Faecal Immunochemical Testing in Acute Hospital GI Endoscopy Services

Position paper from the HSE Endoscopy Programme

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1. The Faecal Immunochemical Test (FIT)

Lower GI tract symptoms are relatively non-specific for colorectal cancer; approximately 97% of patients referred urgently for colonoscopy due to concerning symptoms will not have CRC[1,2]. Endoscopy workload, in particular colonoscopy, is rising by approximately 5-10% per year and this, in conjunction with fixed endoscopy capacity, has led to significant colonoscopy waiting lists.

Faecal immunochemical tests (FITs) for haemoglobin (Hb), the main component of blood, are specific for intact human Hb and its early degradation products.[3] FIT does not require dietary restriction, is specific to lower gastrointestinal (GI) cancers as upper GI enzymes degrade human globin, and is less affected by concomitant medication use than the guaiac method to detect faecal occult blood (gFOB).[4,5] Quantitative FIT detects the globin component of haemoglobin (Hb) by immunoassay and can reliably measure the faecal Hb concentration (fHb). Elevated f-Hb levels suggest significant colorectal pathology, especially colorectal cancer. Patients can complete a FIT test in their home and send the test to a lab for analysis. Ideally FIT should be available in primary care in Ireland as not only does it meet the need to move care out of the acute hospital but also increases access to care closer to home, in alignment with Sláintecare (Refer to *Endoscopy Programme position paper FIT in Primary Care*).

BowelScreen, the national colon cancer screening service, provides a FIT-based population screening programme for asymptomatic individuals between the ages of 59 and 69. The current BowelScreen FIT threshold is 45 ug/g (225 ng/mL) .

Key message

FIT can be used to prioritise patients for investigation, as colorectal cancer and other serious bowel disease is more likely at higher f-Hb concentrations.

FIT should be incorporated into the care pathways in primary and secondary care for patients being referred for colonoscopy, including patients with high-risk symptoms.

FIT can also be used to prioritise patients for investigation on the routine colonoscopy waiting list who are waiting greater than 13 weeks for a colonoscopy and who have not had a recent FIT.

Endoscopy services must have robust systems and clinical governance in place to ensure FIT testing is performed in a timely fashion, having regard to recommended HSE waiting list time frames.

2. New referrals for colonoscopy

FIT testing can support clinical decisions within the symptomatic service, to allow cases with a higher pre-test probability of significant GI diagnosis, such as colorectal cancer, high-risk adenomatous polyps or inflammatory bowel disease, to be prioritised for an endoscopy procedure.

There is a significant body of clinical research supporting the diagnostic accuracy of FIT in symptomatic patients utilising a range of thresholds.[6-10] The most used fHb threshold is 10 µg Hb/g (50 ng/mL).

FIT is suitable for patients with low-risk symptoms as a first diagnostic step (rather than automatically scheduling a patient for a colonoscopy) and should also be considered for patients with high-risk symptoms depending on local resources.

In 2017 the National Institute for Health and Care Excellence (NICE) in the UK recommended (DG30) FIT use in primary care to guide referral for suspected colorectal cancer in people without rectal bleeding who have unexplained symptoms but do not meet the criteria for a suspected cancer referral as outlined in NG12.[11] This would equate to our routine patient cohort. The positive FIT result threshold is 10 µg Hb/g of faeces. Subsequently the NICE *Suspected cancer: recognition and referral guidance (NG 12)*, which was updated in 2021, recommended using FIT for patients without rectal bleeding who do not meet the urgent referral criteria.[1]

In the UK NICE FIT Steering Group study of approximately 9,800 symptomatic individuals referred for colonoscopy, comprising a mix of predominantly high risk patients (75% medium/high risk, 25% low risk by NG12 criteria), colorectal cancer was detected in 3.3%.[12] The FIT positivity rate was 19% and the positive predicate value (PPV) of a FIT >10 µg Hb/g for colorectal cancer was 16% but more importantly the negative predictive value (NPV) was 99.6% - risk of colorectal cancer was 0.4% in those patients with a fHb <10 µg Hb/g faeces. The NPV for other significant colorectal pathology was also >95%; 97% for IBD and 97% for high-risk adenomatous polyps. The authors proposed that FIT should be used in primary care as a triaging tool for low-risk symptoms before referral to secondary care and that this strategy should be expanded to include all symptomatic patients.

