Early Cancer Detection With Blood Test May Change Screening Paradigms

New tests can detect a common signal across more than 50 types of cancer from tumor DNA in blood.

September 13, 2022 By European Society for Medical Oncology

Cancer doctors, care providers and payers need to get ready for a major shift in early cancer detection that will affect almost every stage of cancer diagnosis and treatment. New data supporting the accuracy of multi-cancer early detection (MCED) blood testing, presented at the the European Society for Medical Oncology (ESMO) Congress 2022, have major implications for future cancer care provision, said Fabrice André, ESMO 2022 Scientific Co-Chair.

“It is a duty of professional societies like ESMO to raise awareness of the fact that within the next five years, we will need more doctors, surgeons and nurses, together with more diagnostic and treatment infrastructure, to care for the rising number of people who will be identified by multi-cancer early detection tests,” explained André, Director of Research at Gustave Roussy Cancer Centre, Villejuif, France and newly elected future president of the Society for the years 2025-2026. “We need to involve all stakeholders in deciding new pathways of care. We need to agree who will be tested and when and where tests will be carried out, and to anticipate the changes that will happen as a result of these tests, for example in the diagnosis and treatment of people with pancreatic and other cancers that are usually diagnosed at a much later stage.”

New MCED tests in development can detect a common cancer signal from over 50 different types of cancer and predict where the signal has come from in the body. The signal arises from small sequences of circulating tumour DNA (ctDNA) in the blood which have some different methylation patterns from non-tumor DNA.

In the PATHFINDER study reported at the ESMO Congress 2022, an MCED test detected a cancer signal in 1.4% of 6621 people aged 50 years and over who were not known to have cancer, and cancer was confirmed in 38% of those with a positive test. Of 6290 people who were cancer free, 99.1% received a negative test result. Among those with a positive test result, the time to achieve diagnostic resolution (i.e. to find cancer or decide there was no evidence of malignancy requiring further investigation) was a median of 79 days. Among participants with a positive screening test, diagnostic resolution was achieved within three months for 73%.

“The results are an important first step for early cancer detection tests because they showed a

good detection rate for people who had cancer and an excellent specificity rate for those who did not have cancer. In people with a positive test, it took less than two months to confirm the diagnosis if they had cancer and it took a bit longer if they did not have cancer primarily because physicians opted to perform imaging studies and then repeat them a second time several months later to investigate the possibility of a cancer diagnosis," explained study senior author Deb Schrag, of Memorial Sloan Kettering Cancer Center, New York, USA.

"An important finding was that few participants with a false positive screening test required multiple invasive procedures such as endoscopies and biopsies. This finding should help to allay concerns that these tests could cause harm by generating unnecessary procedures in people who are well," added Schrag.

She stressed the importance of continued standard screening for tumors, such as breast and colorectal cancer, while MCED tests are being refined and validated for cancers such as pancreatic, small bowel and stomach cancer where there are currently no screening options.

"This study indicates that hope is on the horizon for detecting cancers that are currently unscreenable, but of course much more work is needed and, with experience and larger samples, these assays will improve. The tests need to be refined so they are better at distinguishing tumour DNA from all the other DNA that is circulating in the blood," said Schrag. "It is also critical to note that the purpose of cancer screening is not to decrease the incidence of cancer, but rather to decrease cancer mortality. It is premature to reach any conclusions about how MCED testing affects mortality which was not measured in the PATHFINDER study and requires lengthy follow-up."

The study reported at the ESMO Congress 2022 is the first prospective investigation to show that an MCED test can detect cancer in patients with undiagnosed cancer, as previous studies used tests only in patients already known to have cancer. A number of further studies are now underway including a major randomised clinical trial enrolling 140,000 asymptomatic people in England to investigate the clinical effectiveness of MCED testing on cancer outcomes.

"We need comparative trials across all types of cancer to find out if having an early detection test affects morbidity and mortality. We also need to know how the tests benefit patients, and how to discuss the results with them," said André. "In addition, we need to know more about the small proportion of false positive tests – MCED results that indicate cancer is present but this is not confirmed by standard diagnostic procedures. We need some of these answers before we can calculate the cost impact of introducing MCED tests in routine clinical practice," André concluded.

This news release was published by the European Society for Medical Oncology on September 11, 2022.

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