

Electronic Health Record Use and Care Coordination

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Organization:	University of California, Berkeley
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Summary: While electronic health record (EHR) systems have been consistently promoted as a policy priority for improving the quality and efficiency of the United States health care system, there is limited research evidence to inform policymakers about the effects of EHR use on care coordination. This study examined the association between EHR use and care coordination and clinical care quality for patients with diabetes, and how team working relationships modify these effects. This study was conducted in Kaiser Permanente Northern California (KPNC), a large, prepaid integrated delivery system providing comprehensive medical care for more than three million members, including outpatient, inpatient, emergency department, pharmacy, and laboratory services.

Researchers examined the association between EHR use and care coordination, while adjusting for clinician characteristics and organizational factors and whether the association between EHR use and care coordination varies by team climate. Measures of care coordination and team climate were captured using existing self-administered survey responses collected from primary care clinicians in 2005, 2006, and 2008 during the staggered implementation of the EHR system. Quality and clinical outcome measures were captured using the health system's automated databases. They included guideline-adherent prescription drug use and laboratory monitoring, and physiologic disease control for diabetes patients receiving care from multiple clinicians.

Specific Aims:

- Examine the association between EHR use and care coordination among teams with positive and negative reports of team climate, while adjusting for patient, physician, team, and medical center characteristics. **(Achieved)**
- Examine the association between care coordination and clinical care quality for patients receiving care from multiple clinicians. **(Achieved)**

2012 Activities: Dr. Graetz obtained and analyzed data for both aims and drafted and submitted manuscripts to her dissertation committee for review. Abstracts were submitted to the American Public Health Association conference, the American Medical Informatics Association annual symposium, and the AcademyHealth annual research meeting. She submitted a manuscript of her findings to the *Health Services Research* Journal. Dr. Graetz used a 4-month no-cost extension to conduct the final analysis and prepare a manuscript. The project ended in December 2012.

Impact and Findings: Use of an outpatient and an integrated outpatient and inpatient EHR was associated with improvements in care coordination across clinicians and delivery sites respectively. Use of the

outpatient EHR was associated with improvements in glycemic and lipid control for patients with diabetes. There was a statistically significant interaction effect between team cohesion and EHR use on clinical outcomes for patients with diabetes and care coordination. Patients cared for by clinicians working in primary care teams with high cohesion had substantially better patient outcomes with the EHR compared with patients cared for by teams with low cohesion. Patients cared for by clinicians working in primary care teams with higher cohesion experienced a 0.11 percentage point decrease in hemoglobin A1c (HbA1c) and a 2.15 mg/dL reduction in low-density lipoprotein cholesterol (LDL-C) with use of the EHR, compared to a 0.08 percentage point decrease in HbA1c and 1.42 mg/dL reduction in LDL-C with the EHR for patients cared for by clinicians working in primary care teams with lower cohesion. The organizational context, in particular primary care team members' working relationships, is critical to maximize potential gains from EHR use.

Target Population: Adults, Chronic Care*, Diabetes

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions and the electronic exchange of health information to improve quality of care.

Business Goal: Knowledge Creation

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