

New study offers hope in early detection of esophageal cancer

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Researchers at Oxford University's Nuffield Department of Primary Care Health Sciences have developed a new tool to predict people's risks of getting esophageal cancer in the next ten years.

Researchers in the Nuffield Department of Primary Care Health Sciences at the University of Oxford have today unveiled a groundbreaking tool that could revolutionize the early detection of esophageal cancer—the long tube that carries food from the throat to the stomach.

This is the eighth most common cancer in the world. Using vast patient databases and cutting-edge computational techniques, the team has developed a prediction algorithm called "CanPredict (esophageal)" that identifies individuals at high risk of this cancer and could potentially save countless lives through targeted screening and early intervention.

Published today in *The Lancet Regional Health—Europe* the team of researchers from the Universities of Oxford, Cambridge, and Nottingham developed this innovative tool to predict the 10-year risk of esophageal cancer and to identify high-risk patients for further screening, potentially leading to earlier detection and improved patient outcomes. While there are methods available for detecting esophageal cancer, such as endoscopy, they are often reserved for patients showing symptoms or those already known to be at high risk.

Professor Julia Hippisley-Cox, a practicing GP and lead researcher from the Nuffield Department of Primary Care Health Sciences at the University of Oxford, emphasized the potential impact of the CanPredict tool: "With no widespread screening program currently in place in the NHS, developing a new strategy to enable earlier detection remains paramount.

"CanPredict offers a tailored approach, concentrating on those most in need, and identifying patients at risk of esophageal cancer. This has the potential to make diagnoses of cancer earlier when there are likely to be more treatment options."

To put it into perspective, when using CanPredict to monitor only the

top 20% of high-risk individuals, we can catch more than three in four cases (76%) of expected esophageal cancer diagnoses in the coming decade.

Esophageal cancer, a significant health concern worldwide, often remains undetected until its advanced stages, making early identification crucial. This new algorithm has the potential to revolutionize the way primary care practitioners—and health care systems more broadly—approach the disease. It could, for example, be something that a GP practice runs a few times a year to identify high-risk patients, without them having to come in for consultations.

The team developed the new tool by analyzing the anonymized medical records from more than 12 million patients from GP practices contributing to the QResearch database across England and identified more than 16,000 cases of esophageal cancer. The researchers incorporated key factors like age, lifestyle habits, [medical history](#), and medication use into the CanPredict algorithm.

Once developed, CanPredict was checked by testing it in a separate set of QResearch practices (more than 4 million patients) and the Clinical Practice Research Database (more than 2.5 million patients). In testing, CanPredict accurately predicted an individual's risk of esophageal cancer within the next decade. It outperformed existing models for estimating esophageal cancer risk.

Winnie Mei, co-author and Research Fellow in Medical Statistics and Epidemiology at the University of Oxford's Nuffield Department of Primary Care Health Sciences, said, "Our study bridges a significant gap in primary care. By identifying [high-risk patients](#) earlier, we can potentially offer them life-saving interventions. This tool is a testament to the power of combining technology with medical research."

The study also highlighted the importance of factors such as age, body mass index, smoking, [alcohol consumption](#), and previous medical conditions in determining the risk of developing esophageal [cancer](#). The algorithm's ability to integrate these factors offers a comprehensive and personalized risk assessment for patients and can also help the NHS optimize the use of its resources by targeting those at highest risk who are most likely to benefit from screening.

Professor Rebecca Fitzgerald, OBE, FMedSci, co-author and Professor of Cancer Prevention at the University of Cambridge, said, "While our findings are promising, it's essential to approach them with cautious optimism. Our next steps to realizing the potential of CanPredict involve assessing the cost-effectiveness of this tool and exploring its integration into national clinical computer systems."

Professor Julia Hippisley-Cox said, "We thank the many thousands of GPs who share anonymized data with QResearch without whom this research would not be possible."

More information: Julia Hippisley-Cox et al, Development and validation of a novel risk prediction algorithm to estimate 10-year risk of oesophageal cancer in primary care: prospective cohort study and evaluation of performance against two other risk prediction models, *The Lancet Regional Health—Europe* (2023). [DOI: 10.1016/j.lanepe.2023.100700](#)

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