Multi-Grantee Technical Assistance Meeting: Improving Information Exchange for Care Transitions

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1. Background

The Agency for Healthcare Research and Quality's (AHRQ's) Health Information Technology (IT) Portfolio provides ongoing technical assistance to grantees in the form of Webinars, one-on-one technical assistance, and peer-to-peer teleconferences through the National Resource Center for Health IT (NRC). Webinars provide opportunities for grantees to communicate shared experiences, address common challenges, become informed of proven successful research methods, and share other considerations in an open format.

Care transitions occur when patients move among health care providers and settings as their care needs change throughout the course of an illness or in the treatment of chronic conditions. Accurate, reliable, and timely information exchange between providers and care settings can help reduce the fragmentation of care, thereby increasing quality of care, reducing future readmissions, and decreasing cost. Ensuring that a care team or caregiver has all the necessary information on a patient is vital to the patient's clinical outcome. As the prevalence of health information exchange (HIE) between entities increases, opportunities arise to streamline the exchange of care information and facilitate smooth care transitions for patients.

This multi-grantee Webinar, titled "Improving Information Exchange for Care Transitions," was held on May 23, 2013, from 2 p.m. to 3:30 p.m., EST. The objectives of the Webinar were to—

- Provide an overview of the types of care transitions that occur and how information exchange can be utilized (e.g., medication reconciliation, discharge summaries, aftercare instructions, etc.).
- Showcase examples of health IT that facilitate the transition from inpatient to home health care and long-term care, and demonstrate how data can be used.
- Guide discussion among grantees concerning health IT and information exchange that impacts care transitions, and relevant research questions to be addressed.

The Webinar was facilitated by Mark Belanger, M.B.A., director of advisory services at the Massachusetts eHealth Collaborative (MAeHC), who also made one of the Webinar presentations. Other presenters for the Webinar were as follows:

- Lawrence Garber, M.D., medical director for informatics, Reliant Medical Group
- Margaret McDonald, M.S.W., associate director of research studies, Center for Home Care Policy & Research, Visiting Nurse Service of New York

2. Meeting Summary

Mr. Belanger began the Webinar with a high-level introduction to the Webinar's topics, an outline of the event's objectives, and background information on each of the subject matter experts.

Presentations

Presenter: Mark Belanger, M.B.A., Director of Advisory Services, Massachusetts eHealth Collaborative
"Overview of Health IT and Care Transitions"

Mr. Belanger provided an overview of the current landscape as it pertains to care transitions and health IT and emphasized that care transitions and information exchange could play a large role in improving quality and reducing cost of care.

He outlined several market forces that work to encourage the improvement of information flows to support care transitions, such as—

- Health Information Technology for Economic and Clinical Health Act (HITECH) Meaningful Use (MU) incentives to hospitals and ambulatory providers which promote both electronic health record (EHR) adoption as well as incentives for EHR use.
- EHR certification requirements which stipulate that EHRs must be able to both export and incorporate standard data formats.
- State laws such as the 2006 Massachusetts health reform law, which links HIE use to physician licensure.
- Shift in payment structure to shared savings models on the part of both public and private payers.

Presenting data from the New Hampshire Hospital Association Inpatient Admission and Discharge data set (2008), Mr. Belanger demonstrated that inpatient admission sources vary greatly by hospital. This indicates the ability of HIEs to accommodate many different use cases. In addition, patient destinations after discharge vary, with many patients moving to some type of supported environment (e.g., a skilled nursing facility or a rehabilitation facility) which requires a thorough discharge summary and care exchange information handoffs.

Mr. Belanger emphasized that there are areas of rapid progress as well as opportunities for improvement related to information exchange in care transitions. Progress is being made in EHR adoption, data transport standardization (e.g., DIRECT transport), data format standardization (e.g., Continuity of Care Document [CCD]), vocabulary standardization and normalization, and payment alignment. However, difficulties remain with building interfaces between platforms as well as with sending and protecting sensitive information (e.g., HIV status, genetic testing). In addition, proprietary EHR vendor strategies, lack of trust across entities, and HIE sustainability after HITECH funding is expended are all concerns to be addressed. These areas of difficulty present opportunities for future health IT research to determine what is not working, reasons why, and how they can be resolved.

