Clinical pathology selected abstracts

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Data on screening for multiple cancers at one visit from a cancer center study

April 2023—Cancer is the second leading cause of death globally. While great progress is being made in personalized cancer treatments, early detection and diagnosis is critical to reduce mortality and improve the effectiveness of treatment. Guidelines for preventative screening are available but require a large public health intervention strategy. Having "one-stop-shop" screening for multiple cancers at one time would reduce the barriers to participating in cancer screening programs and may lead to greater numbers of screening participants. An integrated cancer prevention center (ICPC) was developed in 2006 at the Tel Aviv Medical Center, in Israel, to screen for all cancers that the U.S. Preventive Services Task Force recommends be screened, including breast, colon, cervical, lung, skin, ovarian, uterine, thyroid, testicular, oropharyngeal, and prostate cancer. The authors conducted a study at the ICPC to show how early detection could be achieved by screening for multiple cancers during one visit. They prospectively studied self-referred asymptomatic people between 20 and 80 years of age. Multiple specialists obtained clinical, laboratory, and epidemiological data, including family history. Additional testing was indicated based on symptoms, family history, individual risk factors, and abnormalities observed during the visit. Follow-up recommendations and diagnoses were given during the clinic visit. Between January 2006 and December 2019, 8,618 men and 8,486 women were screened at the ICPC. Of the 248 patients for whom cancer staging was available, 19.8 percent were stage 0, 45.6 percent were stage I, 12.1 percent were stage II, 10.1 percent were stage III, and 12.5 percent were stage IV. This means most cancers were found at an early stage, with 75 percent found at stage 0, I, or II. The major cancers detected were skin, breast, thyroid, and colorectal. The average stage of detection at the ICPC was earlier for breast, lung, prostate, and female reproductive cancers than in the United States. The patient satisfaction rate with the ICPC experience was high, at 8.35 ± 1.85 on a scale of one to 10. Although ICPC screening was not necessarily superior, having specialists conduct screening tests specific to their field may have enhanced the quality and accuracy of testing. Because lab tests and imaging studies were conducted on site on the same day (except for colonoscopy) and recommended follow-up with each specialist was provided, delays in diagnosis and loss to follow-up were prevented. As a result of early detection, only 31 (12.5 percent) cancers were found at a metastatic stage. When these data were compared with those in the Israeli public registry, the percentage of all cancers found at stage IV was lower at the ICPC. The authors demonstrated that they were able to detect cancers at an early stage using the ICPC model. However, they also noted that there were some limitations to this proof-of-concept study for comprehensive cancer screening. Among them were the cost-effectiveness and generalizability of such an approach to cancer screening in a multidisciplinary outpatient clinic. Furthermore, patients were self-referred, which may add bias to the data and conclusions. The authors recommended that future studies include the long-term outcomes of patients who visited the ICPC compared with those of the general population, who may have only participated in general screening programs or were evaluated when symptoms appeared.

Bernstein E, Lev-Ari S, Shapira S, et al. Data from a one-stop-shop comprehensive cancer screening center. *J Clin Oncol*. https://doi.org/10.1200/JCo.22.00938

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Use of clinical decision support to improve evaluation of monoclonal gammopathies

Monoclonal gammopathies are a category of diverse diseases defined by the production of immunoglobulin proteins that emerge from a clonal population of plasma cells. They may be classified as malignant or

premalignant conditions and range from monoclonal immunoglobulin proteins (M proteins) that are identified as part of multiple myeloma to an isolated monoclonal gammopathy of uncertain significance (MGUS). The workup for monoclonal gammopathies involves quantifying and characterizing the M proteins in serum and urine. The introduction of the serum free light chain assay (sFLC) into M protein detection, when used with serum and urine protein electrophoresis (SPEP and UPEP, respectively) followed by immunofixation electrophoresis (IFE), improved the diagnostic accuracy of the monoclonal gammopathy workup. In 2009, the International Myeloma Working Group recommended ordering an SPEP, sFLC, and serum IFE for the initial workup of all monoclonal gammopathies except AL amyloidosis, which also requires a urine IFE. The kappa-to-lambda free light chain ratios in the sFLC assay assess clonality, provide prognostic utility, and enhance diagnostic sensitivity. Even with recommendations to include sFLC in an initial monoclonal gammopathy workup, its use continues to vary among providers. The authors conducted a study at their institution (Massachusetts General Hospital) to assess the ability of a clinical decision support alert to improve guideline compliance and to analyze its clinical impact. They designed and implemented a clinical decision support alert to educate providers and prompt them to order an sFLC assay when ordering SPEP testing. The alert was built using standard Epic best-practice advisory tools (Epic Systems). The alert was designed to fire when a provider orders a SPEP without a concurrent sFLC order or an sFLC result in the past 30 days. The results showed that the alert was highly effective at increasing the co-ordering of SPEP and sFLC testing. Before implementing the alert, only 62.8 percent of SPEP evaluations included sFLC testing. After implementing it, approximately 90 percent included an sFLC assay. Among patients with no prior sFLC testing, 28.9 percent were identified as having an abnormal kappa-to-lambda ratio. Furthermore, the sFLC assay provided the only laboratory evidence of an M protein in 17 percent (452 of 2,652) of patients who had no sFLC results in the past six years (termed new patients). The more accurate diagnoses of multiple myeloma and other monoclonal gammopathies had a positive impact on clinical care. The study also showed that the provider only spent a median dwell time of five seconds interacting with an alert and demonstrated that the alert increased the co-ordering of SPEP and sFLC testing primarily in patients undergoing an initial laboratory evaluation for a suspected monoclonal gammopathy. The authors concluded that the clinical decision support alert was highly effective in changing sFLC ordering practices. They noted that this type of alert is a universally applicable approach for addressing gaps between clinical practice and recommended guidelines.

Pearson DS, McEvoy DS, Murali MR, et al. Use of clinical decision support to improve the laboratory evaluation of monoclonal gammopathies. *Am J Clin Pathol*. 2023;159:192–204.

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