



Research • Education • Innovation

at St Mark's, the UK's national bowel hospital





Foreword

Critical to our clinical and research recovery coming out of the Covid-19 pandemic has been the opportunity to deliver almost all of our specialist clinical services from the new site of St Mark's Hospital at Central Middlesex; this is where the hub of St Mark's will remain, and it represents only our second move in a hundred years.

During this extraordinarily challenging time, we have been grateful to receive support from the community and supporters of St Mark's. We have been sustained and humbled by the acts of kindness and continued belief and investment in our work to improve the lives of people living with complex bowel diseases.

Professor Omar Faiz & Miss Carolynne Vaizey
Consultant Surgeons & Joint Divisional Clinical Directors,
St Mark's Hospital



The Covid-19 pandemic and other NHS pressures have challenged the Foundation and wider hospital in an unprecedented way, but like our clinical colleagues, my team and I have remained acutely aware that the health difficulties of St Mark's patients have not gone away.

Our supporters have enabled us to keep investing in research, like projects whose clinical value has increased in the context of capacity constraints and the need for more precise, efficient approaches to diagnosis and treatment. We are pleased to summarise a few of these in this document. Charitable support has also enabled us to continue disseminating the best practice developed at St Mark's to healthcare professionals in the UK and abroad.

In the same way that our specialist teams are stronger together, supported by our donors, we will realise the future we wish to see for people living with complex bowel diseases. Thank you.

Jason Bacon
Chief Executive, St Mark's Hospital Foundation

Pressures on clinical services were mounting before the pandemic, so now, it has become even more urgent for research to:

- Facilitate early diagnosis.
- Aspire to the future goal to personalise treatment based on individual disease biology.
- Develop and identify surgical and endoscopic innovations and techniques that will, for example, improve procedure efficiency.



Research at St Mark's

EARLY DIAGNOSIS

PERFECTS

CT colonography (CTC) is an alternative to traditional colonoscopy and can be used for frail, older and fearful patients to identify pre-cancerous and cancerous growths, but CTC scan reporting varies across the UK which is leading to bowel cancers being missed.

The PERFECTs training and accreditation programme, which was a collaborative project between St Mark's and University College London Hospital's radiology faculty, aimed to train radiologists practicing CTC in the UK to a high standard of proficiency. Principles established by PERFECTs have led to the creation of the National CT Colonography Training & Accreditation Programme. Involving the core PERFECTs team, it aims to train, test and performance monitor radiographers and radiologists who perform and interpret CTC.

Dr Anu Obaro (left image, centre) leading a PERFECTs workshop. She is a Consultant Radiologist at St Mark's, Project Lead for PERFECTs and Online Training Lead for the National Programme.

Lynch studies

New diagnostic techniques for bowel cancer detection and prevention

During the Covid-19 pandemic, St Mark's spearheaded a national project to improve access to colonoscopy for high-risk patients by using faecal immunochemical testing (FIT) to identify patients in greatest need of support.

Ultimately, FIT was shown to provide clinical value to patients with Lynch Syndrome during this time when options for endoscopy were limited. A next step will be to assess what role FIT has alongside colonoscopy.

The team behind this work has received recognition for their efforts to improve access to care for high-risk patients during the pandemic.



...the faecal immunochemical test (FIT) for haemoglobin (Hb) is used in symptomatic and screening populations to guide subsequent... We report a national emergency clinical service implemented a COVID-19 pandemic which used FIT to prioritise colonoscopy in LS while endoscopy services were severely limited.

Methods

...national genetic and endoscopy services across England were invited to... risk eligibility was determined by 1) diagnosis of LS and 2) planned... nooscopic surveillance between March 1, 2020 – March 31, 2021... tests for FIT testing from participating clinics were sent to the NHS... Cancer Screening South of England Hub. The Hub sent patients a FIT... DC Sensor™, Eiken, Japan) FIT instructions, a questionnaire, and a pre... a return envelope.

...reports with faecal... moglobin (F-Hb) results... re returned for clinical... tion.

