Clinical pathology selected abstracts

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Optimization of laboratory ordering practices for CBC with differential

May 2019—Over 5 billion laboratory tests are performed in the United States each year, and more than 20 percent are considered unnecessary. The American Board of Internal Medicine Foundation initiated the Choosing Wisely campaign in 2012 to increase awareness of wasteful or unnecessary medical tests, procedures, and treatments. Studies have shown that tests ordered without a clear rationale not only waste resources but are also a source of iatrogenic anemia, which has been associated with increased blood transfusions, lengths of stay, and mortality. The most common tests performed in the clinical hematology laboratory are the CBC and CBC with differential. The Choosing Wisely campaign recommends eliminating repeat CBC and chemistry testing for stable patients. Furthermore, it is recommended that the CBC with differential be repeated only in specific situations, such as for risk or symptoms of anemia, signs of infection, or a disease or treatment that affects blood cells. The authors conducted a study to determine if a reduction in CBC and CBC with differential tests could be achieved without negatively impacting patient care. They compared the quantity of testing and distribution of repeated tests before, during, and after an educational intervention. After collecting data on hospital ordering patterns, the team collected data about total CBC and CBC with differential orders from comparable hospitals. An analysis of these data showed that the CBC with differential test was ordered 10-fold more frequently than CBC tests. The trauma burn intensive care unit (TBICU) ordered the most CBC with differential tests, with repeat testing ordered every four to 12 hours. Therefore, the educational intervention was targeted at reducing the ordering of CBC with differential tests in the TBICU. The most significant change that resulted from this intervention was a decrease in the number of CBC with differential tests ordered and an increase in the number of CBC tests ordered for TBICU patients. The intervention also significantly decreased the number of CBC with differential tests performed within 22 hours of each other for TBICU patients. One reason for ordering the CBC with differential was to use it as an early marker for sepsis and to look for bandemia. The investigators analyzed data pre- and post-intervention to ensure that less frequent testing did not negatively impact or delay the diagnosis of sepsis. The authors concluded that the intervention reduced the number of CBC with differential tests ordered and tests repeated every 12 hours without negatively impacting patients. These results were sustainable after the intervention. The authors also noted improvement in other hospital units, most likely through staff members sharing information between units.

Shen JZ, Hill BC, Polhill SR, et al. Optimization of laboratory ordering practices for complete blood count with differential. *Am J Clin Pathol.* 2019;151:306–315.

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Effects of oral anticoagulants and aspirin on fecal tests in colorectal cancer screening

A fecal immunochemical test for occult blood is the most frequently used colorectal cancer screening tool worldwide. It is recommended that a positive fecal immunochemical test (FIT) be followed by colonoscopy. A high positive predictive value is important in a screening program to reduce the number of unnecessary colonoscopies. Aspirin and anticoagulants, which are associated with gastrointestinal bleeding, are common medications used by the target population for colorectal screening, patients 50 years and older. According to current screening guidelines, discontinuing antithrombotic treatment prior to fecal sampling is not recommended. The authors conducted a study to assess the impact of aspirin, warfarin, and direct-acting oral anticoagulants (DOACs) on the positive predictive value for colorectal cancer and advanced adenoma following a positive FIT result. They used data from a large colorectal cancer screening trial in Norway. The participants were 50 to 74 years old and had a positive FIT result and subsequent colonoscopy. The subjects who used regular aspirin, warfarin, or DOACs were

defined as users. Nonusers served as controls. The primary outcomes were the positive predic-tive value for colorectal cancer and advanced adenoma. Among 5,908 participants, the positive predictive value for colorectal cancer was 3.8 percent for aspirin users versus 6.4 percent for matched nonusers ($P = .006$), while the positive predictive value for advanced adenoma was 27.2 percent for aspirin users versus 32.6 percent for matched nonusers ($P = .011$). The positive predictive value for colorectal cancer was 0.9 percent for DOAC users versus 6.8 percent for matched nonusers ($P = .001$), while the positive predictive value for advanced adenoma was 20.5 percent for DOAC users versus 32.4 percent for matched nonusers ($P = .002$). There was no significant difference in positive predictive values for colorectal cancer or advanced adenoma in warfarin users compared with nonusers. To the authors' knowledge, this is the largest cohort of aspirin and DOAC users to be studied for FIT performance. The authors concluded that aspirin and DOAC users have a lower positive predictive value for colorectal cancers and advanced adenomas compared with nonusers. They noted that although aspirin and DOAC use increases the rate of false-positive tests, a pause in taking these drugs may increase the risk of potentially life-threatening or disabling thromboembolic and cardiovascular events. Requiring medication adjustment may also complicate FIT screening and impact adherence to the screening program. The authors suggested that a possible approach to this problem may be to repeat FIT testing for those on DOACs who have a positive FIT result.

Randel KR, Botteri E, Romstad KMK, et al. Effects of oral anticoagulants and aspirin on performance of fecal immunochemical tests in colorectal cancer screening. *Gastroenterology*. 2019. https://doi.org/10.1053/j.gastro.2019.01.040.

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