

## Evaluation of Effectiveness of a Health Information Technology-Based Care Transition Information Transfer System

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<b>Organization:</b>	Billings Clinic Foundation
<b>Mechanism:</b>	RFA: HS08-002: Ambulatory Safety and Quality Program Improving Management of Individuals with Complex Healthcare Needs through Health Information Technology (MCP)
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**Summary:** Improving communication between inpatient and outpatient providers will be crucial as the health care environment continues to shift and the burden of patient care is spread across settings. Changes in health care include imposed payments for avoidable readmissions, the development of patient-centered medical homes, accountable care organizations, and bundled payments. Each will present challenges to health care organizations struggling to adapt, adjust, and remain viable. New ways to improve communication through use of health IT must play a central role in this process.

The purpose of this project was to improve the coordination of care for patients with two or more chronic conditions who were discharged from a hospital to a rural primary care clinic. The project team developed and implemented a care transition information transfer (CTIT) system for all Billings Clinic Hospital discharged patients and post-acute care providers, with a particular focus on those living in rural communities. The CTIT system was designed to pull patient data from the Billings Clinic integrated electronic health record (EHR).

Primary care clinics within and outside the Billings Clinic health care system receive notifications by e fax, providing basic data on the recent hospitalization, followup appointments, and medications. Internal providers may also receive notification through the EHR messaging system. Outside providers are prompted to access more complete medical information by connecting through a Web-based portal to the hospital's EHR. The system provides patients and their primary care providers (PCPs) with discharge information, including a patient-friendly medication list, as well as information about followup visits, laboratory testing and results, and operative reports.

Dr. Ciemins and her team conducted a prospective study to evaluate whether development and implementation of the CTIT system improved patient and rural provider satisfaction with the hospital discharge process, and to measure system efficiency and process outcomes, as well as patient clinical outcomes. Patient clinical outcomes included patient adherence to medication instructions after discharge, patient receipt of reconciled medication lists, hospital readmission rates, ambulatory followup visits, and utilization of emergent care services. A second intervention modified the EHR-based medication reconciliation process. Secondary outcomes included medication reconciliation, patient medication adherence and accuracy, and patient and provider satisfaction.

Study participants included medically complex adults discharged from an urban hospital to their rural

homes. These medically complex adults were defined as those managing at least two of the following chronic conditions: depression, diabetes, hypertension, heart failure, chronic obstructive pulmonary disorder, coronary artery disease, transient ischemic attack, or cerebrovascular accident. A total of 1,197 patients were randomly selected from 4,300 eligible patients from 185 rural health centers.

### Specific Aims:

- Develop a health information technology-based CTIT system. **(Achieved)**
- Evaluate the effects of the CTIT system on clinical and systems-level outcomes, system efficiency, satisfaction with care transitions among rural PCPs, patient satisfaction with care transitions, and timely communication of patient information. **(Achieved)**

**2012 Activities:** A new medication reconciliation process was implemented in May 2012 and the research team collected the final round of data for this process. All nursing staff members were trained on the computer-based medication history update that comprises the first part of the reconciliation process; all physicians were trained to do an admission and discharge medication reconciliation. As in prior data collection phases, participants were randomized from a list of patients who were diagnosed with two or more chronic conditions.

This final data collection phase involved selecting a total of 25 patient interviews per month, for a total of 100 calls over 4 months. Patients were called within 30 days of discharge. Pharmacists called patients and recorded information. Data were then reviewed by the research team, and an expert reviewer confirmed whether each medication was reconciled. Expert reviews were done by comparing the discharge summary, the medication list, the patient-friendly medication list, and patient report. Considerations included the time that each list was completed and when the call with the patient took place, whether short-term drugs remained on these lists, and whether selections were still accurate. They also assessed whether patients were taking the correct medications in the correct dosages at the correct times. When discrepancies were found, it was noted as to whether it was due to patient error, a conscious decision by the patient to change how s/he took the medication, or a reconciliation error. Medical chart reviews were conducted on all participants to confirm the Billings Clinic visits and hospitalizations reported by the patient.

During 2012, Dr. Ciemins' team also focused on data analysis and manuscript preparation. The project used a 1 year no-cost extension to complete the project which ended in September 2012. As last self-reported in the AHRQ Research Reporting System, progress was completely on track and budget spending was on target.

**Impact and Findings:** The results of this study demonstrate how a health IT intervention, focusing on discharge standardization and improved provider communication, may improve followup of medically complex patients post-hospitalization and lead to reductions in readmissions. Sixty-three percent of patients at baseline compared with 75 percent of patients post-intervention received a medical followup appointment within 30 days of hospital discharge. Further, receiving a medical followup visit within 30 days was associated with reduced readmission rates and post-discharge emergent care visits. Improvements were also observed in EHR medication reconciliation at discharge and during followup, accuracy of information collected at admission, and completeness of patient discharge medication list. Provider satisfaction with the efficiency and reliability of the care transition process improved over time.

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**Target Population:** Adults, Chronic Care\*

**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

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