The Fast Track FIT study which evaluated 5,040 patients undergoing colonoscopy, CTC or colorectal telephone assessment pathway showed a colorectal cancer risk of 0.5% in those with fHb <10 µg Hb/g faeces. [13] In a study of 4,000 patients by Johnstone *et al*., a FIT <10 µg Hb/g, together with a normal Hb level, had a NPV for colorectal cancer of 99.96%. [14]

Patients with symptoms meeting NICE criteria and a negative FIT result (<10 µg Hb/g) had less than 0.5% chance of colorectal cancer; a very low risk, but it is important to stress that the risk is not zero. Colonoscopy is the gold standard test; however it is associated with an interval cancer rate of 0.6% in patients under surveillance and a miss rate of 11.0% for advanced adenomas and up to 26% for all adenomas.[15-17]

A recently published study of real world follow up of FIT negative patients referred to a rapid access clinic in the UK demonstrated a similar NPV for FIT - 8 CRCs were detected amongst 1,299 patients FIT

negative (<10 µg Hb/g) patients seen over a three year period.[18] Similarly in a retrospective review of 622 patients referred on a 2 week-wait pathway and seen in a FIT negative clinic in the UK, Nigam et al reported a single CRC diagnosis which was made 27 months after the negative FIT result.[19]

The Association of Coloproctology of Great Britain & Ireland (ACPGBI) in conjunction with the British Society of Gastroenterology (BSG) published guidelines in 2022 for the use of FIT in patients with lower GI tract symptoms concerning for colorectal cancer.[20] The guidelines support the use of FIT for symptomatic patients being considered for referral for an urgent colonoscopy. The guidelines also recommend the use of FIT in primary care for patient with iron deficiency anaemia to determine referral urgency**.**

While access to FIT in the primary care setting is being rolled out in Northern Ireland, Scotland, Wales and England, it is not currently widely available in primary care in Ireland. The HSE Endoscopy Programme therefore endorsed the use of FIT in the secondary care setting for triage of the routine colonoscopy referral cohort in its initial position paper in 2023. In line with BSG guidance, the Endoscopy Programme recommends that patients with a fHb ≥10 µg Hb/g should be prioritised for colonoscopy. Where laboratory reports are in ng/mL the recommended cut off point is ≥50 ng/mL, which is the equivalent of 10 µg Hb/g.

In 2023 NICE updated its FIT recommendations to include patients with high-risk symptoms.[21] The updated guidance recommended the use of FIT to guide referral for suspected colorectal cancer in adults with the following symptoms or signs:

- with an abdominal mass, or
- with a change in bowel habit, or
- with iron-deficiency anaemia, or
- aged 40 and over with unexplained weight loss and abdominal pain, or
- aged under 50 with rectal bleeding and either of the following unexplained symptoms:
    - abdominal pain
    - weight loss, or
- aged 50 and over with any of the following unexplained symptoms:
    - rectal bleeding
    - abdominal pain
    - weight loss, or
- aged 60 and over with anaemia even in the absence of iron deficiency
- Patients with a rectal mass, an unexplained anal mass or unexplained anal ulceration do not need to a FIT initially

In line with the updated ACPGBI & BSG guidelines and the updated NICE recommendations, the HSE Endoscopy Programme endorses the use of FIT for triage of colonoscopy referrals, where appropriate. FIT should be offered to newly referred patients even if they have previously had a negative FIT result through the BowelScreen programme.

All HSE and Voluntary Hospital Endoscopy services can avail of the centralised HSE FIT service. For further information please contact:
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Of note endoscopy services must have robust systems and clinical governance in place to ensure FIT testing is performed and followed up in a timely fashion, having regard to the recommended HSE waiting list time frames.

Safety netting

Patients with a negative FIT test and low-risk symptoms and a normal Hb could be followed up in primary care or in the outpatient setting. Patients should not be excluded from secondary care assessment and/or endoscopy based on FIT testing alone.

