Algorithm can detect patients at high risk for colorectal cancer

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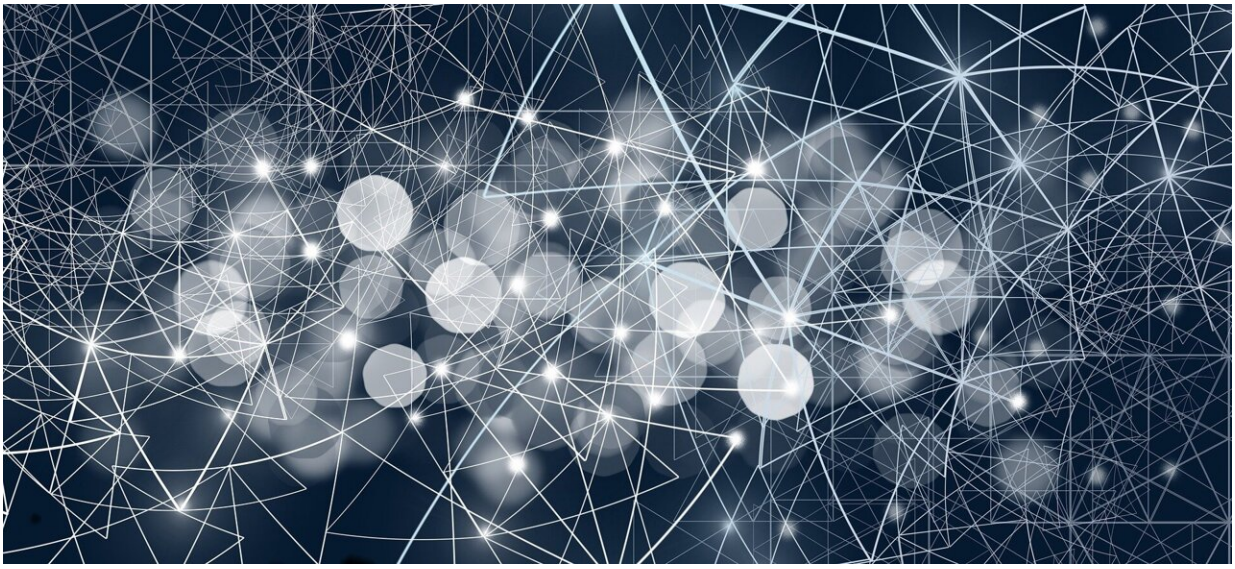

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A machine-learning algorithm detected potential signs of colorectal cancer (CRC) in patients identified as high-risk who had missed a routine colonoscopy, according to a new study led by Geisinger and Medial EarlySign.

The findings, published this month in *NEJM Catalyst Innovations in Care Delivery*, present a noninvasive method to increase screening among those who may have CRC.

Despite evidence of the benefits of regular CRC screening and significant efforts among providers and healthcare systems to increase screenings, approximately 32% of age-eligible adults in the United States do not follow current CRC screening guidelines, according to the National Cancer Institute. Serious illness and death from CRC can be prevented if asymptomatic polyps and other early-stage cancers are detected and treated early.

In the study, Geisinger identified a group of 25,610 patients who were overdue for CRC screening, and used a machine-learning algorithm to flag those at highest risk for developing cancer. The algorithm, developed by EarlySign, identified patients as high-risk by analyzing age, gender, and a recent outpatient complete blood count (CBC). A nurse then called the patients to inform them of their risk and offer to schedule a colonoscopy.

Of the patients flagged as high-risk, 68% were scheduled for a colonoscopy, and of those, approximately 70% had a significant finding.

"When carefully implemented and supported by healthcare providers, machine learning can be a low-cost, noninvasive supplement to other colorectal cancer screening efforts," said Keith Boell, D.O., chief quality officer for population initiatives at Geisinger and a co-author of the study. "This technology can act as a safety net, potentially preventing missed or delayed diagnosis among some patients who may already have undiagnosed signs of disease."

"Our partnership with Geisinger has focused on addressing the devasting impact of CRC with predictive algorithms that can impact early detection, coupled with integration into clinical workflows that lead to a personalized approach to care that engages patients in prevention and treatment," said Ori Geva, EarlySign co-founder and CEO. "Inclusion of our joint study with Geisinger in *NEJM Catalyst Innovations in Care*

Delivery is a great honor for our team, and we are grateful to all the co-authors and project teams from EarlySign and Geisinger for their achievements in quality research and outcomes."

More information: Daniel Underberger et al, Collaboration to Improve Colorectal Cancer Screening Using Machine Learning, *NEJM Catalyst* (2022). DOI: 10.1056/CAT.21.0170

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