed to successfully use data derived from EHRs and HIEs?

The Webinar began with a presentation of the issues and challenges often encountered by grantees utilizing electronic health records (EHRs) for their research studies. This overview was followed by formal presentations from four presenters who discussed their experiences and lessons learned based on their research activities and practical experience in the field. The Webinar concluded with a question and answer session with grantees.

Presentations

Facilitator: Barbara Lund, M.B.A., M.S.W.—Project Director, Massachusetts eHealth Collaborative, AHRQ NRC TA Lead

Using EHRs for Research: Setting the Stage

Research studies focusing on the implementation and use of health IT have become more prevalent in recent years. However, health IT vendors often have different priorities than researchers, resulting in delays in implementation and training. Vendors may charge for software modifications and upgrades, which are required to complete a particular study. It is often challenging to find the “appropriate” person at the vendor company with whom to collaborate on these requests. In addition, implementation, version upgrades, and enhancement requests can delay the research study and typically take longer to implement than planned.

Researchers have also noted the inherent limitations of EHRs for research studies. Most EHR systems are perceived to be too “bulky” and do not allow for streamlined data entry. Providers often use one system to enter data and a different system for analysis and reporting. Finally, many traditional EHR systems lack flexibility and have limited—or highly complex—reporting systems.

The use of structured data from EHRs may also be problematic. Researchers frequently find that data are inconsistently input into EHRs. Many physicians prefer to hand write notes or dictate, and many resist structured data entry. Often, limited resources are available to train practice staff on required fields for data entry. Finally, there is a strong emphasis on the status quo: “we’ve always done it this way!”

Presenter: David Mehr, M.D., M.S.—William C. Allen Professor, Director of Research, Department of Family and Community Medicine, University of Missouri—Columbia School of Medicine

Dr. Mehr began by discussing his research at the University of Missouri (U of Missouri), which has implemented the Cerner EHR at the Medical Center. By way of background, Cerner and the University of Missouri have more than a decade of experience of successful collaboration on some of the nation's first efforts to develop electronic patient medical records. The implementation has been effective in part because of U of Missouri Medical Center’s proximity to Cerner’s corporate headquarters. Cerner worked closely with U of Missouri to create EHR tools to improve chronic illness care through the Medical Home Project. Dr. Mehr’s research project with AHRQ included an evaluation of the quality improvement resulting from use of these tools, including registry function and analytics (quality performance measures) and a patient Web portal (secure messaging and record viewing).

Dr. Mehr noted several issues affecting research are noted below.

Delayed implementation

Dr. Mehr explained that like many other research projects, his project had delays; he noted the importance of understanding the underlying reasons for the delays. Although the physicians assumed the vendor was causing the delays, it turned out the delays often were caused by competing priorities for the university's own IT staff. Implementation of some modules was delayed because no key institutional players had "ownership" of the implementation project. To resolve the issue, the research staff, in one case, pulled together the key institutional players to implement a module.

Difficulty communicating

Dr. Mehr noted the importance of "speaking the same language" when working together on system projects. Departments may use different vocabularies and varied approaches to working on issues. Successful collaboration requires sufficient allotment of time from all involved to learn to communicate and work together.

Software not functioning properly

Even if software works in a mock environment, it may not always work in production. Workflow and usability issues may not be recognized before they are implemented in production. Dr. Mehr suggested that users need to have a good process for communicating issues and must work closely together to troubleshoot problems as they arise post-go live.

Plan for maintaining functionality

Vendor upgrades for maintenance and code enhancements may occasionally "break" a well-functioning system. Researchers should work with practices to ensure IT staff members are in place to routinely maintain and update systems and rectify issues that arise.

In summary, developing a productive working relationship with a vendor should pave the way for an effective institutional-vendor partnership, which may help further the development of new products and research.

