

Blood test hope for bowel diseases

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Scientists have identified chemical changes in the DNA of patients with inflammatory bowel diseases that could improve screening for the conditions.

The DNA changes can be detected in blood samples, paving the way for simple tests to aid diagnosis.

Researchers say their findings also shed light on how the diseases develop and could reveal new approaches to treatments.

Inflammation

Inflammatory bowel diseases (IBD) are long-term conditions caused by inflammation of the gut. Several genes have been linked to the conditions but not everyone who inherits these genes will become ill.

Scientists say their findings could help explain how factors such as diet and gut bacteria can trigger disease to develop in some people who have inherited these genes, but not others.

DNA samples

The international team – coordinated by the University of Edinburgh – analysed DNA samples from 240 people newly diagnosed with IBD.

They found that [chemical signatures](#) in patients' DNA – known as epigenetic changes – were different from those in healthy people.

Chemical signatures

Experts say the findings could lead to a simple blood test to screen people who show symptoms of the diseases.

People who do not have the signatures in their DNA could be spared further tests, which can be invasive and require hospital care.

Prognosis

Results from the test could help doctors to predict how severe a person's condition is likely to become in the short term, so that therapy can be tailored to them.

The results could also reveal clues to a patient's longer term prognosis, the team says.

"Our findings bring fresh insights to the underlying causes of inflammatory bowel diseases, which could eventually lead to new treatments. Characterising epigenetic signatures in the DNA of patients could help us to devise better tests for diagnosing these diseases, so that patients can be given the best possible care," says Professor Jack Satsangi.

Bowel diseases

IBD causes painful abdominal cramps, recurrent diarrhoea, weight loss and extreme tiredness.

Symptoms are common between Crohn's disease, ulcerative colitis and other bowel conditions, which makes it difficult for doctors to determine which of the illnesses a person has.

Diagnosis

The diseases are currently diagnosed based on blood tests and analysis of stool samples. Patients usually require an endoscopy to confirm diagnosis, which is invasive and requires [hospital care](#).

Limited therapies

Treatments are focused on dampening inflammation and managing the symptoms of the illness.

In extreme cases, [patients](#) may be offered surgery to remove the section of their bowel that is affected but illness can often recur.

The study, published in the journal *Nature Communications*, was funded by the European Union.

"Inflammatory bowel diseases are becoming more common worldwide with young people being particularly affected. In Scotland, rising cases among children are a major public health concern. We urgently need better understanding of how and why these diseases occur," says Dr Nicholas Ventham.

More information: N. T. Ventham et al. Integrative epigenome-wide analysis demonstrates that DNA methylation may mediate genetic risk in inflammatory bowel disease, *Nature Communications* (2016). [DOI: 10.1038/NCOMMS13507](https://doi.org/10.1038/NCOMMS13507)

Provided by University of Edinburgh

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