

Clinical pathology selected abstracts

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Evaluation of a laboratory stewardship intervention targeted at cardiac and thoracic surgical services

November 2023—Among the many reasons unnecessary laboratory tests are ordered in a hospital are preselected orders on order sets, clinician habits, and trainee concerns. Laboratory tests are among the highest volume procedures performed in inpatient hospital care. Excessive use of these tests can lead to patient discomfort as a result of unnecessary phlebotomy and contribute to iatrogenic anemia and increased risk of bloodstream infections. It can also contribute to the rising cost of medical care. Many laboratory stewardship programs have been developed to improve how clinicians order and use lab tests. These efforts often focus on modifying the computerized provider order-entry (CPOE) system and can be used in conjunction with education and feedback to drive change. This approach is particularly appealing for academic medical centers seeking to illustrate the importance of delivering high-value care while reducing unnecessary laboratory use. The authors conducted a study in which they selected the thoracic and cardiac surgery service lines at an academic quaternary care hospital, both of which have high levels of laboratory use, for a multilevel laboratory stewardship intervention to decrease unnecessary lab testing. They designed a multilevel intervention for the study that included five components: stakeholder engagement, provider education, CPOE modification, performance feedback, and culture change supported by leadership. The primary outcome of the study was laboratory tests ordered per patient day. The secondary outcomes were number of blood draws per patient day, total lab-associated costs, length of stay, discharge to a nursing facility, 30-day readmission, and death. A difference-in-difference analytic approach was employed to evaluate the outcome measures in the intervention period. Other surgical services were used as controls. For the primary outcome of laboratory tests ordered per patient day, the authors found that 1.5 to two fewer tests were ordered per patient day for the thoracic and cardiac surgery services, and an estimated 20,000 fewer tests were performed during the intervention period. Of interest, blood draws per patient day decreased significantly on the thoracic surgery service but not on the cardiac surgery service. Furthermore, lengths of stay, deaths, and 30-day readmissions did not change significantly across services in the postintervention period, suggesting that the interventions did not have a measurable adverse impact on patient outcomes. The authors concluded that a multilevel intervention based on stakeholder engagement, provider education, CPOE modification, performance feedback, and deliberate culture change improves laboratory test ordering across thoracic and cardiac surgery services. They noted that a partnership between laboratory and clinical services that order high volumes of lab tests can be an effective strategy for developing a robust laboratory stewardship program.

Mathias PC, Khor S, Harris K, et al. Evaluation of a multilevel laboratory stewardship intervention targeted to cardiac and thoracic surgical services at an academic medical center. *Arch Pathol Lab Med*. 2023;147:957-963.

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Monitoring syphilis serology in blood donors as a surrogate marker of early transfusion-transmissible infection behavioral risk

The deferral from blood donation in Canada for gay, bisexual, and other men who have had sex with men (GBMSM), implemented in the 1980s, was gradually shortened and eventually replaced with sexual risk questions, irrespective of the gender of potential blood donors' partners. Other countries are considering options for removing or altering time-based deferral policies or have also implemented them. Syphilis is a spirochete bacterium *Treponema pallidum* subspecies, which, like HIV, is known to be a sexually-transmissible disease. Even though it's possible to transmit syphilis via whole blood transfusion, this is unlikely due to current blood product processing

procedures. All blood donations in Canada are tested for antibodies to *T. pallidum*, and no transfusion transmissions appear in the database of blood donor records. Syphilis testing has been proposed as a surrogate marker for monitoring sexual risks in blood donors, and it was included in the postimplementation monitoring plan for behavior-based questions in England and Canada. Male-to-male sex is a risk factor for syphilis and HIV, but syphilis occurs more frequently than HIV. During the past decade, Canada has shown an increasing rate of infectious syphilis, which has prompted a national action plan. The authors conducted a study to describe trends in syphilis rates during progressively shorter time deferrals for GBMSM, assess risk behavior in syphilis-positive donors, and evaluate whether trends in syphilis rates have been useful in analyzing sexual risk behavior in donors. They used logistic regression to analyze syphilis positivity in 10,288,322 whole blood donations from January 2010 to September 2022 and based on GBMSM deferral time periods, donation status, age, and sex. Overall, 26.9 percent of syphilis-positive donors and 42.2 percent of controls participated in risk-factor interviews analyzed by logistic regression. The results showed that syphilis rates were higher in first-time donors (odds ratio [OR], 2.7; 95 percent confidence interval [CI], 2.1–3.3) and males (OR, 2.3; 95 percent CI, 1.9–2.8) and with three-month deferral (OR, 3.4; 95 percent CI, 2.6–4.3). The increase was greater for first-time donor males ($p < .001$) but similar for male and female repeat donors ($p > 0.5$). Among first-time donors, histories of intravenous drug use (OR, 11.7; 95 percent CI, 2.0–69.5), male-to-male sex (OR, 7.8; 95 percent CI, 2.0–30.2), and birth in a high-prevalence country (OR, 7.6; 95 percent CI, 4.4–13.0) were the major predictors of syphilis positivity. Among repeat donors, history of male-to-male sex (OR, 33.5; CI, 3.5–317.0) was the strongest predictor of syphilis positivity. The authors noted that all but one of the GBMSM syphilis-positive donors were noncompliant with the GBMSM deferral. Approximately 25 percent of the first-time case donors interviewed had syphilis. Of this group, 44 percent were born in a high-prevalence country. The authors demonstrated that rising syphilis rates in donors correlated with a general increase in trends over time, demographics, and social determinants of health. Even though GBMSM history may contribute to donor syphilis rates, it does not appear that shortening time deferrals is related to the rising syphilis rates observed among donors. Because syphilis rates have increased in blood donors and the general population, while HIV rates have not, monitoring syphilis rates does not appear to be a good surrogate for HIV risk.

O'Brien SF, Drews SJ, Yi QL, et al. Monitoring syphilis serology in blood donors: Is there utility as a surrogate marker of early transfusion transmissible infection behavioral risk? *Transfusion*. 2023;63:1195–1203.

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