

## Computer Assisted Medication and Patient Information Interface

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<b>Organization:</b>	Emory University
<b>Mechanism:</b>	RFA: HS08-269: Exploratory and Developmental Grant to Improve Health Care Quality Through Health Information Technology (R21)
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<b>Project Period:</b>	December 2009 – November 2011
<b>AHRQ Funding Amount:</b>	\$299,998
<b>Summary Status as of:</b>	December 2010

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

**Summary:** Although many studies show that the complications and costs of diabetes can be reduced by controlling glucose and other risk factors, many persons with diabetes do not achieve good control of these factors. Data suggest that 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 to poorly-informed clinical decisionmaking and 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 is developing an accessible touch-screen computer interface that patients can use in a municipal hospital diabetes clinic to report medication information and adverse drug interactions, including hypoglycemia. The patient information interface will obtain complete and accurate information from patients so that providers can make informed therapeutic decisions for patients with diabetes and its major cardiovascular risk factors.

A provider medication interface will be 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 will support medication management functions, including correcting incoming medication data, entry of new drug regimens, 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 against the reference standard of comprehensive multi-source interview by an experienced pharmacy expert. The team will also assess the accuracy, acceptability, time efficiency, and utility of the patient information interface for both providers and patients in a study population of type 2 diabetes patients with at least two visits in the prior year.

### 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. **(Ongoing)**

- Develop a provider medication interface to support medication management functions. **(Ongoing)**
- Assess the accuracy, acceptability, time efficiency, and utility of the information interface for both providers and patients. **(Upcoming)**

**2010 Activities:** By the end of 2010, a total of 79 participants (19 development and 60 pilot subjects) were enrolled to test the patient interface. Each subject was to complete a CAMPII information entry session with the touch-screen interface; a one-page medication form promoted by the American Public Health Association; and a six-page checklist style form, tailored to list the clinic’s usual medications and containing hypoglycemia questions. In addition, for the 60 pilot subjects there was an interview with a pharmacist who assessed the “truth” (whether the patient has actually been taking the medication); as well as surveys about the forms and CAMPII. Session data were collected, including process details for the CAMPII-patient interaction (e.g. duration of session, number of steps, seconds per screen, etc); along with medication, hypoglycemia, and other information entered by patients on the computer kiosk. Data were coded and entered into a database to allow comparison of the patient information sources to the “truth.” Multiple scoring methods were applied. These will inform methods for the full interface evaluation and identify additional data elements needed. Preliminary results will be reported in 2011.

Dr. Ziemer and his team are in the process of developing the provider medication interface to enable provider correction of incoming medication data, entry of new drug regimens, and printing of prescriptions and medication instructions. Providers will be able to update a daily medication schedule for the patient that includes pill pictures, medication purpose, expected benefits, and potential adverse reactions.

The planned full interface evaluation will include an assessment of the accuracy, acceptability, time efficiency, and utility of the patient information interface for both providers and patients. During 2010, the team conducted team meetings to finalize processes, forms, and interface elements for this evaluation.

**Grantee’s Most Recent Self-Reported Quarterly Status (as of December 2010):** Project progress is mostly on track. The project budget is significantly underspent (more than 20 percent) because of early staffing challenges related to timing of the grant start date.

**Preliminary Impact and Findings:** The preliminary data strongly suggest that the touch-screen CAMPII method is more sensitive for detecting and recording hypoglycemia than the medical chart or the paper forms. Scoring methods have not been finalized but some of the scores suggest that CAMPII is better than standard paper forms, but somewhat worse than the medical chart for reporting medication adherence. CAMPII is better than the chart or standard forms for identifying associated adverse events.

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**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

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\* *AHRQ Priority Population*