

# Feasibility of FIT – the Hull Experience

Ian Hanning MSc and Mark Hajjawi PhD,

Department of Clinical Biochemistry, Hull & East Yorkshire Hospitals NHS Trust



Hull & East Yorkshire Hospitals NHS trust is undertaking a feasibility study for the roll out of faecal immunochemical testing (FIT) in symptomatic patients, using the HM-JACKarc system. Having recently had a successful UKAS Assessment for transition to ISO 15189 (including FIT), the team presents their implementation and assessment experience, to aid other laboratories with their implementation of FIT and associated UKAS considerations.

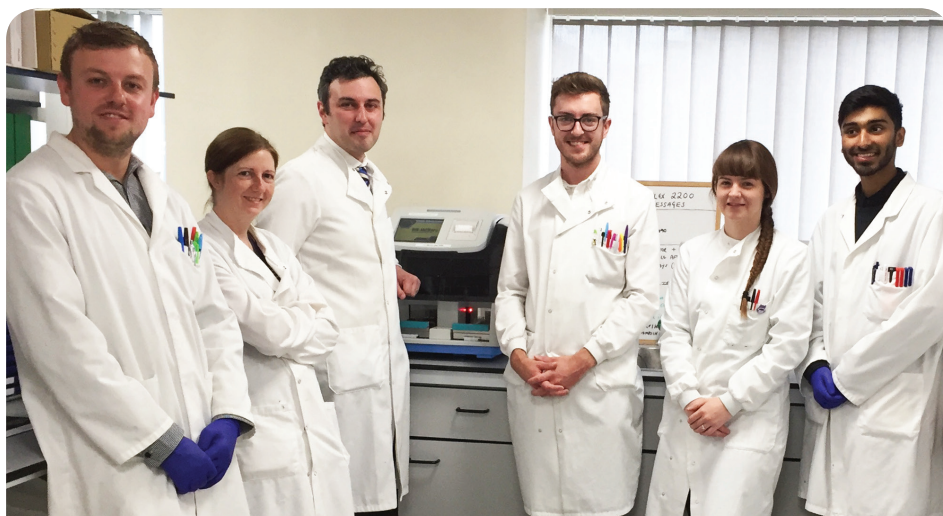
## Background

*"The updated NICE NG12' in 2015 signalled a new era of faecal testing. However, these guidelines (Sections 1.3.1 and Section 1.3.4) took UK Clinical Biochemistry by surprise, by recommending that particular patient groups be tested for faecal occult blood (FOB), a test that most laboratories no longer performed.*

*This was controversial as most UK laboratories had disinvested in FOB testing. Indeed, the Hull laboratories stopped guaiac based testing (gFOB) (which detects pseudo-peroxidase activity) over ten years ago. However, there was a new assay available - FIT, which uses antibodies specific to human haemoglobin, in a quantitative, turbidimetric method. FIT, specific for human haemoglobin and requiring a single sample, is far superior to gFOB, a test renowned for its poor performance characteristics and high false positivity rate (due to dietary interference).*

*In 2015/2016 interest in FIT accelerated and we were already looking at introducing it when we were contacted by both of our local CCGs (Hull and East Riding of Yorkshire) – they had identified FIT as a potential way to transform the colorectal cancer (CRC) pathway. Discussions ensued, but it became apparent that there were a number of hurdles to overcome.*

*We approached two Key Opinion leaders, Judith Strachan (Tayside) and Ian Godber (Lanarkshire), who not only had lab experience of the testing, but were publishing data. These discussions were invaluable and we would strongly recommend anyone starting up a FIT service to discuss their programme with someone who is already running one.*



**The Clinical Biochemistry team at Hull & East Yorkshire Hospitals NHS Trust with the HM-JACKarc Faecal Immunochemical Test system.**

*Then, with support of the CCGs we began a feasibility study, allowing us to develop the infrastructure and assess workload. This involved 13 GP surgeries, with the aim of collecting 250 samples. Importantly, everyone in the pathway was included in the discussions; the laboratory, CCGs, GPs, clinicians, and surgeons.*

## Setting up the FIT Feasibility Study

*Following recommendations, we chose to issue the sample collection device (picker) to the patient for them to sample their stool. The first obstacle was logistics; a patient pack was compiled including: the picker, patient instructions, return envelope, and lab request form.*

*A colleague in the local CCG delivered kits to the surgeries. GP involvement was supported by information letters describing the study, examples of the 'FIT kit', plus educational presentations.*

*We opted to have the sample returned to the GP by the patient, for return to the laboratory by the routine sample transport. We requested the GP indicates the predominant symptom, as per the list included in NG12.*

*The time taken to compile patient packs should not be under-estimated – around six hours to collate 250 kits, plus preparation and printing of the contents.*

*Planning meetings with CCGs and preparation of GP information was also time well spent, often out-of-hours.*

*The feasibility study started in July 2017 and after eight months, 127 patient samples had been analysed with 27 being reported as FIT positive ( $\geq 10 \mu\text{g Hb/g faeces}$ ). GPs were advised to refer such patients under the 2WW. These data are yet to be analysed and correlation with clinical findings are a vital aspect of this service.*

*NHS England Yorkshire and the Humber Clinical Networks also contacted us to set up a FIT Implementation Group. Our advice was, "do not re-invent the wheel – speak to people who are already running the test!"*

*We were also awarded funding from their Innovation Fund which will allow the second phase of the implementation study to run for an estimated 12 months, giving us an opportunity to collect data on annual workload, positivity numbers and outcomes.*

## ISO 15189 Considerations

*ISO 15189 is at the forefront of our minds whenever setting up a new method. It is vital to ensure all necessary information is documented, based on a core document or SOP describing the department's approach to validation and verification.*

