Implementation of a Referral-Test Management System Using REDCap

Regina Kwon, MD, MPH, Kevin Martin, CLS/MT, Lori Sokoll, PhD, Claire Knezevic, PhD
Department of Pathology, Johns Hopkins University School of Medicine

Abstract

Background

Each year, our laboratory Customer Service department handles more than 1,600 requests for non-formulary tests. Though they represent only a small fraction of the tests we perform, referral tests consume significant resources due to a paper-based management process. Tracking efforts for quality assurance and billing have, over time, resulted in duplicate (or even triplicate) data entry, multiple scanning steps, and large paper repositories. We describe here a project to design, test, and launch a referral-test management system using REDCap, a platform better known for collecting research data.

Technology

REDCap (Research Electronic Data Capture, v10.6.5, Nashville, Tenn.), Report Scheduler (Luke Stevens, Victoria, Australia).

Design

We based the functional requirements on an analysis of the workflow, from initial call receipt and pathologist review to sample send-out, result tracking, and periodic reporting. We identified five direct user roles (ordering provider, Customer Service representative, clinical lab scientist, resident/fellow, department administrator) and three indirect (attending, QA/QI staff, and Billing staff), each with different access and reporting needs. An iterative development process followed, driven by end-user interviews and component testing.

The new system ultimately comprised one survey and two data-entry forms. The original data and several standalone repositories were cleaned and either loaded into the system or redistributed. The REDCap Alerts & Notifications module was used to generate e-mails and pages on completion of each of the workflow stages, and an external module was used to produce a scheduled report for billing. Simple dashboards were created to track requests in real time.

Results

The project was proposed in December 2020, and design and development began in January. Testing and training were completed in February, and the new system launched in early March 2021. It presently supports more than fifty users and handles all referral tests for five laboratories at a rate of five to seven requests per day.

Conclusions

Our unique implementation of REDCap demonstrates the usefulness of this secure platform as an adjunct to the laboratory information system. This system will help us capture the full referral-test workload, allowing us to evaluate test utilization, plan information system updates, and improve billing tasks.