Presenter: Rainu Kaushal, MD, M.P.H.—Chief of the Division of Quality and Medical Informatics at Weill Cornell Medical College

Dr. Kaushal presented a research model that has helped promote collaboration between vendors and researchers in the discussion and design of research studies. She noted the importance of understanding the priorities and intentions of a system's designers and builders. Researchers should understand the (1) goals of the implementation from the vendor and user perspectives, (2) characteristics of the users, and (3) research questions of interest to the users and vendors. Researchers also should understand which data elements are being used and for whom data are being stored and accessed.

Researchers may share the results of these collaborative efforts with vendors, focusing on the business implications of any suggested product changes and on product development in line with the suggested enhancements—especially as these pertain to research

requirements. The results are typically published and shared in national meetings. Researchers hold stakeholder meetings with users who have assisted with the technology evaluation to provide them with more detailed feedback on the findings. This approach has been very effective with users and vendors because they are both involved with the numerous steps of the evaluation process.

Other considerations for successful collaborations include the following:

- **Funding.** Gaining actual, or in-kind, financial support from vendors.
- **Collaboration agreements and data use agreements.** Using agreements to solidify arrangements while maintaining academic independence.
- **Authorship and acknowledgement considerations.** Engaging vendors in discussions and publically acknowledging vendors in the research, as appropriate; however, naming a vendor may decrease the generalizability of a study.
- **Dissemination.** Meeting with vendors to discuss product enhancements based on findings from the research.

Presenter: Melissa Honour, M.P.H.—Administrative Director, Center for Healthcare Informatics and Policy at Weill Cornell Medical College

Ms. Honour discussed the perspective of vendors involved in research collaborations with research organizations and academic groups. To achieve successful collaboration with mutually shared value, Ms. Honour noted the importance of understanding the vendor's perspective and the value a vendor obtains from interacting with the research team.

Reasons for vendor collaboration with researchers and academic groups include—

- Increasing satisfaction of vendor's clients.
- Building the vendor's credibility by leveraging the reputation of the research organization.
- Using expertise and knowledge gained by the research team to improve the product and product implementations.
- Disseminating positive results to assist with vendor marketing and sales.

Ms. Honour discussed an effective approach to working with vendors. In this approach, multiple grantees and academic institutions contact the vendor as a group. In one example, 15 academic centers with shared goals for collaboration and a shared mission statement worked together with the vendor to prioritize product enhancements.

Additional opportunities for researchers to work with vendors and their client base include attending vendor user group conferences, engaging in online user communities, and participating in product development workshops. By collaborating with vendors, researchers can build positive relationships with vendors to accomplish multiple shared goals.

Ms. Honour noted that researchers may successfully engage vendors by asking research questions from the vendor’s perspective:

- Does your research help the vendor *differentiate* in the market or *stay ahead*?
- Does your research potentially increase the *profitability of the vendor*?
- Does your research help the vendor *innovate*?

Finally, Ms. Honour noted there is value for researchers to develop a trusted relationship with vendor leadership to help guide leaders’ priorities and align their goals with federally funded projects (e.g., health IT policy). This relationship may include a researcher’s involvement on a vendor advisory board, where he or she can provide expert advice on the vendor product and service strategies.

Presenter: Barbara Lund, M.B.A., M.S.W.—Project Director, Massachusetts eHealth Collaborative, AHRQ NRC TA Lead

The final presenter, Ms. Lund, provided the perspective of “lessons learned” through the practical work of the Massachusetts eHealth Collaborative, which has implemented EHRs in more than 1,000 practices. Researchers are sometimes involved with EHR implementations during the initial planning phase, which is an ideal time to lay the groundwork for research studies. Considerations for involvement at this phase include—

- Determining the desired end-state based of practice and research goals.
- Understanding exactly how the EHR needs to be configured before implementation.
- Paying very close attention to the impact of an EHR implementation on practice workflow.
- Standardizing use whenever possible.
- Leveraging the HHS Meaningful Use (MU) standards and certification criteria for EHRs by synchronizing research needs with MU.

The advent of MU provides a unique opportunity to support common data entry and extraction, which may be very beneficial to collecting data for research purposes.