*It should be highlighted that for most laboratories it will be the introduction of a new method, rather than update of an existing method. We would also suggest a summary sheet giving the performance characteristics and targets, listing all relevant documents and documenting the timeline. Following is a list of points to consider for method verification (Note: this list is not exhaustive).*

## Method Verification

- Comparing patient results (analysis by Passing Bablok with correlation, regression, and bias plots). Acceptable limits must be set before analysis and be documented.
  - As with many labs, we were not routinely running gFOB and thus had no data for comparison. With our well-established links at Tayside, we were able to obtain previously analysed samples, permitting us to undertake sample comparisons with an established FIT laboratory – with proven performance and results and confirmed also by colonoscopy findings.
- Intra- and inter-assay imprecision – ensure that you compare your values with those provided by the manufacturer to confirm that this performance is in line with their data.
  - Be clear how values were achieved – initial data are unlikely to include multiple calibrations, different vials of IQC etc. and so this should be an evolving situation as the laboratory service matures. Ideally refer to an over-arching SOP describing criteria for acceptability (or otherwise) of IQC data, action to be taken when IQC fails those limits and how non-conformances are recorded and investigated.
- EQA data – the initial verification work should involve analysis of EQA samples to give further re-assurance of the performance of the assay.
  - This would typically involve interpretation – positive or negative. The spread of numerical values is broad, making interpretation more difficult. As for IQC, there should be an over-arching EQA SOP, giving rationale for choosing a particular scheme.
- Uncertainty – there should be centralised documents describing uncertainty, the department's approach to calculating and applying uncertainty and acceptance criteria (and their basis) for the values calculated for FIT.
- Training/competencies – there should be documented evidence of the training and up-to-date competencies (with assessment by, for example, questioning/quiz)
  - This is applicable not only for those running the assay, but those witnessing. All staff should have access to updated records.
- HCPC Registration –BMS and Clinical Scientist staff should be registered.
- Data transfer to the laboratory computer – if the FIT results are generated on a stand-alone analyser without interfacing, there must be an independent second check of data entry.
  - Our HM-JACKarc is interfaced into our laboratory system (LabCentre). Evidence is needed to show the interface programme performs as expected, and transfers what is expected.
- Reference intervals – include how the values were obtained
  - Values  $\geq 10 \mu\text{gHb/g}$  faeces are considered positive, as recommended by NICE DG30<sup>2</sup> (which superseded NG12 1.3.4).

- Metrological traceability  
Sort this out before assessment!
  - For the HM-JACKarc, traceability is to the WHO International Standard Haemoglobin Cyanide, NIBSC 98-708. Documentation was obtained from Alpha Laboratories.
- Kit insert – for Manufacturer's claims.
  - Although not essential, comments regarding imprecision are valuable to include in the assessment portfolio.

- Documented record of the ratification date and starting date. This could be following discussion at the Senior Staff meeting – in the past the acceptance (formally signed off) and start date could be lost in the mists of time.

*We included FIT in our scope for our UKAS Transition Assessment last October and it was one of the witnessed tests. There were no findings specific to FIT.*

## The Future

*At present several laboratories in England are introducing FIT in line with NICE DG30. Tayside and Lanarkshire are using FIT to triage all patients with lower abdominal symptoms, including those who qualify for the 2WW in England; those with positive results are fast-tracked to secondary care whilst those with a negative FIT (and unlikely to have CRC) need to be re-assessed.*

**Other centres have shown a reduced number of unnecessary colonoscopies, which benefits the patient and eases pressure on the colonoscopy service.**

*It is supported by the publication by Quyn AJ, Steele RJC, Digby J et al. Application of NICE guideline NG-12 to the initial assessment of patients with lower gastrointestinal symptoms is not FIT for purpose. In Annals of Clinical Biochemistry 2018; 55:69-76. They concluded that 'fHb provides a good rule-out test for SCD (significant colorectal disease) and has significantly higher overall diagnostic accuracy than NG12'. We are not at that stage yet, but are considering using FIT to triage all patients in the future."*

## A FIT Service Designed for You

Alpha Laboratories can now provide a complete solution tailored to help you develop your FIT programme. From logistics to patient instructions, complete custom kits to scheduling assistance, our Bowel Cancer Specialists are on hand to help you create the ideal solution to support your patient pathway. Visit [faecal-immunochemical-test.co.uk](http://faecal-immunochemical-test.co.uk)



## Key Messages

The key messages from Ian and Mark's experience at Hull, is that evidence is key – having documentation to support clinical decisions, laboratory work process and data verification are critical to ensure a smooth and compliant assessment. Additionally, the implementation of FIT testing is a national project for both symptomatic patients and those being screened. Intra-laboratory discussions and input from trusted colleagues will help shape the CRC Pathways going forward to harmonise and improve patient care.

## Acknowledgements

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Jane French, UK NEQAS, Birmingham Quality  
Sally Benton, Bowel Cancer Screening Southern Programme Hub, Guildford

## References

1. National Institute for Health and Clinical Excellence 2015: Suspected cancer: recognition & referral. NICE guideline (NG12)
2. National Institute for Health and Clinical Excellence 2017: Quantitative faecal immunochemical tests to guide referral for colorectal cancer in primary care. NICE guideline (DG30)
3. Mowat C, Digby J, Strachan JA, Wilson R, Carey FA, Fraser CG, Steele RJ 2016 Faecal haemoglobin and faecal calprotectin as indicators of bowel disease in patients presenting to primary care with bowel symptoms. Gut 65 1463 - 1469
4. Godber IM, Todd LM, Fraser CG, MacDonald LR, Younes HB 2016 Use of a faecal immunochemical test for haemoglobin can aid in the investigation of patients with lower abdominal symptoms. Clin Chem Lab Med 54 595 - 602

