A Risk Based Approach to Improving Management of Chronic Kidney Disease

Principal Investigator:	Sequist, Thomas D., M.D., M.P.H.
Organization:	Brigham and Women's Hospital
Mechanism:	RFA: HS08-270: Utilizing Health IT to Improve Health Care Quality Grant (R18)
Grant Number:	R18 HS 018226
Project Period:	December 2009 – July 2013
AHRQ Funding Amount:	$1,127,741

Summary: Chronic kidney disease (CKD), though common, is often unrecognized by primary care physicians (PCPs). While better health outcomes can be obtained with better disease identification and management, there has been limited review of the outcomes of comprehensive disease management of CKD and no studies of the impact of patient education on this condition. A research team at Harvard Vanguard Medical Associates, an integrated delivery system in Massachusetts, conducted a randomized controlled study on the care of patients with Stages 3 and 4 CKD in the primary care setting. The study implemented a disease management program at 14 health centers with improved clinical decision support for physicians and self-management support for patients.

During the first phase of this project in 2010, one health center was selected to pilot test the clinical decision- and patient-support materials. The randomized controlled trial was conducted over 18 months and included approximately 170 providers. The physicians in the intervention group received patient-specific alerts at the time of office visits; the control group physicians did not.

The impact of combining electronic alerts, a disease registry, and a patient-education program on adherence to best treatment practices is being measured by several indicators, including problem lists and encounter codes. Assessment of the appropriate documented problem list and encounter codes is being used to measure PCP awareness of CKD. Providers are also being queried on how the use of the intervention tools affected their attitude about CKD management and the use of electronic reminder systems. Data for the study will be taken for patients with CKD from Harvard Vanguard's electronic health record (EHR). The data will provide information on best practices in the treatment of CKD in the primary care setting through the use of EHRs, advanced decision support, and patient outreach and education.

Specific Aims:

- Use computerized clinical information systems to identify baseline predictors of appropriate evaluation and treatment of Stages 3 and 4 chronic kidney disease, including patient characteristics and nephrology involvement. **(Achieved)**

- Assess whether quality of care for Stage 3 chronic kidney disease can be substantially improved over 18 months by: 1) point-of-care electronic alerts to primary care physicians recommending risk-appropriate care; and 2) quarterly mailings to patients providing self-management support materials, including tailored recommendations based on personalized data from an electronic disease registry. **(Ongoing)**

- Assess the relationship between utilization of the intervention components and primary care physician attitudes toward both chronic kidney disease management and electronic reminder systems. **(Upcoming)**

2012 Activities: The 18-month randomized trial started in spring 2011 with completion planned for January 2013. The intervention included physician alerts recommending risk-appropriate care and mailing of patient support materials for those with CKD. Clinical practice site start dates were staggered in phases, but all conducted the intervention for 18 months. The trial was extended for some practices so that all practices would complete in the same month. Of the 8,000 patients in the trial, about 4,000 were in the intervention arm and 1,200 were enrolled in the patient-education mailing program. The patients in the mailing program received an initial baseline survey to assess the quality of the patient-education materials and provider education, and will receive a followup survey in January 2013. The research team developed followup surveys to assess provider attitudes at the conclusion of the trial; this was submitted for institutional review board approval.

Throughout the clinical trial, the time between the primary care provider placing an order for a nephrologist and the time of the nephrologist appointment was tracked: all patients have been seen within the 45-day goal. This was important because in the pilot phase of the project, the increase in referrals generated by the implementation of the electronic alerts led to longer than desirable wait times for the nephrology appointments.

A 12-month no-cost extension was used to complete the clinical trial and conduct data analysis. As last self-reported in the AHRQ Research Reporting System, project progress is completely on track and project budget spending is roughly on target.

Preliminary Impact and Findings: In the first phase of research, the project team analyzed the predictors of quality of CKD care. The analysis found that among 11,760 patients treated by 166 PCPs across 15 clinics, 66 percent had hypertension and 29 percent had diabetes. PCP awareness of CKD was low, at 24 percent, and only 10 percent of patients were co-managed with nephrologists. Most patients were not receiving appropriate CKD care, and both PCP awareness and nephrology co-management were consistently associated with improved effectiveness and drug safety.

The completed pilot intervention provided several insights into implementing the larger scale intervention. These included: 1) the volume of nephrology referrals generated through electronic alerts; 2) patient reactions to educational mailing materials; and 3) provider reactions to the electronic alerts.

Target Population: Chronic Care*, Kidney Disease

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Business Goal: Knowledge Creation

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