At any threshold, FIT alone is not a 'rule out' test for colorectal cancer. Appropriate and effective follow up (safety netting) is required for patients who do not return a sample or who have a negative FIT with persistent or worrying symptoms. Safety netting can include specific follow up advice for the patient and GP, outpatient clinic review, repeat FIT or alternative investigations such as capsule endoscopy or CT scan. Endoscopy units should consider if patients need additional help, information or support to return their sample.

For further information please refer to the HSE Acute Operations Endoscopy Programme's publication *Triage Guidance for Upper and Lower Gastrointestinal Endoscopic Procedures (excluding ERCP and EUS)*.

3. Patients already on the routine colonoscopy waiting list

While not recommending widespread use of FIT in already triaged routine colonoscopy waiting lists, the ACPGBI & BSG guidelines comment that FIT could be used to 'upgrade' (clinically reprioritise) patients on routine waiting lists.

Interruption of gastrointestinal endoscopy services during the COVID pandemic led to a backlog of patients awaiting colonoscopy. Upon resumption of endoscopy services, this backlog resulted in substantially longer waiting times for colonoscopy. In 2022-2023, the HSE Endoscopy Programme in conjunction with University Hospital Galway and Letterkenny University Hospital, conducted a clinical validation initiative for patients waiting <3months on the routine colonoscopy waiting list utilising FIT to identify patients who needed to have their procedure expedited.

The patients contacted and were invited to return a FIT sample. In the case of a positive test, the gastroenterologist triaged the patient to receive an appointment for an urgent colonoscopy, within 28 days. Patients with a negative test remained on the waiting list for a non-urgent colonoscopy, as did patients who did not return a sample or otherwise declined to participate in the study.

1,226 patients were invited to submit a FIT. 715 responded and 655 patients had a valid FIT result. Of these 115 were FIT positive and 540 were FIT negative. 102 FIT positive patients and 441 FIT negative patients underwent a colonoscopy. There were no CRC diagnoses in the patients who had undergone a colonoscopy. Advanced adenomas were diagnosed in 7% of the patients overall – 14% of FIT positive cohort and 6% of FIT negative cohort.

The HSE Endoscopy Programme endorses the use of FIT as part of the validation of routine colonoscopy waiting list for patients who have not had a FIT prior to being placed on the routine endoscopy waiting list. Local processes and resources must be in place to ensure proper clinical governance of such initiatives.

4. Planned (surveillance) patients

Although there is limited data on the use of FIT for the management of planned procedure waiting lists[22,23], the HSE Endoscopy Programme advises that FIT could be considered to prioritise patients for investigation who are on waiting lists for polyp surveillance, post-colorectal cancer screening and moderate risk familial colorectal cancer history screening (excluding suspected or confirmed hereditary colorectal cancer syndromes) if the waiting times for these procedures are excessive.

Local processes and resources must be in place to ensure proper clinical governance of such initiatives.

