

Optimizing Biospecimen Workflows: Streamlining Clinical Trial Blood Collection Through a Novel Integration of Enterprise I.T. Systems

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Background

The Research Biofluid Management Unit (RBMU) of the Clinical Trials Office (CTO) at NYU Langone Health (NYULH) Perlmutter Cancer Center (PCC) is a research laboratory responsible for the collection of research biospecimens for oncology clinical trials and research studies.

Before 2022, the CTO clinical coordination unit (CCU) research coordinators used email to submit requests for research biospecimen collections to the RBMU lab via an Excel file attachment known as a “research ticket”, prompting RBMU to assemble and deliver a patient and visit-specific **blood collection kit** to the clinic. A research ticket was completed for each time point and frequently contained redundant or erroneous patient demographics, appointment details, or specimen information. RBMU received hundreds of emailed ticket files that regularly required revision due to schedule add-ons, typos, or errors. The email ticket system also required CCU staff to monitor Epic electronic medical records (EMR) for schedule changes.

Errors in tickets and add-ons resulted in missed or inaccurate collections, delays in lab and clinical workflows, and longer wait times for patients on research studies.

Goals

We aimed to replace the existing research ticket email workflow with an integration between enterprise laboratory information management system (LIMS) LabVantage and Epic EMR. The new request system would reduce human error and last-minute requests by automating patient demographics and providing real-time appointment updates from Epic to LabVantage, ultimately streamlining schedule notifications, kit delivery, blood collection, and downstream sample processing.

Solutions and Methods

In 2018, a clinical trial management project began development with LIMS LabVantage and Epic EMR integration and enhancement. Project requirements included:

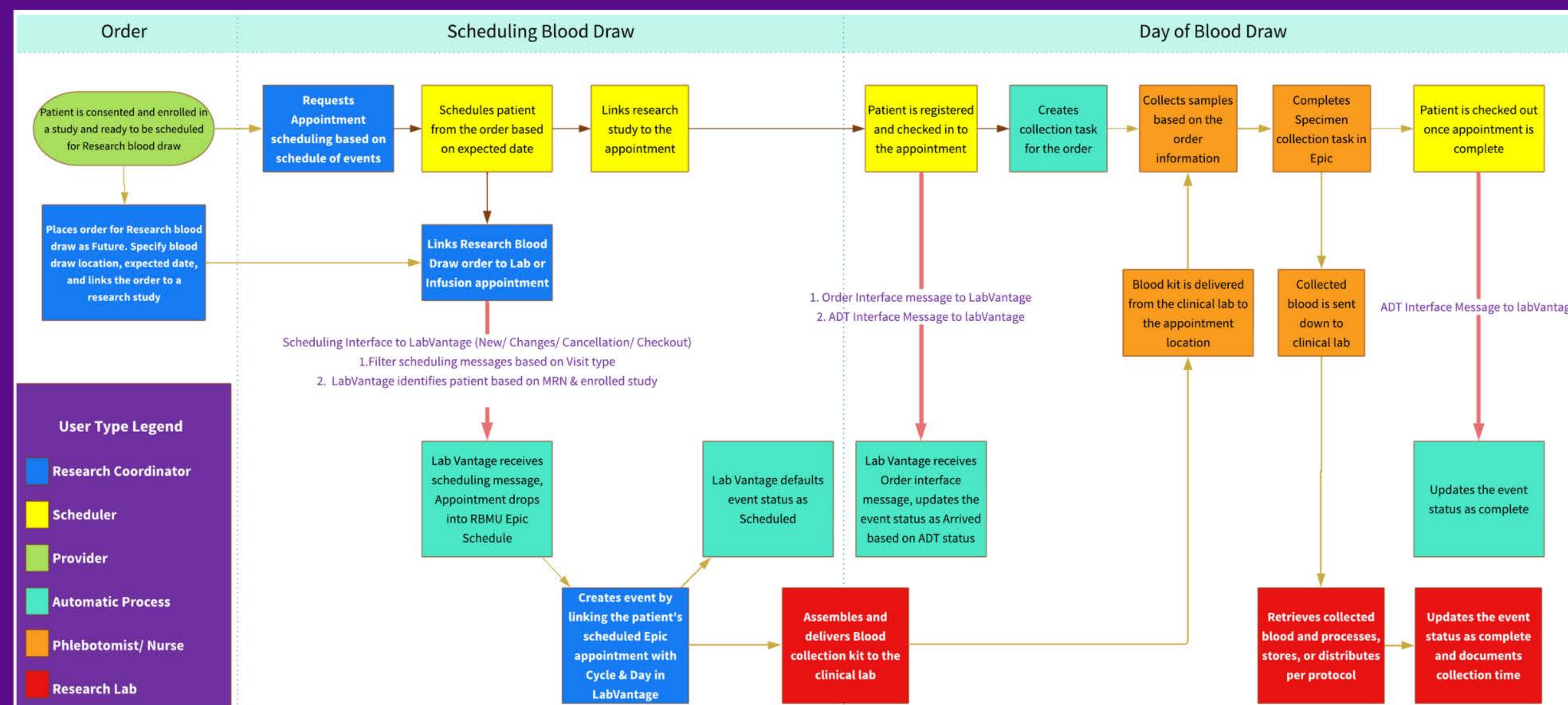
- Capture study information in LabVantage via integration with enterprise clinical research management system (CRMS)
- Automatically enroll participants in LabVantage studies based on CRMS and Epic enrollment
- Build clinical protocols in LabVantage outlining specimen collection schedules
- Create a new “research blood draw” order in Epic that staff can link to patients’ lab or infusion appointments
- Develop a scheduling integration to show research-specific Epic appointments within LabVantage
- Build a platform in LabVantage for CCU staff to request appointment-specific blood kits
- Create a calendar to track expected samples with real-time automatic Epic appointment updates based on visit check-ins, completions, rescheduling, cancellations, and no-shows
- Train faculty group practice schedulers, phlebotomists, infusion nurses, and research staff

Outcomes

In July 2022, the Epic EMR-LabVantage integration replaced the email-excel research ticket for outpatient blood collections in Manhattan.

Since then, the Epic EMR-LabVantage integration has facilitated 13,000 specimen collections for 250 clinical trials using Epic research blood draw orders.

- ★ 90% of all clinical trial blood specimens are collected using the new system
- ★ 200+ NYU Langone Health personnel were trained on new workflows in Epic and LabVantage
- ★ Eliminated errors in patient demographics in specimen requests with EMR integration
- ★ Decreased last-minute specimen requests by 50%
- ★ Eliminated the risk of missed visits caused by unsend or unread emails



Lessons Learned & Future Directions

Integrating NYULH Epic EMR with LIMS LabVantage streamlined clinical trial specimen management for clinical and laboratory staff. Accurate patient demographics and real-time automated updates to the specimen calendar reduced errors on requisition forms, missed or incorrect specimen collections, and delays in sample collection and processing downstream.

Next steps include expanding the Epic-LabVantage integration to include blood and tissue collections at inpatient sites and NYULH PCC Long Island and Brooklyn outpatient locations.