Optimizing Medication History Value in Clinical Encounters With Elderly Patients

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Summary: Electronic prescribing (e-prescribing) combined with a medication history may assist physicians in more fully understanding adherence issues with older patients, promoting clinician-patient partnerships, empowering patients to participate in treatment decisions, and allowing patients to negotiate acceptable medication regimens that are more amenable to patient follow-through. Some e-prescribing systems are integrated with pharmacy chains, making medication histories and information on unfilled prescriptions available to clinicians.

This project was designed to assess whether clinician training on medication history could improve its use during the clinical encounter and optimize improvement in the quality of medication management in ambulatory settings. In addition, the project examined the role of electronic medication management tools in helping clinicians to identify potential medication management problems and to monitor complex medication regimens.

Dr. Lapane's team developed geriatric-specific algorithms to identify potential medication management issues—such as polypharmacy, potentially inappropriate medication use, duplicative therapy, and nonadherence—when using community pharmacy-generated medication histories. The team used these algorithms to collaborate with electronic medical record (EMR) and e-prescribing software vendors to integrate problem-oriented "triggers" at the point of prescribing, which organized medication history information for reference during visits.

The team also developed and pre-tested four Web- or DVD-based continuing medical education (CME) training modules that were used to conduct clinician trainings. Module content focused on how to improve geriatric patient-provider communication relating to medication management with the use of technology-based tools.

Physicians who used the e-prescribing application and network to transmit prescriptions to pharmacies were recruited and a two-arm randomized controlled study to test this intervention was conducted. Half the practices received the e-prescribing software, which included triggering based on medication history information. The other half received the software with triggers and were given the opportunity to complete the CME training modules.

Specific Aims:
- Develop geriatric-specific algorithms to identify potential issues with medication management (e.g.,

polypharmacy, potentially inappropriate medication use, duplicative therapy, and nonadherence) using community pharmacy-generated medication history. **(Achieved)**

- Develop structured, problem-oriented frameworks for organizing medication history information during visits (triggering) for common issues identified by the algorithms developed in the first aim. **(Achieved)**

- Develop and pretest modules to teach clinicians how to improve geriatric patient-provider communication relating to medication management with the use of technology (training). **(Achieved)**

- Test the impact of these interventions on clinician behavior using a randomized controlled trial with two arms: 1) delivery of triggers; and 2) delivery of triggering and training interventions. **(Achieved)**

- Develop "tool-kit" resources and intervention products for use by nonphysician providers in other ambulatory settings (e.g., pharmacists in community pharmacy settings). **(Achieved)**

2011 Activities: During the first 3 years of the project, the research team developed the algorithms and worked with an e-prescribing software developer to learn how medication data were captured and to finalize the specific triggers. An EMR vendor then coded these triggers. By the end of 2010 all participating physicians had the triggers installed in their e-prescribing solution.

Recruitment of physicians from Virginia Commonwealth University was completed in summer 2011. In order to be eligible, physicians were required to use one of two e-prescribing systems and had to provide comprehensive care. In addition, eligibility required that at least 25 percent of each physician's patient case mix be over 65 years of age, and providers had to be willing to be randomized to one of the intervention arms. A total of 33 doctors were randomized to the two previously developed intervention arms; 14 to algorithms in software, and 19 to algorithms in software and opportunity to complete the CME training modules.

Patient surveys were collected before and after the intervention period to capture patient perceptions of medication-related issues with their providers. Five clinical encounters were audio recorded for each physician. Patient survey data and physician audio data were coded to assess the quality of patient-provider interactions about medications. Data for each medication were coded into themes including general information, knowledge of the drug, discussion of the prescription, and effects of the drug. The coding scheme allowed the team to capture the extent of contribution of each party to medication-related discussions during medical encounters.

As last self-reported in the AHRQ Research Reporting System, project progress and activities were completely on track, and project budget spending was roughly on target. Dr. Lapane's team utilized a 1-year no-cost extension to ensure adequate time for recruitment, implementation, analysis, and dissemination, and the project was completed in September 2011.

Impact and Findings: Evidence-based treatment algorithms were well received by primary care physicians. Providing alternatives to potentially inappropriate medications would make it easier for physicians to change decisions at the point of prescribing. No changes were found in physician perceptions of e-prescribing or in the patient perceptions of physician communication. Physicians overrode alerts often, and this did not vary by treatment arm.

Target Population: Elderly*

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: Implementation and Use

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