Clinical Pathology Abstracts, 3/18

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.

Web platform vs. genetic counselor for releasing carrier results from exome sequencing

Genomics can be used to generate a large amount of data that may have important implications for clinical care and selection of therapeutics. However, a bottleneck exists in clinical genomics due to the large volume of results and the lack of availability of knowledgeable professionals to return them to patients in person. The authors conducted a study to test whether a Web-based platform is noninferior to a genetic counselor for educating patients about their carrier results from exome sequencing. They used a cohort from the National Institutes of Health to conduct a randomized noninferiority trial from February 2014 to December 2016 to compare the Web-based platform with a genetic counselor. Among 571 eligible study participants, one to seven heterozygous variants were identified in genes that cause a phenotype that is recessively inherited. The authors used interval surveys to collect data following education and counseling. The Web-based platform integrated education on carrier results with personal test results to directly parallel disclosure education by a genetic counselor. The sessions took a mean time of 21 and 27 minutes, respectively. The study showed that the Web platform was noninferior to the genetic counselor on outcomes assessed at one and six months, including knowledge, test-specific distress, and decisional conflict about choosing to learn results. Furthermore, no significant difference was found between the genetic counselors and Web-based platform with regard to disclosure rates to spouses, children, or siblings. In summary, this trial demonstrates the noninferiority of a Web-based platform for returning carrier results to postreproductive mostly healthy adults. The authors noted that younger and more diverse populations need to be studied to determine if the results are generalizable. This approach may help with the limited genetic counseling resources available and provide a paradigm for which nongenetic health care professionals can return subsets of test results that do not disclose a significant health threat.

Biesecker BB, Lewis KL, Umstead KL, et al. Web platform vs in-person genetic counselor for return of carrier results from exome sequencing. A randomized clinical trial. *JAMA Intern Med.* 2018. doi:10.1001/jamainternmed.2017.8049.

Correspondence: Dr. Barbara B. Biesecker at barbarab@mail.nih.gov

[hr]

Detection and localization of surgically resectable cancers with a multi-analyte blood test

A major goal of cancer research is to detect cancer cells before they metastasize to other areas. When tumor cells are detected but not yet observed with imaging studies, there is still a significant opportunity for cure with systemic therapy. The authors described a blood test designed to detect eight common cancer types by assessing the levels of circulating proteins and mutations in cell-free DNA. They investigated the blood test, called CancerSeek, in 1,005 patients with nonmetastatic, clinically detected cancers of the ovary, liver, stomach, pancreas, esophagus, colorectum, lung, or breast. The blood test not only can detect early cancer but also localize the tissue of origin. In the authors' study, CancerSeek tests were positive in a median of 70 percent of the eight cancer types. The sensitivities ranged from 60 to 98 percent for detecting ovary, liver, stomach, pancreas, and esophagus cancer, for which there are no screening tests for average-risk people. The specificity of CancerSeek was more than 99 percent. In a median of 83 percent of patients, the blood test localized the cancer to a small

number of anatomic sites. In summary, this study has shown the potential for a multi-analyte blood test to detect cancer in eight common solid tumor types. The significance of this early work has major implications for detecting and treating metastatic cancer at early stages. However, the authors noted that to establish the clinical utility of CancerSeek and demonstrate its impact on saving lives, additional prospective studies on all incident cancer types in a large population are needed.

Cohen JD, Li L, Wang Y, et al. Detection and localization of surgically resectable cancers with a multi-analyte blood test. *Science.* 2018. doi:10.1126/science.aar3247.

Correspondence: Dr. Cristian Tomasetti at ctomasetti@jhu.edu