An Automatic Notification System for Test Results
Finalized After Discharge

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**Summary:** This project is creating an automated system to notify physicians, via secure email, patients’ test results pending at discharge (TPADs). The system is designed to facilitate communication and acknowledgement of test results by responsible inpatient and ambulatory physicians during care transitions. The study team will evaluate the system’s impact on physicians’ awareness of test results.

In the first phase of this study, components of the system were developed to: 1) identify tests with results pending at the time of discharge; 2) obtain the identity and email addresses of the responsible inpatient and ambulatory providers; 3) exclude routinely-ordered tests to avoid provider alert fatigue; and 4) automate notification to providers by email once results are available. The intervention relies primarily upon the inpatient clinical information system; the admission, discharge, and transfer systems; and network email to orchestrate the series of events that lead to the automated notification of final test results after discharge.

In the second phase, a cluster-randomized, 6-month controlled trial measured the impact of this system on physicians’ awareness. The study participants were 450 patients who were discharged from the inpatient general medicine and cardiology services at Brigham and Women’s Hospital (BWH). Staff randomized both the responsible inpatient provider (attending physician at time of hospital discharge) and the responsible outpatient provider (the patient’s primary care physician [PCP]) prior to the intervention. The study population included patients with TPADs discharged from these services if both their inpatient attending and primary care physician were randomized to the either intervention or usual care. Patients were excluded if their inpatient attending and PCP were in discordant arms or if their inpatient attending and PCP were the same person.

The primary outcome is awareness of any TPAD result by the inpatient attending. Secondary outcomes include awareness of any TPAD result by the PCP, user satisfaction, awareness of actionable test results, and whether appropriate actions are taken in response to these results after EHR review. Physician awareness is measured by a survey sent to responsible providers 72 hours after the last finalized TPAD result is available. The study will inform future efforts to optimize this type of intervention at BWH and other institutions trying to minimize this patient safety problem.

**Specific Aims:**

- Create an automatic notification system to prompt physicians of test results finalized after discharge.

(Achieved)
• Evaluate the impact of this system on physician awareness of test results finalized after discharge. (Ongoing)

2011 Activities: Microbiology test types were activated. The randomized controlled trial (RCT) continued during this period, and the project achieved target enrollment of 450 subjects, thereby concluding the RCT at the end of May 2011. The research team began cleaning the final data set for analysis, compiling a list of patients for the exploratory analysis of downstream actions, and preparing preliminary drafts of manuscripts describing the innovation. The project team anticipates completing all aspects of the project by the end of the 9-month no-cost extension period.

As last self-reported in the AHRQ Research Reporting System, progress is completely on track and project budget spending is on target.

Preliminary Impact and Findings: An interim analysis of the data showed promising results. Inpatient attending and PCP satisfaction with the new automated email notification system was high. Those physicians receiving usual care reported lower satisfaction with existing systems of managing TPADs. Both inpatient attending and primary care physicians reported higher awareness of test results finalized after discharge: 72 percent and 56 percent, respectively. The inpatient attending and PCP in the control group both reported lower awareness, at 34 percent each.

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