

## **Stratifying the risk of colorectal disease in order to direct the use of colonoscopy in symptomatic patients**



### **AIMS**

The primary aim of the project was to develop a risk score using the amount of blood detected in stool along with age, gender, symptoms and lifestyle data which can be used to help guide which patients need urgent investigation for bowel disease.

A secondary aim was to determine the suitability of using a short questionnaire in patients referred to NHS Tayside colorectal service with symptoms of bowel disease.



### **KEY FINDINGS**

- We asked patients referred to the Colorectal (bowel) Service a short set of questions which people found easy to complete. Unfortunately these questions didn't help to find serious bowel disease.
- We found that more blood in the stool, being male and over 60 years of age helped us find serious bowel disease.
- We found a way to use this to help GP's decide which patients need quick investigation for bowel disease.



## WHAT DID THE STUDY INVOLVE?

Patients who have symptoms that could be caused by serious bowel disease (bowel cancer, high risk adenoma (growth in bowel wall which may turn into cancer) or inflammatory bowel disease (IBD, includes conditions causing inflammation of the bowel including Crohn's disease and ulcerative colitis) require investigation, often colonoscopy (a test where a camera tube is used to look for cancers or growths in the bowel). However, serious bowel disease is only found in 6-13% of patients undergoing colonoscopy for investigation of the symptoms that are associated with bowel cancer (rectal bleeding and change of bowel habit) and IBD (diarrhoea, pain, weight loss). An increase in demand for colonoscopy has been seen in recent years, with the "Be Clear on Cancer" campaign in England producing a 60% increase in the number of patients referred, but with no effect on the number of cancers diagnosed and a 30% increase in the cost of diagnosing a cancer.

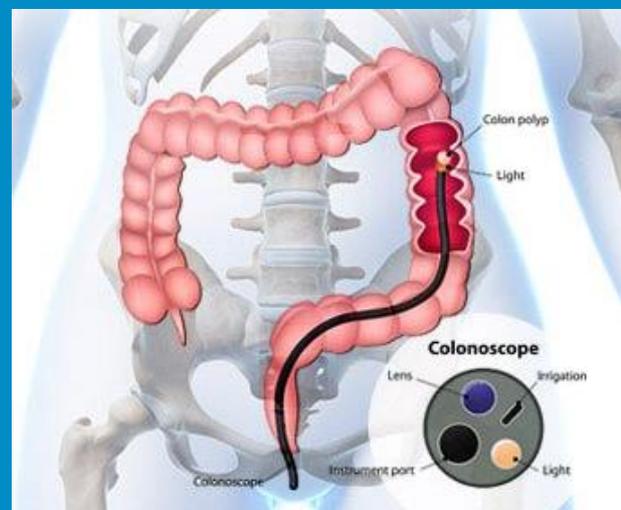
Currently in NHS Tayside, patients with bowel symptoms are referred via the Colorectal Service, where they are triaged by Consultant Gastroenterologists and the majority are brought straight to investigation. For a period of one year, patients who were due for colonoscopy to investigate bowel symptoms were sent a study invitation letter. Those who indicated their willingness to take part in the study were approached by a member of the research team upon their arrival to Endoscopy for their test. Patients then confirmed their symptoms, completed a short questionnaire on current medications, family history of bowel disease and lifestyle and Body Mass Index (BMI) was calculated.

Results of investigations were then linked with questionnaire data as well as full blood count and, where available, the result of the Faecal Immunochemical Test (FIT, a test which involves collecting a sample of a bowel movement to measure the amount of blood found in the stool). The possible risk factors for serious bowel disease were assessed with the aim of developing a simple scoring system.

