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Editor: Deborah Sesok-Pizzini, MD, MBA, professor, Department of Clinical Pathology and Laboratory Medicine, Perelman School of Medicine, University of Pennsylvania, Philadelphia, and chief, Division of Transfusion Medicine, Children's Hospital of Philadelphia.

Process optimization to improve immunosuppressant drug testing turnaround time

The routine use of immunosuppressant medications is critical for patients receiving solid organ transplants. Monitoring immunosuppressant (ISP) drug concentrations helps guide safe and effective dosing. ISP drug monitoring is performed using mass spectrometry or immunoassay methods. While mass spectrometry is the gold standard for ISP drug monitoring due to its high specificity and accuracy, immunoassay methods are more easily implemented in laboratories. The authors conducted a study to improve turnaround times for ISP drug testing processes in a reference laboratory located 1.5 miles from the hospital laboratory, which performs ISP drug monitoring using mass spectrometry. They constructed value stream maps of the ISP drug testing process to identify process bottlenecks. The investigators used laboratory information time stamps, direct observation, and discussion with staff to create the maps. Improvements were then implemented to attain the required turnaround times in order to have results reported earlier to facilitate dose adjustments. Results showed that baseline performance of the existing ISP drug testing process was 28 percent of samples reported by 2 PM. The major bottlenecks identified were analytical run schedule, instrument delays, difficulty identifying ISP drug samples at intake, and difficulty collecting specimens. Following the process changes, a median of 76 percent of samples were reported by 2 PM. The authors concluded that this study demonstrated that adjusting ISP drug sample collection and process analysis using value stream mapping enabled the laboratory to meet the physician-requested reporting time. They noted that this approach may be applicable to other tests. Furthermore, the lessons learned may be particularly valuable for larger health care organizations operating hub-and-spoke lab models and rural or isolated labs that need to improve the workflow for send-out testing.

Barakauskas VE, Bradshaw TA, Smith LD, et al. Process optimization to improve immunosuppressant drug testing turnaround time. *Am J Clin Pathol.* 2016;146:182-190.

Correspondence: Kamisha Johnson-Davis at kamisha.johnson-davis@aruplab.com

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Assessment of the state of current practice in coagulation laboratories

Coagulation laboratories are confronted with several new challenges, including meeting workflow requirements with limited staffing, establishing procedures for performing coagulation tests on patients who may have Ebola virus disease, and addressing the growing demand for tests to measure the effects of new direct oral anticoagulants, as well as billing practices for such drugs. The authors conducted a study in which they surveyed clinical laboratories in the North American Specialized Coagulation Laboratory Association to investigate how laboratories are addressing these new developments. They emailed a questionnaire, using SurveyMonkey, to the 98 NASCOLA coagulation laboratories and received 46 responses. The number of FTE employees was reported as good (45.7 percent), adequate but ideally need more (39.1 percent), and inadequate (15.2 percent). The median number of special coagulation tests for laboratories that reported inadequate staffing levels was 9,000 tests per technologist per year. In contrast, laboratories with a median of 4,000 tests per technologist per year reported that their staffing levels were adequate. For Ebola testing, the coagulation testing was primarily performed at the point of care. Only 26.1 percent of labs reported that they do not perform coagulation tests for Ebola. The tests offered were prothrombin time, activated partial thromboplastin time, and fibrinogen. Finally, 35 percent of special

coagulation laboratories billed for at least one laboratory test for direct oral anticoagulants, while 48 percent did not offer such tests. The authors concluded that this snapshot of the state of specialized coagulation laboratories, with regard to the aforementioned pressing issues, may be a useful resource for other labs that are negotiating resources and developing testing and billing menus.

Zantek ND, Hayward CP, Simcox TG, et al. An assessment of the state of current practice in coagulation laboratories. *Am J Clin Pathol*. 2016;146:378-383.

Correspondence: Dr. Elizabeth M. Van Cott, Dept. of Pathology, Massachusetts General Hospital, 55 Fruit St., Boston MA 02114