

# Faecal Calprotectin is a Cost-Effective Method of Assessing Activity of Inflammatory Bowel Disease

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## Introduction

Assessing activity of Inflammatory Bowel Disease (IBD) can be challenging without the use of radiological and endoscopic investigations. IBD-type symptoms can also be attributable to other causes including irritable bowel syndrome, bile salt diarrhoea or fibrotic strictures. Plasma markers such as C-Reactive Protein and Erythrocyte Sedimentation Rate do not always correlate with disease activity in IBD patients(1). Faecal calprotectin (FC) is a neutrophil-derived protein, which has been shown to be a sensitive marker of gastrointestinal inflammation(2) and correlates with disease activity in IBD(3). However, few studies have questioned whether this is a cost-effective test that can reduce the number of further investigations needed.

## Aim

To determine whether use of FC to assess disease activity in IBD patients in a gastroenterology outpatient setting is a cost effective investigation.

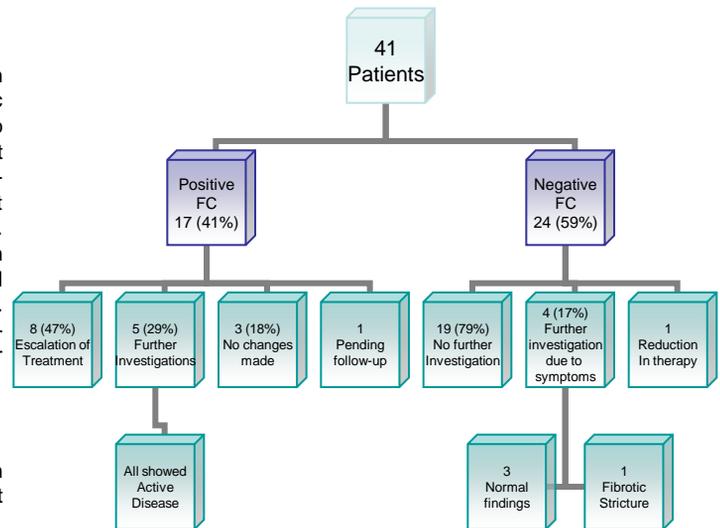


Figure 1: Flow chart describing management of patients in whom FC was performed

Name of investigation	NHS Tariff (£)
Gastroscopy	406
Flexible Sigmoidoscopy	410
Colonoscopy	410
Small bowel contrast study	183
Barium enema	153
CT abdomen with oral contrast	183
MRI abdomen with oral contrast	234
White cell scan	300
Ultrasound abdomen	55

Table 1: Standard NHS tariffs for investigations performed in North Bristol NHS Trust

## Methods

All patients in North Bristol NHS Trust in whom FC had been requested in IBD patients in the outpatient department over a 1 year period (from 1 Dec 2007 to 30 Nov 2008) were identified and their records reviewed. All investigations (laboratory, radiological and endoscopic tests) requested at the time of the FC and within 4 weeks of the FC results were included in the analysis. The cut-off for a positive FC is 51mcg/g or above in our laboratory. Cost of investigations were determined from standard NHS tariffs (table 1).

Distribution of disease	Investigations required to assess disease activity	No. of patients	NHS Tariff per patient/£	Total NHS tariff/£
Colonic	Colonoscopy	13	410	5330
Ileocolonic	Colonoscopy + small bowel enteroclysis	13	593	7709
Left colonic	Flexible sigmoidoscopy	4	410	1640
Proctitis	Flexible sigmoidoscopy	1	410	410
Small bowel	Small bowel enteroclysis	9	183	1647
Duodenal	Gastroscopy	1	406	406
			<b>Total cost</b>	<b>17142</b>

Table 2: Calculated cost of standard investigation depending on site of disease

## Results

We identified 41 IBD patients (mean age 49 years; 12 male, 29 female) of which 17 (41%) had a positive FC (figure 1). Eight (47%) of these had an escalation in medical therapy without further investigation, 3 (18%) had no change made and 5 (29%) underwent further invasive investigation. All these subsequent investigations (3 small bowel contrast studies, 1 white cell scan and 1 colonoscopy) demonstrated active disease.

Of those with a negative FC, 19 (79%) had no further investigation and IBD therapy remained unchanged, 1 (4%) had medical therapy reduced and 4 (17%) were investigated due to ongoing symptoms. Only 1 of these patients was found to have pathology on subsequent investigation (fibrotic small intestinal stricture). The total cost of all investigations carried out in the patients studied was £5496. In contrast, standard investigation of disease activity in this group of IBD patients would have required either colonoscopy and/or small bowel enteroclysis depending on the distribution of their disease costing at least £17142 (table 2).

## Conclusion

FC can be used in the majority of patients to guide management without the need for further tests.

In this observational study a management decision was made based on the FC result in 76% of patients. It has reduced the use of expensive and invasive investigations and delivered a cost benefit to our service saving £11646 in 1 year.

We recommend FC as a cost efficient test to assess disease activity in IBD.

## References

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