Appendix 1: Using FIT in clinical pathways

Fig. 1 Using FIT to triage **new referrals** to GI endoscopy services

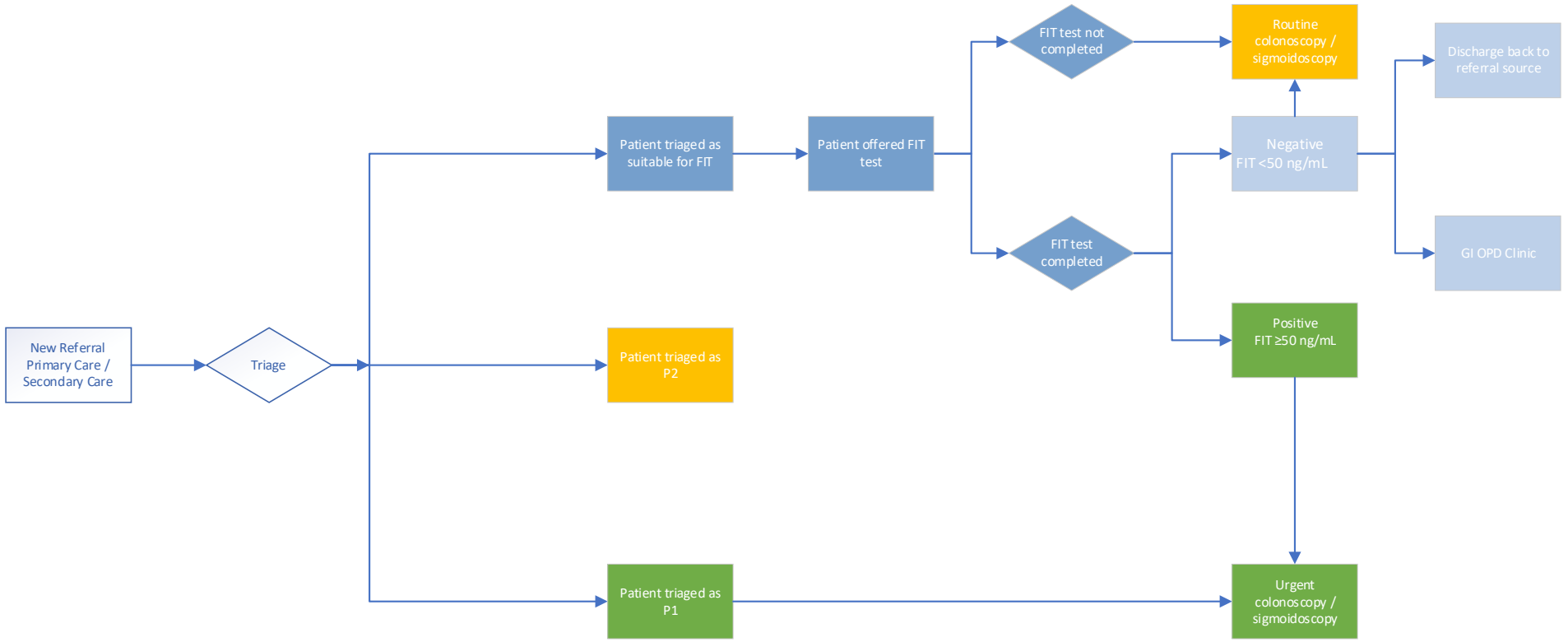
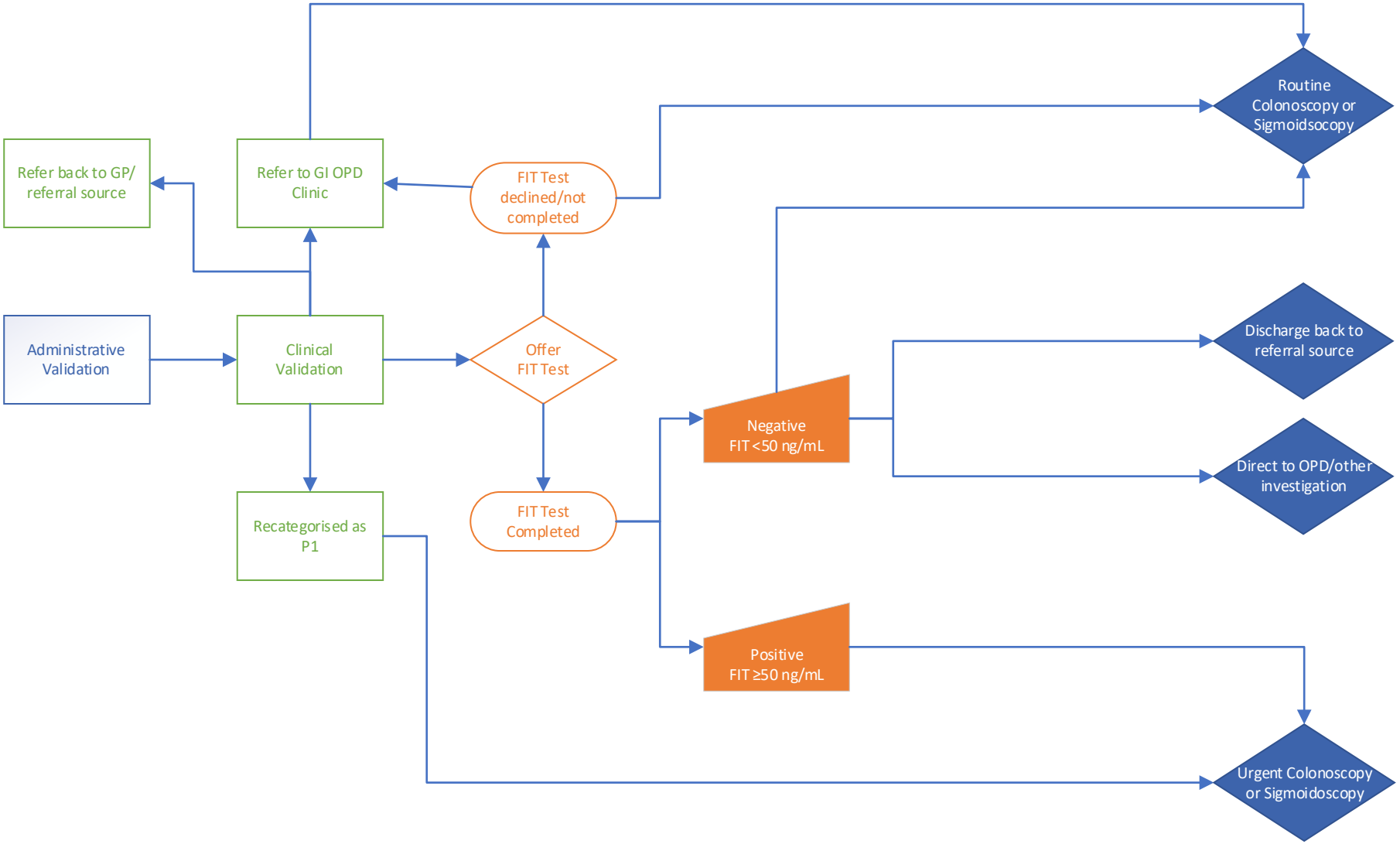


