

The goal of achieving maximum productivity through process redesign and teamwork in oncology laboratory (lab) operations can be challenging in cancer care organizations. At an urban cancer center, missing lab orders occurred frequently and led to increases in lab errors, turnaround time, and patient wait times. Patient and staff satisfaction metrics were also affected, resulting in suboptimal scores. A nurse-driven practice change project was initiated after a thorough assessment in two clinic sites. The application of targeted lean methodology to redesign lab processes and workflows, in addition to engaging multiple stakeholders, was implemented to support a culture of continuous quality improvement.

**AT A GLANCE**

- Missing lab orders in the outpatient oncology population causes delays in results, inefficient care delivery, and suboptimal patient and staff satisfaction.
- Working within patient-centered systems, oncology nurses can integrate teamwork and collaboration by engaging stakeholders to improve operational and organizational outcomes.
- Applying the principles of lean methodology can stimulate oncology nurses to lead the redesign of lab processes that optimize productivity, quality, safety, and responsive patient care.

**KEYWORDS**

laboratory orders; quality improvement; oncology; nursing; lean methodology

**DIGITAL OBJECT IDENTIFIER**

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# Laboratory Process Improvement

A quality initiative in an outpatient oncology clinic

Megann Wojciechowski, DNP, RN, BMTCN®, QIA<sup>CM</sup>, and Mary F. Rodts, DNP, CNP, ONC, FAAN

**L**aboratory (lab) testing is divided into pre-analytic, analytic, and post-analytic phases. Test ordering and specimen collection is a part of the pre-analytic phase. Plebani et al. (2015) reported that pre-analytic errors account for as many as 70% of all mistakes made in lab testing. This article describes a quality improvement initiative led by oncology nurses and other healthcare providers to optimize the pre-analytic lab processes in two practice settings to enhance efficiency, quality, safety, and patient care delivery.

**Problem Identification**

The Rush University Cancer Center (RUCC) Chicago clinic is located within an urban academic medical center in Chicago, Illinois, with a lab that services 200 patients daily. The RUCC Oak Park clinic is located within a community hospital in Oak Park, Illinois, with a lab that services 40 patients daily.

Press Ganey Associates, a national patient experience and care delivery company, reported that, in February 2019, the RUCC Chicago location ranked in the 29th percentile and the RUCC Oak Park location ranked in the 65th percentile for the Moving Through Your Visit (MTYV) driver, with scores of 81% and 92.4%, respectively. The overall target goal for all drivers was 93.3% (Rush University Medical Center, 2019). Provider teams were expected to have lab orders and clear appointment notes entered in the electronic health record (EHR) prior to

a patient’s arrival. However, according to baseline data, appointment notes and lab orders were missing from patients’ charts 25% of the time at the RUCC Chicago location and 10% of the time at the RUCC Oak Park location. Ineffective processes were associated with an increase in patient wait times, lab errors, lengthy lab turnaround times, and a decrease in patient satisfaction scores. These metrics warranted an improvement initiative to redesign lab processes and foster better communication, teamwork, and collaboration.

**Operational Significance**

Patients were scheduled for lab work between 6:30 am and noon to allow time for subsequent appointments with a provider and infusion services in each oncology outpatient clinic. There was no capacity on the lab schedule based on staff or space availability; therefore, the scheduling process created a bottleneck, and lab information not completed and available for review by the appointment increased a patient’s wait time. In February 2019, during an evaluation of lab appointment times by the author, patients were found to wait 13 minutes at RUCC Chicago and 5 minutes at RUCC Oak Park.

A time log recorded by both nursing and lab personnel was used for the daily lab precheck review. At RUCC Chicago, the log indicated that nurse navigators spent as many as 90 minutes per day reviewing appointment notes and lab orders in February 2019. Lab personnel spent 60 minutes per day at RUCC Oak Park and 105 minutes per day at RUCC Chicago reviewing lab