Complexity of Using Multiple Data Sources for Population Management in Colorectal Cancer Screening: The Experience of SATIS-PHI/CRC

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Introduction

The Systems Approach to Tracking and Increasing Screening for Public Health Improvement of Colorectal Cancer (SATIS-PH/CRC)

A six-step, evidence-based, system-level redesign of the way in which colorectal cancer (CRC) screening and follow-up are conducted in a community-based network of primary care practices.

- intended to assist primary care practices to better provide guideline-based preventive health care to their age-appropriate patients, who are at average risk for CRC and who are not up to date in their screening for it.
- intervention is intended to be conducted by a central entity, such as a health care delivery system, accountable care organization, or insurer, affiliated with a network of primary care practices on behalf of and in conjunction with those practices.
- tasks funded by CDC through AHRQ’s ACTION program and implemented by the CNA Action Partnership, which included Jefferson University and Lehigh Valley Health Network. The task order was carried out between October 2007 and July 2010.

Methods

The task was carried out in 15 practices of the Lehigh Valley Physician Hospital Organization (LVPHO), whose practices included:

- Hospital-owned practices.
- Hospital clinics.
- Independent private practices.
- Private practices in a large association.

Eligible patients of each practice were invited to screen for colorectal cancer by colonoscopy or stool blood test (SBT) in accordance with 2008 guidelines published by the American Cancer Society.

Results of screening were tracked via the same databases used to determine initial eligibility, supplemented by lab reporting and chart review (both paper and electronic).

Research Question

What complexities arise when implementing a multi-practice population screening task with data from multiple sources?

Findings

Steps 3, 4, and 5 (Fig. 1) involved coordination of the multiple practices and their support services by EPICnet, with complexities occurring at each step.

These complexities created delay in implementation, resulted in errors that required correction, or required training and support of individual practices. Complexities were apparent in three major areas:

1. Organizational complexities involving the function of an organization and its priorities as related to the task or the involved practices.
2. Information systems complexities relating to US personnel, data systems and data components necessary to the task.
3. Human Factors: complexities relating to the knowledge, experience, and performance of people acting on behalf of the task in the implementation phase, in patient screening, and in the tracking phase.

Figure 1. Steps for conducting SATIS-PH/CRC. Steps 3 through 5 involved coordination of practices and multiple support services.

Step 1. Recruit Practices

Gain engagement from all physicians to represent their practice and contact their patients.

Step 2. Conduct Academic Detailing

Bring physician knowledge and physician/practice behavior in line with 2008 ACS guidelines for colorectal screening and follow-up.

Step 3. Identify Eligible Patients

Develop patient list by electronic records review and eligibility assessment.

Step 4. Mail Screening Materials

Mail screening invitation, information, and materials on behalf of the practice. Mail a reminder to non-respondents.

Step 5. Track Screening

Review electronic records review and audit chart to report completed screening results.

Step 6. Provide Feedback

Notify practices of screening results and recommended follow-up.

Figure 2. Data sources for identifying the patient population in SATIS-PH/CRC.

Table 1. Sources for tracking results of screening, by number of patients using each source. Results in 53 practices with ENMS and 5 practices with paper charts were confirmed by chart audit.

Table 2. Utilization of manual chart review.

Discussion

- UPIN is an open-model medical system involving multiple practices models, with each member or group using its own databases for managing patient care.
- Databases did not share a common operating system, common coding, or common data entry guidelines. Many practices still use paper charts for the medical record.
- This resulted in a need to manually aggregate and clean population data to make it useful for SATIS-PH/CRC.
- The practice entities and multiple support systems each had their own internal timelines and priorities, changes in operating systems, and changes in personnel, creating delays in any request for electronic records review or preparing population mailings.
- Human factors at the practice level in entering billing and EMR data led to challenges in cleaning data or searching for data to determine patient eligibility and track results of CRC screening.
- These factors impacted the ability to access and extract data from the various sources and systems, resulting in a time delay from the time data was requested until it was prepared for implementation of the task. That delay was as long as a six months for the development of the initial patient eligibility list.

Conclusions

Implementation of a population intervention in an open-model medical system can be a time-intensive and labor-intensive task due to the complex interaction of organizational factors, information systems factors, and human factors. Awareness of these complexities, and the time and support required, may be keys to an organization’s ability to provide care based population data, as in an Accountable Care Organization model.

References