Fig 2 Using FIT with patients **already on the routine colonoscopy waiting list**



References:

1. NICE. Suspected cancer: recognition and referral [NG12]. National Institute for Health and Care Excellence, 2015.
2. Jones et al. Colorectal Cancer detection rates and stage at diagnosis in routine and urgent colonoscopy referrals compared to BowelScreen populations: a single tertiary-centre evaluation. ISG 2020
3. Allison JE, Fraser CG, Halloran SP, et al. Population screening for colorectal cancer means getting FIT: the past, present and future of colorectal cancer screening using the Fecal Immunochemical Test for Hemoglobin (FIT). *Gut Liver* 2014;8:117–30.
4. Allison JE, Fraser CG, Halloran SP, Young GP. Population screening for colorectal cancer means getting FIT: the past, present, and future of colorectal cancer screening using the fecal immunochemical test for hemoglobin (FIT). *Gut Liver*. 2014 Mar;**8(2):**117-30
5. Tinmouth J, Lansdorp-Vogelaar I, Allison JE. Faecal immunochemical tests versus guaiac faecal occult blood tests: what clinicians and colorectal cancer screening programme organisers need to know. *Gut*. 2015; 64: 1327- 1337.
6. Westwood M, Corro Ramos I, Lang S, Luyendijk M, Zaim R, Stirk L, et al. Faecal immunochemical tests to triage patients with lower abdominal symptoms for suspected CRC referrals in primary care: a systematic review and cost-effectiveness analysis. *Health Technol Assess*. 2017;21(33):1-234.
7. Mowat C, Digby J, Strachan JA, Wilson R, Carey FA, Fraser CG, et al. Faecal haemoglobin and faecal calprotectin as indicators of bowel disease in patients presenting to primary care with bowel symptoms. *Gut*. 2016;65(9):1463-9.
8. Pin Vieito N, Zarraquiños S, Cubiella J. High-risk symptoms and quantitative faecal immunochemical test accuracy: Systematic review and meta-analysis. *World J Gastroenterol*. 2019;25(19):2383-401.
9. Stonestreet, J., Chandrapalan, S., Woolley, D., Uthman, U., & Arasaradnam, R. P. (2019). Systematic review and meta-analysis : diagnostic accuracy of faecal immunochemical testing for haemoglobin (FIT) in detecting CRC for both symptomatic and screening population. *Acta Gastroenterologica Belgica,* 82(2), 291–299.
10. Pin-Vieito, N., Tejido-Sandoval, C., de Vicente-Bielza, N., et al. *Gut*, doi:10.1136/gutjnl- 2021-324856
11. NICE. Diagnostics guidance [DG30]. Quantitative faecal immunochemical tests to guide referral for CRC in primary care. National Institute for Health and Care Excellence; 2017
12. D'Souza N, Georgiou Delisle T, Chen M The NICE FIT Steering Group*, et al.* Faecal immunochemical test is superior to symptoms in predicting pathology in patients with suspected colorectal cancer symptoms referred on a 2WW pathway: a diagnostic accuracy study *Gut.* 2021;**70:**1130-1138.
13. Turvill JL, Turnock D, Cottingham D. The Fast Track FIT study : diagnostic accuracy of faecal immunochemical test for haemoglobin in. *Br J Gen Pract* 2021;71:643–51.
14. Johnstone MS, Burton P, Kourounis G, Winter J, Crighton E, Mansouri D, Witherspoon P, Smith K, McSorley ST. Combining the quantitative faecal immunochemical test and full blood count reliably rules out colorectal cancer in a symptomatic patient referral pathway. Int J Colorectal Dis. 2022 Feb;37(2):457-466

