

Health Information Exchange and Ambulatory Test Utilization

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Summary: One of the purported benefits of health information exchange (HIE) is that it can improve the efficiency of care by reducing redundant laboratory and radiology testing. There is evidence that test utilization is reduced substantially within institutions, such as medical centers, when they implement comprehensive electronic medical records. If physicians can easily access the results of tests that have already been performed, they are less likely to repeat them. However, while it is intuitive that HIE across organizations in a community would lead to a reduction in test utilization, there is little evidence that community HIEs result in such an impact. As the United States explores investments in HIE to improve the quality of care, policymakers and potential stakeholders in HIE, such as health plans, need more estimates of the degree to which HIE can improve the efficiency of care.

Mesa County, Colorado, is a rich resource for more definitive assessments of the effects of HIE. Quality Health Network (QHN), a regional HIE that started providing data exchange to Mesa County in 2005, captures nearly all the test results in the county, and has been adopted by more than 85 percent of the practitioners. There is also evidence that since HIE was introduced, reductions in laboratory and radiology utilization in Mesa County contrast with national trends of steady or increasing test utilization. This study is formally assessing whether adoption of a community-wide HIE reduces utilization of laboratory and radiology testing. The primary study design used was a retrospective pre-post HIE adoption comparison of providers working in Mesa County medical practices. The analyses, conducted at practice and provider levels, employed general linear mixed models. Rates and costs of tests were the outcome variables, and adoption over time from 2005 to 2010 was the primary predictor variable.

The electronic exchange of health information in communities may improve the quality and efficiency of medical care. Providers can make better decisions when the health information they need is on hand. By assessing whether a robust, mature regional HIE system increases medical care efficiency, this project will provide estimates of value that will prove useful for national decisionmakers and local stakeholders in HIE, and will help guide future HIE efforts.

Specific Aim:

- Determine whether adoption of HIE in Mesa County, Colorado, is associated with a reduction in test ordering. **(Achieved)**

2012 Activities: The focus of activity was on data analysis and dissemination of findings. The study team completed its data analyses using the shifted slope model to address the preliminary finding of a negative shift in the slope of laboratory test rates while observing a positive shift in laboratory test costs.

The project team continues to investigate this unanticipated finding. The project team also completed a sensitivity analysis comparing different ways of categorizing HIE adoption. The team looked at cost per test, as well as whether primary versus specialty care showed different levels of effect. Differential effects were depicted in a poster presented at the AHRQ Annual Conference in September 2012. A manuscript titled, [Effects of Health Information Exchange Adoption on Ambulatory Testing Rates](#), was accepted for publication in the *Journal of the American Medical Informatics Association*.

As last self-reported in the AHRQ Research Reporting System, project progress and activities are on track, and project budget spending is on target. There was an initial delay caused by the purchase of ManagedCare by TransUnion in late 2010. ManagedCare was the agency providing the project with claims data for the analysis, and therefore new business associate agreements had to be developed with TransUnion. Once the new agreements were signed, data became available, and the team was able to resume working at full effort. A 9-month no-cost extension was used to compensate for the delay in obtaining the study data.

Preliminary Impact and Findings: The study showed a statistically significant decrease in the rates of laboratory testing rates associated with HIE. Claims submitted by 306 providers in 69 practices for 34,818 patients from the second quarter of 2005 to the fourth quarter of 2010 were analyzed. The rate of testing per provider was expressed as tests per 1,000 patients per quarter. For primary and specialty care providers, the rate of laboratory testing increased over the time span and shifted downward with HIE adoption. There was no observed significant effect on the cost of testing, for which the study team is examining potential explanations, such as the possibility that HIE adoption might be associated with fewer but more expensive laboratory tests. For radiology testing, HIE adoption was not associated with significant changes in rates or imputed charges in either provider group.

While the reduction in laboratory testing rates confirms that HIE adoption can result in more efficient care, the short-term economic benefit may be less than anticipated. This study was limited in its ability to differentiate effects of HIE adoption from other secular trends. Future research on the impact of HIE to improve care coordination in ways that go beyond the effects on testing rates may hold much promise for the study of HIE.

Target Population: General

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

Business Goal: Knowledge Creation