Presenter: Lawrence Garber, M.D., Medical Director for Informatics, Reliant Medical Group
"Connecting Long-Term and Post-Acute Care (LTPAC) Providers to the Healthcare System of the Future"

Dr. Garber began his presentation with some statistics illustrating the failure of care coordination in many care settings. He noted that there are 150,000 preventable adverse drug events each year which result in $8 billion of waste and harm to patients. Additionally, there are 1.5 million preventable adverse events following hospital discharges and $26 billion wasted annually on preventable readmissions nationwide.

According to the Office of the National Coordinator for Health IT (ONC), improving information flow and exchange is considered vital to improving care transitions. Dr. Garber noted that currently we are not doing an adequate job of moving patients across health care settings safely.

The Centers for Medicare & Medicaid Services (CMS) EHR Incentive Program's MU incentives do not target long term and post acute care (LTPAC) providers, so the industry must find ways to connect these providers to the health care system. Hospitalized patients are the sickest population and account for approximately 75 percent of Medicare costs. Approximately 40 percent of Medicare patients are discharged to traditional LTPAC settings such as home health care, skilled nursing facilities, and inpatient rehabilitation. Hospitals must convey information needed by LTPAC settings in order to care for this patient population. Key questions that must be addressed are as follows:

- What are the data elements needed for transitions across the continuum of care?
- What are the technologies needed to facilitate this connectivity? and
- Does connecting LTPAC settings to an HIE work?

Traditionally, care transitions datasets have contained what the sender thinks the receiver needs; however, in the future it will be important to take into account the actual requirements of the receiver.

Dr. Garber and his team in Massachusetts received an HIE Challenge grant from ONC to pursue their Improving Massachusetts Post-Acute Care Transfers project (IMPACT). The team surveyed 46 organizations to assess health care data receivers' needs. Eleven different types of health care organizations and 12 different user roles were represented. A standard Continuity of Care Document (CCD) has 175 data elements, yet the survey findings indicated that 325 data elements were required to meet basic care transition needs. Furthermore, in order to facilitate care planning and longitudinal coordination of care, 483 elements are needed. While many of these 483 data elements can be mapped to the basic 175 elements in a CCD, many have constraints and require additional information. For example, if heart failure is documented, ejection fraction must also be documented and sent. Of the 483 data elements needed for care planning, 20 percent have no corresponding CCD element.

Different types of care transitions require different data types, and Dr. Garber's group defined five transitions datasets:

1. An outpatient report from testing, treatment or a procedure
2. An outpatient referral for testing, treatment or procedure

3. A shared care encounter summary, e.g., office visit, consultation summary, return from the ED to the referring facility
4. A consultation request clinical summary
5. A permanent or long-term transfer of care to a different facility or care team, e.g., discharge from a hospital to a nursing home

Each of the above data sets builds on a smaller set, so that the fifth set contains all 483 data elements. In the case of a permanent or long-term transfer to a different facility or care team, a significant amount of data transfer is required. The IMPACT project sought to test this largest data set, the transfer of care summary. Sixteen health care organizations participated in this process: two hospitals, two large group practices, two home health agencies, eight skilled nursing facilities, one inpatient rehabilitation facility, and one long-term acute care hospital. Dr. Garber's group discovered that the necessary information had often been collected, but in most cases it had not been sent. In addition, 92 percent of the time the receivers reported gaps of up to four data elements and the majority of those reporting gaps were home health care providers.

The three largest datasets/transfer documents will be published in December 2013 as national standards and will coincide with the release of MU Stage 3 requirements. These datasets have been proposed as standards for MU Stage 3 to be incorporated into EHRs.

Dr. Garber noted that while it is one thing to have the data to transfer, having the technology to do so is of paramount importance. This is where the Local Adaptor for Network Distribution (LAND) and Surrogate EHR Environment (SEE) applications become important. The LAND application acts as a data courier to gather, transform, and securely transfer data for DIRECT transmission.

SEE is a type of electronic mailbox for non-EHR users that allows them to send and receive data through a browser. SEE enables users to generate standard transfer of care documents; users can access a received document and update the necessary data fields. Two documents can be reconciled into a third document using this application, and SEE users can print copies of the document for patients, family, or ambulance transport. Both tools are inexpensive methods of facilitating connectivity to HIE while matching individual organizations' current technology levels.

LAND and SEE applications will be launched in July 2013 with 16 participating organizations. Researchers will be evaluating 30-day hospital readmission rates, ER visit rates, hospital admission rates from the ER, and total resource utilization. The goal is to assess whether HIE has a significant impact on any of those measures.