Considerations for researchers engaging with practices *after* an EHR implementation include—

- Remediating the practice—training or re-training clinicians and staff to use the EHR in a consistent and standardized way.
- Encouraging the use of discrete data elements whenever possible.
- Supporting receipt of electronic lab results and other data via electronic interchange or interfaces.
- Leveraging the HHS Meaningful Use (MU) standards and certification criteria for EHRs as much as possible.
- Working with practices to establish formal policies and procedures for data entry and use.

Ms. Lund noted that some vendors are more flexible than others in terms of upgrades, enhancements, and general technology; for example, vendors may deliver upgrades via a SaaS model (“Software as a Service”), requiring little to no involvement by the practice to perform an upgrade. Researchers are also encouraged to ensure adequate time to work with vendors on enhancement requests, especially if the enhancements are essential to completing the research study.

Ms. Lund provided several comments about research studies involving quality reporting using EHRs. Specific reporting needs should be identified and grouped to streamline the data gathering process as much as possible (e.g., data collection needs for Patient Centered Medical Home, Physician Quality Reporting Initiative, and Meaningful Use may be similar). A thorough assessment of the EHR implementation at the practice will reveal the capabilities of the EHR system, the possible need for practice remediation, and the capabilities of the practice staff to adapt to any modifications required for research studies. Once these needs are identified, the researcher may need to enlist the help of the practice to implement workflow changes, modify the way clinicians and staff document data in the EHR, and train staff to optimize their use of the system.

Finally, the use of benchmarking and peer comparison reports may be helpful as researchers engage practices in making changes for research studies. Reports may be a very helpful way for clinicians to view the “end goal” and understand that what clinicians do on a daily basis makes a difference in patient outcomes. The researcher’s goal is to help clinicians understand that their role is key to not only assisting with a research study, but also providing better overall patient care.

Chapter 2. Questions and Answers

Question 1: Do you have any suggestions for working simultaneously with multiple vendors on one project?

Dr. Kaushal noted that her team has worked simultaneously with multiple vendors on projects. She explained that it is advisable to choose an issue or study question on which vendors are already focused and to clearly demonstrate why multiple vendors are needed for the study. For example, if a researcher is studying a community that has three main vendors and the study question being asked ideally requires a sample of all providers and is central to the vendors' own mission, the vendors may be more willing to cooperate with the study.

Ms. Honour agreed that it is important to establish a common point of interest among all vendors. If your research goal is also a common objective among all vendors, one of the vendors will likely want to lead the way in demonstrating this goal in the interest of healthy competition. One approach to working with multiple vendors is to demonstrate what other vendors can do or how you have been able to work successfully with other vendors. Ultimately, vendors strive to deliver the same outcomes as their competitors.

Dr. Mehr noted that it is very challenging to work with multiple vendors simultaneously to obtain customized reports. Because data are entered and stored differently in different systems, it is hard to pull data from disparate systems and consolidate it for reporting purposes, including reporting for Meaningful Use purposes.

Dr. Alexander Krist, one of the grantee participants, elaborated that throughout the presentation he sensed a common theme of establishing a relationship with a vendor by working with that vendor. He noted that this important process takes time and resources. He explained that this presents a challenge for his particular research network, which contains many practices in different health care settings and different environments with different EHRs. Dr. Krist clarified that his team performs a number of interventions that involve adding features, changing functions, or pulling data from EHRs. In actuality, his team has ended up doing more of the work on its own rather than working with the vendor because it has been difficult to get everyone to work together in a timely manner toward a common goal.

Ms. Lund noted that, while the issue was not specifically discussed during the Webinar, some research teams have the option of using in-house IT staff who are capable of making changes without involving the vendor.

Question 2: Could you elaborate on your experiences with respect to vendors and their conflicting priorities? Our team has run into this issue with the larger companies. We are trying to work with them and find that they are not paying attention to our research—their focus is more on getting the latest release out the door.