15. Robertson DJ, Lieberman DA, Winawer SJ, *et al*. Colorectal cancers soon after colonoscopy: a pooled multicohort analysis. *Gut* 2014;63:949–56
16. Heresbach D, Barrioz T, Lapalus M, *et al.* Miss rate for colorectal neoplastic polyps: a prospective multicenter study of back-to-back video colonoscopies. *Endoscopy* 2008;40:284–90.
17. Leufkens A, van Oijen M, Vleggaar F, *et al*. Factors influencing the miss rate of polyps in a back-to-back colonoscopy study. *Endoscopy* 2012;44:470–5.
18. Monroy-Iglesias MJ, Martin S, Cargaleiro C, *et al*. Real-world data evaluating Guy's rapid diagnostic clinic as an alternate pathway for patients with FIT levels below 10. BMJ Open. 2024 Apr 15;14(4)
19. Nigam GB, Meran L, Bhatnagar I*, et al.* FIT negative clinic as a safety net for low-risk patients with colorectal cancer: impact on endoscopy and radiology utilisation - a retrospective cohort study. *Frontline Gastroenterology* 2024;**15:**190-197.
20. Monahan KJ, Davies MM, Abulafi M, et al. Faecal immunochemical testing (FIT) in patients with signs or symptoms of suspected colorectal cancer (CRC): a joint guideline from the Association of Coloproctology of Great Britain and Ireland (ACPGBI) and the British Society of Gastroenterology (BSG). Gut. 2022 Jul 12;71(10):1939–62
21. NICE. Diagnostics guidance [DG56]. Quantitative faecal immunochemical testing to guide colorectal cancer pathway referral in primary care. National Institute for Health and Care Excellence; 2023
22. Atkin W, Cross AJ, Kralj-Hans I, et al. Faecal immunochemical tests versus colonoscopy for post-polypectomy surveillance: an accuracy, acceptability and economic study. Health Technol Assess 2019;23(01)
23. Cross AJ, Wooldrage K, Robbins EC, et al. Faecal immunochemical tests (FIT) versus colonoscopy for surveillance after screening and polypectomy: a diagnostic accuracy and cost-effectiveness study. Gut 2019;68:1642-1652.

Useful Resources:

Triage Guidance for Upper and Lower GI Endoscopic Procedures (excluding ERCP and EUS)
https://www.hse.ie/eng/about/who/acute-hospitals-division/clinical-programmes/endoscopy-programme/programme-documents/

Endoscopy Programme position paper on FIT in Primary Care
https://www.hse.ie/eng/about/who/acute-hospitals-division/clinical-programmes/endoscopy-programme/programme-documents/

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