Presenter: Margaret McDonald, M.S.W., Associate Director of Research Studies, Center for Home Care Policy & Research, Visiting Nurse Service of New York

"Nurse Use of an Electronic Clinical Decision Support Tool to Improve Medication Management when Patients are Transitioning into Home Health Care"

Ms. McDonald presented work on a clinical decision support (CDS) tool for medically complex high-risk patients who are newly admitted into home care. Managing medications during the transition to home care is challenging and resource intensive. Most home care patients are clinically complex; they tend to have multiple comorbid conditions, a high number of medications prescribed by various providers, complicated medication regimens, and medication side effects. In addition, treatment adherence is a challenge in this population. She noted that there are successful examples of IT strategies that address medication management in a hospital environment, and her group's aim was to expand these tools to a decentralized setting.

Their study, Improving Medication Practices and Care Transitions through Technology (IMPACT), was a clustered randomized study examining the effectiveness of the CDS intervention to improve the management and outcomes of these patients. The aims were to assess nurses' use of the CDS tool as well as patient outcomes.

Nurses were randomized into two groups and maintained their assignment throughout the 9-month study. The control group (335 nurses and 5,369 patients) provided usual home care and had no contact with the study group. The intervention group (165 nurses and 2,550 patients) received clinical alerts, patient educational material, and access to an electronic CDS tool integrated into the EHR for all high complexity patients. The patient group assignment was determined by the nurse designated as their care coordinator. The clinical alerts were in the form of a patient-specific email that alerted the nurse to high medication complexity and notified them of the CDS tool. The tool was available between the complex patients' second and third visit and was integrated into the EHR.

Patients were eligible if they were recent transfers to home care and had a Medication Regimen Complexity Index (MRCI) score that indicated they were at high risk. This score was based on dosing frequency, routes of administration and special instructions. Examples of special care instructions were pill splitting and directions to take a medication with or without food or at a particular time of day. Medication data was obtained from EHR documentation as well as medication and assessment data collected as part of routine care.

Ms. McDonald's study had two main analyses: a comparison of patient outcomes between the usual care and intervention groups as well as an intervention group subanalysis. The intervention group subanalysis examined the association between nurse CDS use and patient outcomes as well as nurse and patient characteristics associated with CDS use. CDS use was not randomized; certain nurses chose to use the CDS tool while others did not, and nurses chose to use the tool with certain patients and not with others.

Patient outcomes evaluated by the IMPACT study were reduction in complexity, hospitalization, and emergency department (ED) use. Logistic regression models were used to predict patient outcomes while adjusting for patient and nurse characteristics. In both the usual care and intervention groups, 6 percent of patients reduced their MRCI score below the 24.5 threshold. Only the intervention group saw a reduction in ED use and hospitalization, but it was not statistically significant.

The intervention group subanalysis used propensity scores, defined as the conditional probability of CDS use given individual characteristics, to control for nurse and patient characteristics and to reduce any potential bias in the subsequent logistic regression analysis. Ms. McDonald's group found that 82 percent of the 165 intervention nurses used the CDS at least once, and the CDS tool was used with 42 percent of the 2,550 patients in the intervention. Certain characteristics were found to predict the likelihood of nurse CDS use, e.g., older age, increased years of employment, and a higher number of study patients. Nurses working per diem were less likely to use the CDS.

The group also analyzed patient characteristics that influenced nurse CDS use. They found that nurses were more likely to use the tool if the following patient conditions applied:

- Higher number of medications
- Hypertension, cardiac condition, or stroke diagnosis
- Shortness of breath
- Longer length of stay in home care
- Higher number of nurse visits
- Discharge from the inpatient rehabilitation hospital was within 14 days of the patients home care admission

In contrast, the following patient characteristics were associated with a nurse being less likely to use the CDS tool:

- African-American race
- Medicaid beneficiary
- Private insurance
- Cancer diagnosis
- Higher number of chronic conditions
- A change in coordinator of care nurse

Use of CDS by nurses was associated with a higher incidence of a decrease in patient MRCI as well as a reduction in ED use and hospitalization. The reduction in hospitalization rates was found to be statistically significant.

Overall, the IMPACT study demonstrated that CDS use was limited and was influenced by both patient and nurse characteristics. Some of these traits were remediable, such as the use of per diem versus staff nurses and changes in nurse coordinator of care. These findings indicated that CDS use and patient outcomes when transitioning to home care could potentially be improved by increasing per diem nurses' knowledge of, comfort with, and motivation to use IT.

