

Barriers and Facilitators to Implementation and Adoption of EHR in Home Care

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Summary: As demand for home care services increases to support the health care needs of our aging population, more home health agencies in the United States are implementing electronic health records (EHRs). Home care using skilled nursing services is an increasingly important and effective way to deliver care and manage chronic illnesses in the growing older population. Good communication regarding patient data, status, and care plans is essential for ensuring efficiency, patient safety, and quality of care. An EHR at the point-of-care, in this case at the home, would facilitate communication and enable timely access to updated patient health information. If patient data are integrated and available in real time, a home care EHR has the potential to improve health care decisionmaking and outcomes.

The impact of implementing EHRs in hospital and ambulatory care settings has been studied but little research on implementing EHRs in home care settings has been conducted. To address this research gap, Dr. Paulina Sockolow and her research team are conducting a study involving interrupted time-series analysis to assess the impact of a point-of-care home-based EHR. This EHR was implemented in 2009 at Penn Care at Home, a nonprofit freestanding home care agency in Philadelphia that provides services to 1,200 patients a month in a five-county area. Retrospective and prospective quantitative data were collected to understand how EHR implementation affects patient, workflow, and financial outcomes. Qualitative survey and interview data, and quantitative EHR-use data were collected to describe the barriers and facilitators of EHR adoption by home care providers. All Penn Care at Home clinicians who provide direct patient care and document in the EHR and data from all Medicare patients cared for by the home care nurses were included in this study. The research findings will inform the development of home care EHR design and implementation recommendations.

Another component of this study involves comparing the home care EHR functionality with ambulatory EHR functionality, as specified in the Department of Health and Human Services Final Rule on Meaningful Use Stage 1 objectives. The home care EHR functionality is based on the qualitative data collected from home care clinicians' perspectives on EHR functionality, and on qualitative functionality data collected from the EHR documentation. This comparison will result in policy recommendations from the research team on developing Meaningful Use criteria specific for home care EHRs.

Quantifying the impact of the EHR and identifying EHR characteristics associated with better adoption and clinical outcomes will inform improvements in home care EHR development, implementation, and training.

Specific Aims:

- Examine the impact of EHR implementation in a home care agency by comparing patient, workflow, and financial outcomes before and after point-of-care EHR implementation. **(Ongoing)**
- Identify the barriers and facilitators to point-of-care EHR adoption and implementation in home care. **(Ongoing)**
- Propose design, implementation, and policy recommendations that address the barriers and facilitators to implementation and Meaningful Use of the EHR in home care. **(Ongoing)**

2012 Activities: Analysis of the workflow and financial outcomes before and after home care EHR implementation was completed, and a manuscript on the analysis and findings has been submitted for publication. The data extraction and analysis for patient outcomes were ongoing throughout 2012. Dr. Sockolow and her research team worked iteratively with a contracted programmer, describing to the programmer which patient variables in the EHR they were interested in including in their analytical model, and conducting preliminary analyses to determine if the data set extracted by the programmer met their needs and whether additional data elements were of interest. This process proved to be difficult; extracting and analyzing the home care EHR data was associated with a steep learning curve for both the programmer and the biostatisticians. Upon reviewing and revising the analysis, it was determined that additional data was required. The final data set and analysis is expected to be completed within the first quarter of 2013.

Surveys were administered to clinicians to inform the identification of barriers and facilitators to point-of-care EHR adoption and implementation in home care. Due to a low clinician post-survey completion rate, only the pre-surveys were analyzed.

As last self-reported in the AHRQ Research Reporting System, project progress and activities are on track in some respects but not others. Specifically, progress on the first project aim is slightly behind due to the analysis for the patient outcomes being more complex and taking longer than originally planned. The project budget spending is roughly on target.

Preliminary Impact and Findings: Clinicians were satisfied with the EHR impact on workflow and financial outcomes. Specifically, EHR implementation resulted in increased completeness, accuracy, and timeliness of clinical documentation as well as faster Medicare reimbursement. Dr. Sockolow has noted two important lessons learned from this project: 1) it is difficult to extract data from an operational EHR for health services research; and 2) there is a need for biostatisticians with special training in EHR data. Using and understanding EHR data in health services research is a specialized area requiring a significant learning curve and, ideally, specific training.

Target Population: Elderly*, Medicare

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

Business Goal: Implementation and Use

**This target population is one of AHRQ's priority populations.*