Figure 1. Faecal Immunochemical Test for haemoglobin



Figure 2. Colonoscopy





**WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?**

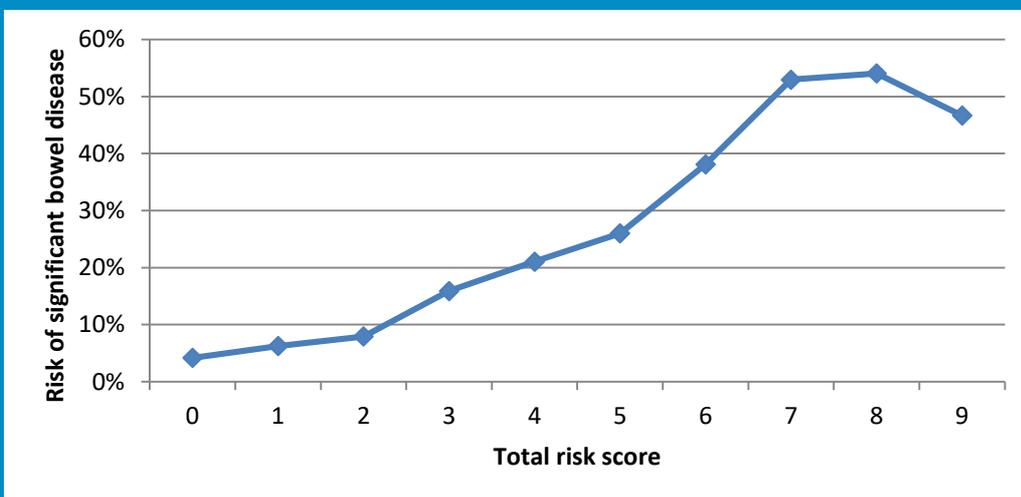
Data was available for a total of 1,634 patients (51.9% female). Data from 817 were used to develop the risk scoring model and data from the other 817 for testing of the model. There were 161 and 156 cases of serious bowel disease in the respective groups.

A raised FIT result, male sex, age over 60 years and rectal bleeding were the only variables shown to associate with a diagnosis of serious bowel disease. A score was assigned to each of these variables depending on the strength of the relationship. Table 1 shows the scoring model, with the sum of the variables giving a total score for an individual between 0 and 10. When the scoring model was tested, the risk of serious bowel disease rose from 4.2% in those with a score of 0 to around 50% in those with high scores, as demonstrated in Figure 3, below.

**Table 1. Scoring system for prediction of serious bowel disease.**

Risk factor	Criteria	Points
FIT result	Undetectable	0
	10 – 49 µg Hb/g faeces	2
	50 – 199 µg Hb/g faeces	3
	200 - 399 µg Hb/g faeces	5
	> 400 µg Hb/g faeces	6
Gender	Female	0
	Male	1
Age	< 60 years	0
	> 60 years	1
Rectal bleeding	Symptom reported	1

**Figure 3. Proportion of patients with serious bowel disease according to total risk score.**





## WHAT IMPACT COULD THE FINDINGS HAVE?

- A risk scoring model using easily collected variables can help GPs to predict the likelihood of serious bowel disease in patients with bowel symptoms.
- Use of the scoring model could help to reduce the number of unnecessary colonoscopies and improve waiting times.
- Those with a high score can be referred urgently to direct colonoscopy resource towards those at greatest risk of having serious bowel disease.



## HOW WILL THE OUTCOMES BE DISSEMINATED?

A full report of the research has been submitted to a peer reviewed journal for publication. Presentation of the findings is also planned at national and international conferences to audiences concerned with improving the process of identifying those at highest risk of serious bowel disease.



## CONCLUSION

The data collected via the study questionnaire did not provide any additional value in a risk scoring model to those items which are already easily collected (age, gender and FIT result). The amount of blood detected in the stool sample provides the strongest indication of whether or not a patient is likely to have serious bowel disease. The addition of age and gender into a scoring model can enhance the GPs assessment of an individual's risk and help guide whether referral to colonoscopy is necessary or a policy of active monitoring might be more appropriate. It is essential to have this "safety netting" in place for patients calculated as having low risk, with symptoms monitored perhaps along with other processes such as a repeat FIT or referral to gastroenterology clinics.



## RESEARCH TEAM & CONTACT

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### Additional Information

The project ended on 31<sup>st</sup> January 2018 and received £319,200 of funding from the Chief Scientist Office.