Ms. Honour responded to this question from the vendor's perspective, explaining that there is always tension between product release schedules, development cycles, and the individual research commitments vendors have made. She advised that researchers maintain a healthy relationship with the vendor so that when the vendor makes decisions about allocating resources or prioritizing projects, the researcher's name and interests are at the forefront of the vendor's mind. Some approaches include maintaining relationships through group collaboration, such as the academic collaboration mentioned during the presentation; and participating in advisory boards and user conferences. Researchers can help influence the ever-present tension between vendor product releases and work on individual research goals.

Dr. Kaushal noted she has found it helpful to choose priority research questions that are important to both vendors and members of the research laboratory (e.g., institution, community, office practice in a community). Because of the rapidly evolving nature of health IT, if researchers choose a study question that is a high priority, they maximize the chances that it will continue to be important during the 3 to 6 years of the project. However, if they choose an issue that is academically interesting yet on the periphery of the vendor's or research community's interests, researchers run the risk that one or more parties may lose interest during the course of the study. Dr. Kaushal noted that, in her experience, completing studies such as these has been akin to "pulling teeth."

***Question 3:** A grantee asked if any of the presenters would be able to share their collaborative or data use agreements in order for their team to see the various components.*

Dr. Kaushal was unable to share her group's specific data use agreement for legal reasons; however, she outlined the structure and components of the agreement. Her group generally has three types of agreements it uses with vendors and other partners. She noted that the goals of the three types of agreements often overlap.

One type of agreement is financial, one is for a collaboration that does not involve finances (e.g., with a health plan where its providers already have a collaboration agreement in place), and one is a data use agreement. Items to incorporate in agreements include ownership of data, ownership of analysis, publication processes, dissemination of information processes, financial agreement detail, and scope of work. In addition, the agreement should specify how data may be used and what types of information require explicit permission for use.

Dr. Kaushal's team attempts to minimize the number of agreements it uses because agreements can easily take several months to finalize. Her team has created a 20-page publication on policies used for its work with numerous entities in New York State, and it hopes to obtain permission from their institution to share and publish the document. The project is a complicated community-based effort involving vendors, health plans, data aggregators, and other members of the community; and it took her team 1.5 years to create the policy. The policy provides a framework by which to think about community-based participation in research and the relationships with the various entities involved.

Dr. Kaushal further noted that if a subcontract with a vendor exists, much of the above may be detailed in the subcontract and scope of work. In this case, a collaboration agreement may not be required; however, the vendor may still require a data use agreement. A collaboration agreement is similar to a financial or subcontract type of agreement, but there is no exchange of money; the agreement states that the two parties will simply follow the scope of work.

Ms. Lund added that the Health Information Technology Research Center (HITRC) Web site may have nonproprietary samples of vendor agreements available.

***Question 4:** Ms. Lund asked if Dr. Krist would take a few minutes to explain how he helped users involved in his study understand the importance of data input into the EHR by examining data output into the database. She noted that the commentary Dr. Krist provided on this during a previous discussion was very useful to grantees.*

Dr. Krist gave an overview of how his team helped practices involved in the research study create a personal health record (PHR) in which they could show their patients information related to preventive care. The information in the PHR was auto-populated from existing information in the EHR.

The research team carefully reviewed the data to understand how providers and other staff were entering information and to understand when data was entered in a way that prevented it from being shared meaningfully in the PHR. Dr. Krist provided an example of a physician who used free text to document a colonoscopy performed 2 or 3 years earlier; however, the information did not flow to the patient's PHR because it was not entered as structured data. As a result, it could not be used to inform the patient of when the next test was due. The researchers mapped the various data elements of many users and discovered immediately that most practices were entering information in a way that could be shared meaningfully via the PHR only approximately 30 percent of the time. They spent 6 months working with the practices to help them learn how to enter data correctly and to track how they entered data. After this period, the practices increased their rate of meaningful data entry from 30 to 60 percent. Dr. Krist's team found that the study was a good learning process for the practices and resulted in a significant cultural shift.

