

Faecal calprotectin (FC)

Calprotectin is a calcium- and zinc-binding protein which is mainly found within neutrophils and monocytes. The presence of calprotectin in faeces is a consequence of neutrophil migration into the gastrointestinal tissue due to an inflammatory process. It is relatively resistant to enzymatic degradation, and therefore, preserved and easily measured in stools for periods of time sufficient to allow for collection and analysis, a property which underlies its clinical utility. FC is used as a biomarker as its concentrations demonstrate good correlation with intestinal inflammation. The main utility of FC measurement at present is in the diagnosis and monitoring of inflammatory bowel disease (IBD). However, it is well recognised that in general population FC values are higher in children than in adults. In preterm and infants younger than 1 year of age, FC may be elevated without any known cause for inflammation. FC values in <4yrs old are not validated.

Appendix A

The ESPGHAN expert group recommends to NOT use FC

- in babies with infantile colic
- children with constipation (does not differentiate between functional and organic causes)
- for cow milk protein allergy (diagnostic tool or as prognostic marker)
- for coeliac disease (diagnosis or monitoring)
- in acute gastroenteritis (to differentiate between viral vs bacterial cause)
- in screening for acute appendicitis,
- in relation to H Pylori (for screening or follow up)
- intestinal polyps (as a screening tool)
- obese children (as a routine measurement)

FC might be elevated in short bowel syndrome children with SIBO

FC may be mildly elevated in obese children

FC levels in children with irritable bowel syndrome symptoms are slightly higher than in healthy controls but lower compared with children with inflammatory bowel disease.

The ESPGHAN expert group recommends using FC as a tool to differentiate functional abdominal pain disorders from organic diseases.

Paediatricians/ GP colleagues:

If you are suspecting inflammatory bowel disease in a child (based on history+/-examination) and faecal calprotectin >250ug/g faeces, you can refer directly to local paediatrician with interest in Gastroenterology or only if symptoms are classical/typical of inflammatory bowel disease to paediatric Gastroenterologist at Birmingham Children's Hospital. Please use the later route judiciously.

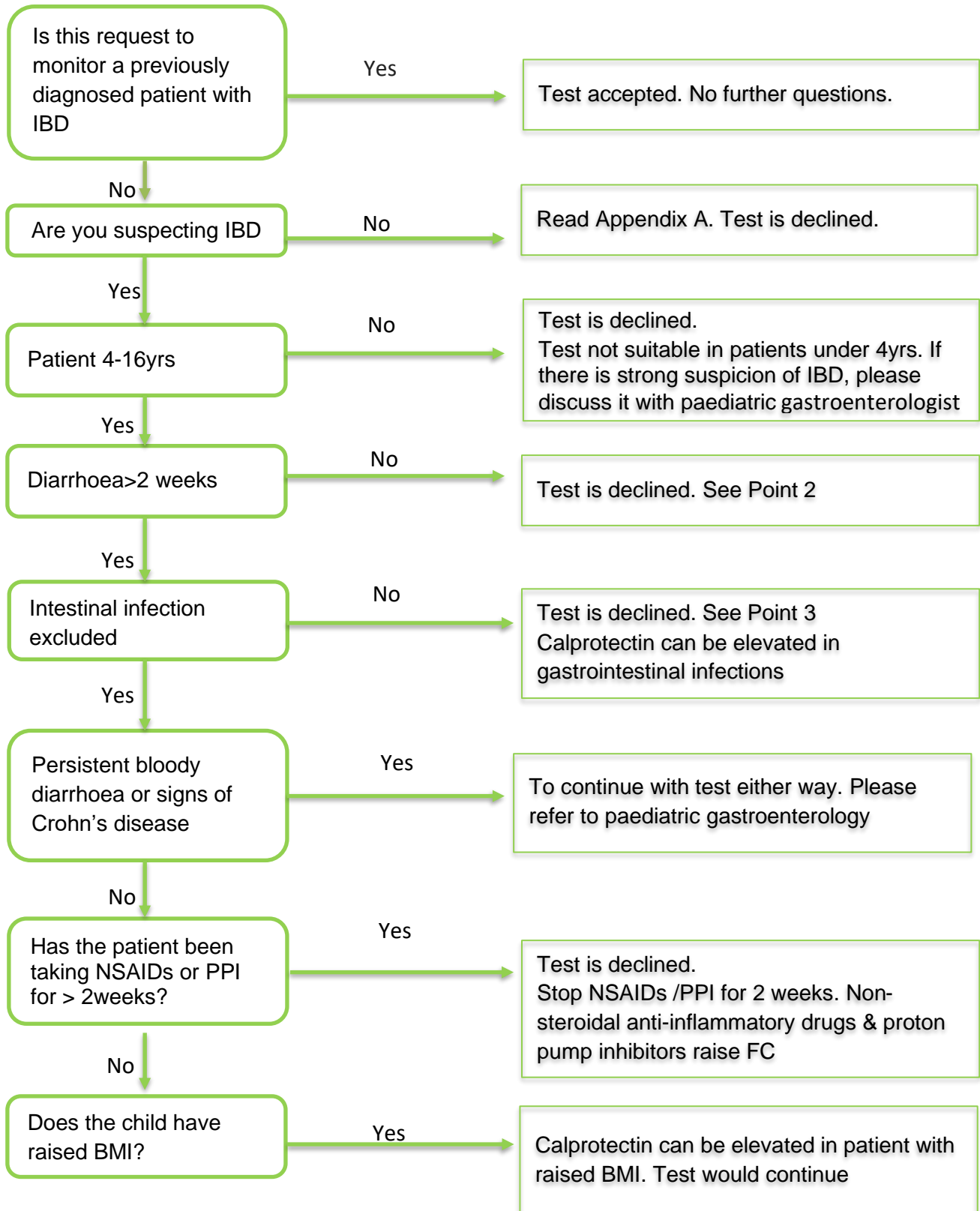
Changes in the request pathway for Paediatric faecal calprotectin 2022:

