Testing for specific proteins significantly improves sensitivity of stool-based colorectal cancer screening

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Testing for novel protein biomarkers in stool finds significantly more colorectal cancers (CRC) and advanced adenomas (precursors to cancer) compared to testing for hemoglobin alone. The proteins can be detected in a small sample of the fecal immunochemical test (FIT), which suggests that they can be applied in population screening. The findings are published in *Annals of Internal Medicine*.

CRC screening can save lives by detecting cancer in its early stages when it is still treatable. Colonoscopy is the gold standard for detecting colorectal tumors, but the test is costly and invasive. As such, most population-wide screening programs use noninvasive stool-based tests, such as the FIT, for triage to colonoscopy. The FIT tests for hemoglobin, or blood protein, in the stool, however, its sensitivity for detecting CRC and advanced adenomas is suboptimal.

Researchers from the Netherlands Cancer Institute and VU University Medical Center sought to identify novel protein biomarkers in stool that could outperform or complement hemoglobin in detecting CRC and advanced adenomas. The researchers used mass spectrometry to search for proteins that were present in stool specimens from persons with CRC or advanced adenomas, and which were virtually absent from stool specimens from controls. By using a combination of four novel protein biomarkers, in this study the investigators found that they were able to detect almost twice as many colorectal cancers and 5 times as many advanced adenomas, compared to using hemoglobin alone.

According to the researchers, this new test has the potential to be easily integrated into population-wide screening programs upon successful clinical validation. Because it uses the same technology as the current standard stool-based test, few adjustments to the screening program would be needed.

More information: *Annals of Internal Medicine* (2017). annals.org/aim/article/doi/10.7326/M17-1068

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