...patients were risk... ified for colonoscopy... sed on the following F-Hb... thresholds (see Image 1):

- F-Hb $\geq 10\mu\text{g}/\text{Hb}/\text{g}$ faeces
- F-Hb $\geq 10\mu\text{g}/\text{Hb}/\text{g}$ faeces
- F-Hb $\geq 10\mu\text{g}/\text{Hb}/\text{g}$ faeces

...ology via urgent... onoscopy pathway.

... F-Hb $\geq 10\mu\text{g}/\text{Hb}/\text{g}$ scheduled

Validated FIT for urgent colonoscopy in Lynch Syndrome: Evidence throughout the COVID-19 pandemic

Presented by: Sally Bentons, Peter Sasieni, Kevin Monahan

Presented at: National Cancer Screening South of England Hub, Royal Surrey County Hospital NHS Foundation Trust, Guildford, UK. The Lynch Syndrome Family, Imperial College London, Harrow, UK, Imperial College London, UK.

Results

- Fifteen centres across England participated from June 9, 2020 – March 31, 2021
- The uptake was 64% (173* / 268 invites)
- 269 (26%) participants had a F-Hb of $\leq 10\mu\text{g}/\text{g}$
- 23 (8%) participants had a F-Hb at or between the limit of detection of the assay (10-20 $\mu\text{g}/\text{g}$) yet below 100 $\mu\text{g}/\text{g}$
- 17 (13%) participants had FIT results of $\geq 20\mu\text{g}/\text{g}$ and met criteria for an urgent colonoscopy (scheduled no more than one month following FIT results) and 54 attended
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- 5 (5%) had colorectal neoplasia: 2 advanced adenomas (AA), 2 adenocarcinomas (AC), 1 serrated polyp (SP)
- Participants with FIT of $\geq 20\mu\text{g}/\text{g}$ had a 2.5x higher rate of urgent colonoscopy (median 15 days) compared to those with FIT of $\leq 10\mu\text{g}/\text{g}$ (median 77 days)

Presenter contact: annie.lincoln@kcl.ac.uk

Faecal immunochemical testing (FIT) demonstrated clinical value for patients with Lynch Syndrome requiring colorectal cancer surveillance in England at the height of the COVID-19 pandemic

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This work was supported by Maudslayi Cancer Charity and King's College London via the King's FCR International Fellowship. We would like to thank the following: British Society of Gastroenterology, Maudslayi Cancer Charity, clinicians, and all patients who participated in this study.

40TUDE

Dr Kevin Monahan (left) is leading this work in collaboration with key partners, including Dr Annie Lincoln from Kings College London (right), who presented the team's work at the American Society of Clinical Oncology conference in Chicago in 2022.

Early diagnosis of dysplasia/cancer in IBD patients using a novel non-invasive test

This collaborative project between St Mark's and the Institute of Cancer Research (ICR) aims to develop a blood test to spot early signs of cancer in people with Inflammatory Bowel Disease (IBD).

Using the test could help target endoscopy to patients most in need.

To date, the research team has seen a signature in the blood that, to a large extent, mirrors what is seen in endoscopic tissue samples (biopsies). It is hoped that the research can lead quite rapidly to a non-invasive test for early cancer detection that will benefit people with IBD around the world. We are in a strong position to achieve this because St Mark's has one of the world's largest cohorts of IBD patients. The hospital also has strong national and international collaborative links with IBD colleagues which provides access to thousands more IBD patients under endoscopic surveillance.



Professor Trevor Graham (left) is the Director of the Centre for Evolution and Cancer at the ICR; Kane Smith (right) is a PhD student in Professor Graham's group; he is working in collaboration with Professor Ailsa Hart and her team at St Mark's to research the development of the early detection blood test.



● IMPROVING DISEASE UNDERSTANDING, STRATIFYING RISK AND PERSONALISED TREATMENT

Precision medicine and IBD

Understanding which chemicals drive inflammation in individual IBD patients may reveal predictors about the drugs patients are more or less likely to respond to. The aspiration of precision medicine is to be able to administer the right treatment for a patient's individual disease biology at the right time, so they stay well for longer.