3. Questions and Answers

This section contains all the questions asked by participants throughout the Webinar and the presenter and facilitator responses.

Question 1: How will LAND and SEE be implemented in lower resource health care settings, which may be less likely to have an EHR?

SEE is designed for underserved providers and those without an EHR; it is accessible by any browser. For less than $20,000 (for the initial set-up), a State can make SEE a part of their State's network and health care information services provider (HISP). The only costs to a provider are the computer and the Internet connection.

Question 2: How is this SEE being marketed to providers? How will providers receive training?

SEE is being marketed to State HIEs and informing them that it is free (after the one-time initial set-up cost). SEE is simpler to use than EHRs, but it may still be complicated for some users. We expect that States will offer this service to providers and provide instruction regarding use.

Question 3: Dr. Garber, what types of protections (e.g., HIPAA) are in place for these sorts of information transfers? And could consumers/patients have access to this information as well?

These transfers are designed to use DIRECT messaging, which is essentially secure email and is the same standard employed by EHRs. Some States are considering offering patients their own DIRECT address. In terms of HIPAA, this can be considered a replacement for faxes and the same consent policies would apply.

Question 4: Dr. Garber, does fall risk have a place in the transfer of care summary standard?

Yes, this is in the transfer of care summary standard. Aspiration risk is also included.

Question 5: Dr. Garber, you mentioned that home health care environments require more care transition information than other environments. Could you explain?

When a patient is discharged from a nursing home and requires home care, home health care needs to know when the first visit will be. Additionally, nursing facilities have predetermined vendors to contact when durable medical equipment (e.g., oxygen, walkers) are needed; however, home care workers do not know whom to contact in this case. The supplier can be determined by the patient's insurer or location.

Question 6: Ms. McDonald, how did you measure emergency room (ER) visits and hospitalizations (e.g., self-report, EHR abstraction, etc.)?

We measured this using EHR and medical record abstraction. We were also able to determine this if the patient was transferred from another hospital.

Question 7: Ms. McDonald, how well was the CDS tool integrated into the rest of the nurse's workflow?

Tablet computers were used in the field and the CDS tool was fully integrated into [the Visiting Nurse Service of New York's] homegrown system. However, the electronic alert Email was a separate function.

Appendix: Presenter Bios

Presenter: Mark Belanger, M.B.A.

Mark Belanger leads Massachusetts eHealth Collaborative's (MAeHC) statewide health information exchange projects for Massachusetts, New Hampshire, North Carolina, and Missouri. Mark has expertise in health care strategic planning and multistakeholder workgroup facilitation as well as deep experience in the health care information industry. Prior to joining MAeHC, Mark was a member of the Booz Allen Hamilton Healthcare and IT practice, where he led large and complex multistakeholder health care information technology projects in the United States and Australia.

Mark holds a master's degree in business administration from Babson College and a bachelor's degree in music education from the University of New Hampshire.

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Presenter: Lawrence Garber, M.D.

Dr. Lawrence Garber is a practicing internist and the medical director for informatics at Reliant Medical Group (formerly known as Fallon Clinic). He has had decades of experience and success in medical informatics.

Dr. Garber is acting chair of the Massachusetts eHealth Collaborative's Executive Committee, a member of the Massachusetts State Health Information Technology Council, and a member of ONC Policy Committee's Health Information Exchange Workgroup. He has been principal investigator on $3.5 million in AHRQ and HHS/ONC grants to develop innovative health information exchanges.

Dr. Garber has also received the 2010 eHealth Initiative eHealth Advocate Award and the 2011 Health Data Management EHR Game Changer Award.

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Presenter: Margaret McDonald, M.S.W.

Ms. Margaret McDonald is associate director of research studies at the Center for Home Care Policy and Research, Visiting Nurse Service of New York. At the Center, she is responsible for developing, conducting, and disseminating results of research studies evaluating the quality, comparative effectiveness and outcomes of home health care interventions. Since joining the VNSNY Research Center in 1998, Ms. McDonald has been the project director on a number of large AHRQ, NIH, and foundation-sponsored projects.

Prior to VNSNY, Ms. McDonald conducted research at Memorial Sloan Kettering Cancer Center's Psychiatry and Pain Service and the Oncology Symptom Control Research Group at Community Cancer Care of Indiana. Ms. McDonald is a graduate of New York University's Stern

School of Business and received a master's degree in social work with a concentration in research from Fordham University.

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