

Computer Assisted Medication and Patient Information Interface

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Organization:	Emory University
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Summary: Although many studies show that the complications and costs of diabetes can be reduced by controlling glucose and other risk factors, many people with diabetes do not achieve good control of these factors. Further, there is often a breakdown in information flow between patient and provider. Inadequate information from patients, particularly in the areas of medication adherence and associated adverse events, can lead providers to make poorly-informed clinical decisions and provide inadequate or unclear instructions for patients. The goal of this Computer Assisted Medication and Patient Information Interface (CAMPII) project is to develop and test a tool to improve and standardize the flow of information between patients with type 2 diabetes and providers, thereby improving treatment outcomes and reducing complications.

The research team developed a touch-screen computer interface that patients at Grady Health System Diabetes Center, a municipal hospital specialty clinic, can use in to report medication information and adverse drug interactions, including hypoglycemia. The patient information interface is designed to collect complete and accurate information so providers can make informed therapeutic decisions for their patients who have diabetes and the associated major cardiovascular risk factors.

A provider medication interface was developed to improve the clarity and accuracy of the information received by providers and the quality of information shared with patients and other providers, with a particular focus on providing clear, detailed instructions, and motivational information to patients. The provider interface is designed to support medication management functions, including medication reconciliation, printing of medication instructions, and production of a daily medication schedule for patients.

A full interface evaluation will compare the completeness and accuracy of medication information obtained by traditional and computer-assisted methods with the reference-standard of a comprehensive multi-source interview by an experienced pharmacy expert. The research team will also assess the accuracy, acceptability, efficiency, and utility of the patient information interface for both providers and patients in a study population of type 2 diabetes patients.

Specific Aims:

- Develop an accessible information computer interface in a municipal hospital diabetes clinic that patients can use to report medication information and adverse drug interactions. **(Achieved)**
- Develop a provider medication interface to support medication management functions. **(Achieved)**
- Assess the accuracy, acceptability, time efficiency, and utility of the information interface for both

providers and patients. **(Ongoing)**

2011 Activities: Design of the provider medication interface was completed in spring 2011. The patient interface was completed in September 2010 and enhanced in June 2011 before the randomized trial. The patient interface is designed for a full size touch-screen PC with a 20-inch monitor. Patients touch large onscreen buttons and thus there are only minimal dexterity and hand-eye coordination requirements for users. Voice-over instructions and reading of options minimize literacy requirements.

Data collection was completed in fall 2011, at which time Dr. Ziemer began work on data analysis, synthesis, and reporting. This includes data quality and data management activities, review of outcomes and identification of key questions, and planning for final publications and reporting.

A total of 239 subjects were recruited, 221 of whom completed the intervention. While the original study plan called for 75 study subjects, some new questions were added to the patient interface and the protocol was modified to allow focused testing of hypoglycemia questions, which required additional subjects to provide the necessary evidence and power for review. These changes were adopted with intuitional review board approval. Through followup phone interviews, the research team asked patients a few additional questions about their medication list. Medication lists were printed for patients enrolled in the computerized portion of the study, while patients enrolled in the paper-only portion were given paper so that they could write the information. Patients enrolled in the usual care portion were not involved in either process. Between 2 and 6 weeks later, team members asked patients in the computerized and paper-only portions to try to find their medication lists and to confirm one or two of the medicines on the list.

As last self-reported in the AHRQ Research Reporting System, project progress and activities are on track and spending is roughly on target. Due to initial staffing challenges related to timing of the grant start date, the project team is using a 10-month no-cost extension to support data analysis and reporting of trial data.

Preliminary Impact and Findings: Preliminary data strongly suggest that the touch-screen CAMPII method is more sensitive for detecting and recording hypoglycemia than provider documentation in the medical chart or patient documentation on the paper forms. CAMPII is also better than the chart or standard forms for identifying associated adverse events.

CAMPII computer-assisted self-interview is better for detecting hypoglycemia than chart documentation, is more specific than paper forms, and, from the provider perspective, was also a more efficient tool than usual care.

Target Population: Adults, Chronic Care*, Diabetes, Racial or Ethnic Minorities*: African-American

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

Business Goal: Knowledge Creation

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