Appendix: Presenter Bios

Presenter: Barbara Lund, M.B.A., M.S.W.—Project Director, Massachusetts eHealth Collaborative, AHRQ NRC TA Lead

Ms. Lund, M.B.A., M.S.W., is a project director at the Massachusetts eHealth Collaborative. She previously served as a senior pilot executive, where she led one of the Massachusetts eHealth Collaborative's (MAeHC's) community pilot projects, overseeing community implementation of EHRs and HIE. She was responsible for coordination of stakeholders and vendors, strategic planning, physician and community engagement, and project troubleshooting. She also led the New York Regional Extension Center Program efforts for MAeHC and is currently involved with the New Hampshire HIE project. Ms. Lund is currently the technical lead for AHRQ's health IT project in conjunction with Booz Allen Hamilton. She is responsible for providing support to health IT research grantees nationally and designing and running numerous Webinars on health IT research topics for grantees. Ms. Lund earned a master's degree in clinical social work from Smith College and an M.B.A. from Simmons School of Management. She has held positions with EHR and personal health record vendors, health care payer organizations, and medical practice management and clinical practices.

Presenter: David Mehr, M.D., M.S.—William C. Allen Professor, Director of Research, Department of Family and Community Medicine, University of Missouri—Columbia School of Medicine

Dr. Mehr, M.D., M.S., is the William C. Allen Professor and Director of Research at the Curtis W. and Ann H. Long Department of Family and Community Medicine, University of Missouri, Columbia, Missouri. He has degrees from the University of California at Santa Cruz (A.B., 1972), the University of California at San Francisco (M.D., 1976), and the University of Michigan (M.S. in Clinical Research Design and Statistical Analysis, 1989). He completed residency training in family medicine at the University of Missouri (1976–1979) and practiced in Columbia, Missouri, for 9 years before completing a fellowship in geriatric medicine (1990) at the University of Michigan. After 2 years on the faculty there, he joined the Department of Family and Community Medicine at the University of Missouri in 1992. He spent a year as a visiting scholar at the VU University Medical Center in Amsterdam (2000–2001). Dr. Mehr has written more than 80 publications, has received three major Federal grants, has served on the National Institutes of Health's Health Services Organization and Delivery study section, and currently serves on AHRQ's Health Care Quality and Effectiveness Research study section.

Presenter: Melissa Honour, M.P.H.—Administrative Director, Center for Healthcare Informatics and Policy at Weill Cornell Medical College

Ms. Honour, M.P.H., recently joined the Center for Healthcare Informatics and Policy at Weill Cornell Medical College and serves as the administrative director for the center. In addition to her operational role, she is active in informatics research and teaching focused

on the evaluation of technology on operational, clinical, and financial outcomes. In addition, she is interested in developing models to increase collaboration between health IT vendors, academic researchers, and Federal and State organizations. Before joining Weill Cornell Medical College, Ms. Honour held multiple positions in the EHR vendor community, including senior product director for clinical analytics at Allscripts and senior consulting director at Eclipsys. She has served on multiple health IT workgroups, including the Quality Tiger Team and Healthcare Information and Management Systems Society (HIMSS) health IT outcome workgroups. Ms. Honour holds a graduate certificate in medical informatics from Oregon Health Sciences University and a master's degree in public health from Boston University with a concentration in epidemiology.

Presenter: Rainu Kaushal, M.D., M.P.H.—Chief of the Division of Quality and Medical Informatics at Weill Cornell Medical College

Dr. Kaushal, M.D., M.P.H., is the Director, Center for Healthcare Informatics and Policy; Chief of the Division of Quality and Medical Informatics at Weill Cornell Medical College; Director of Pediatric Quality and Safety for the Phyllis and David Komansky Center for Children's Health at New York—Presbyterian Hospital; and Executive Director of the Health Information Technology Evaluation Collaborative. She is currently an associate professor in the Departments of Pediatrics, Medicine, and Public Health. Dr. Kaushal is an expert in quality, patient safety, and health IT. She is engaged in research, patient care, management, and operations activities at Weill Cornell Medical College and New York—Presbyterian Hospital focused on using health IT to optimize the value of health care today.