1. Is this request to monitor a previously diagnosed patient with IBD
If Yes, to accept request. No further questions.
If No, then next question.
2. Are you suspecting IBD?
If No, to reject. Direct to appendix A
If Yes, proceed.
3. Age: 4-16yrs
To reject if <4yr years.
Test not suitable in patients under 4yrs. If there is strong suspicion of IBD, please discuss it with paediatric gastroenterologist.
4. Period of diarrhoea:
Agreed: If diarrhoea > 2 weeks the request should continue. Otherwise, reject request.
It was felt that infectious diarrhoea usually settles within 2 weeks
Agreed to use diarrhoea rather than change in bowel habit
5. Has Intestinal Infection been excluded?
Agreed: Rejection of test request if the answer is no.
Calprotectin can be elevated in gastrointestinal infections. If, infectious diarrhoea treat it appropriately and then consider faecal calprotectin request. Infectious diarrhoea usually settles within 2 weeks
6. Persistent bloody diarrhoea or signs of Crohn's disease?
Agreed: To continue with test either way but if answer is yes to have a popup box "Please refer to paediatric gastroenterology".
7. Has the patient been taking NSAIDs or PPI for > 2weeks?
Agreed: If yes, the test will be declined.
Stop NSAIDs /PPI for 2 weeks. Non-steroidal anti-inflammatory drugs & proton pump inhibitors raise FC.

8. Has patient got raised BMI?
Agreed: If yes, test will continue. However, FC is elevated in children with raised BMI
If no, test will still continue.

9. Cut offs to be used. This is agreed with Birmingham Children's Hospital.
Faecal calprotectin: value in ug/g faeces
< 50 - normal
50 -150 - no action
151 -250 – indeterminate. Referrer to make judgement about repeat sample if concern with clinical reason for initial test, family history of IBD or other autoimmune issues
>250 - referral to local paediatrician with interest in gastroenterology. (Dr Mahadevan - DGFT; Dr Rizvi - RWT; Dr Popli - SWBT and Dr Ferdinand - WHT) or directly to BCH.

Pathway for requesting Paediatric Faecal calprotectin (Primary and secondary)



Reference:

Koninckx CR, Donat E, Benninga MA, Broekaert IJ, Gottrand F, Kolho KL, Lionetti P, Miele E, Orel R, Papadopoulou A, Pienar C, Schäppi MG, Wilschanski M, Thapar N. The Use of Fecal Calprotectin Testing in Paediatric Disorders: A Position Paper of the European Society for Paediatric Gastroenterology and Nutrition Gastroenterology Committee. J Pediatr Gastroenterol Nutr. 2021 Apr 1;72(4):617-640