Dr Aamir Saifuddin is one of Professor Ailsa Hart's IBD Clinical Research Fellows at St Mark's. He is co-supervised by Dr Nick Powell at Imperial College London. Dr Saifuddin is:

- Developing a pan-London study which will recruit up to 200 IBD patients either experiencing an IBD flare who are likely to switch to a new biologic medication, or who are starting biologic treatment for the first time ('biologic naïve').
- Growing mini-gut organoids in the laboratory, which may be useful for developing predictive markers.
- Probing large data sets of patients who have been treated with different medications, which will help to explore commonalities between those who do respond to treatment and those who do not respond based on these patterns of inflammation.

To consolidate this topic of interest and to understand the wider context of this research, Dr Saifuddin (pictured) has co-authored a Review article in a leading journal, *Gastroenterology*, about predictive medicine in IBD with leading international experts in this field, including Dr Nick Powell.

Advancing understanding of the cancer pathway to improve the future detection and prevention of cancer in IBD patients through personalised surveillance



Certain groups of patients are at higher risk of developing bowel cancer. However, at this time, the evolutionary process of cancer development in these patients is not understood, which means their future risk is more difficult to predict. Whilst these patients are monitored endoscopically by colonoscopy, not being able to match surveillance intensity with individual cancer risk currently, means that clinical strategies to prevent cancer through early detection are somewhat ineffective.

This project seeks to improve the molecular understanding of cancer development in ulcerative colitis and Crohn's/colitis patients. If similar mutations are found between biopsies, they can be labelled as being part of the same 'clone,' and by measuring how many biopsies are part of the same clone, the size and locations of the clones can be measured across the colon.

Dr Mehmet Yalchin is the St Mark's IBD Clinical Research Fellow leading this research in collaboration with the Institute of Cancer Research. His work to date has revealed a finding with clinical implications.

The current practice for predicting a patient's cancer risk and conducting surveillance is to look for clones under the microscope. This assessment is undertaken by histopathologists. However, Dr Yalchin has applied molecular techniques to trace mutations, and this has exposed clones in parts of the colon that look harmless by eye and histologically.

This work will have an impact on what method is used to conduct surveillance (i.e., use of genetic/molecular tests to support current practice) and how these genetic tests are used (i.e., where exactly biopsies are taken, how many and how often).

Moderated poster presentation for one aspect of Dr Yalchin's research at the 2022 United European Gastroenterology (UEG) Week in Vienna (top).



● SURGICAL & ENDOSCOPIC INNOVATIONS & TECHNIQUES

Surgical Robotics Research Programme for colorectal and anorectal surgery

St Mark's Hospital took delivery of a Da Vinci xi surgical robot in spring 2018. The Programme is researching the potential of robotic technology to improve the long-term health outcomes of people who require surgical intervention for colorectal cancer and other bowel conditions.

Since 2018:

- St Mark's robotics team has completed >300 robotic colorectal operations.
- The Programme has expanded from bowel cancer surgery to IBD and abdominal wall surgery.
- 5 surgeons have been trained with 3 more in the pipeline.
- The first PhD on integration of 3D anatomical models into robotics has completed.
- We have hosted >50 UK and overseas surgeons for one-day case observations; these surgeons have chosen St Mark's as their trainer of first choice to experience robotic colorectal surgery.

In 2022, the Foundation successfully fulfilled its role to seed fund the Programme and financial responsibility transferred to the London North West University Health Care NHS Trust with the full support of the Trust's executive team. We are proud to have helped our NHS Trust embed robotic surgery as a mainstream part of surgical practice for colorectal surgery, and we thank all our donors who helped make this possible.

Mr Danilo Miskovic (top), the Surgical Robotics Research Programme Lead.

WAVE

The WAVE study

The WAVE study was one of our responses to the growing pressures on colonoscopy services in the UK. For the first time, a controlled trial has compared two colonoscopy techniques (water and water & carbon dioxide [hybrid]) to identify which should be used to open up the bowel wall to see the lining of the bowel.

Our hypothesis that the hybrid technique would be more efficient to perform was proven correct; our study showed it offered a 4-minute faster colonoscopy procedure, with no adverse effect on patient comfort, need for sedation and detection of polyps. There was no difference in patient pain scores, in the overall number of loops formed by the colonoscope, and in the polyp and adenoma detection rates between the groups. Patients undergoing hybrid colonoscopy were required to change position less often.

WAVE provides much-needed clarity about the hybrid technique and provides important evidence that this helps optimise colonoscopy insertion by maximising the benefit of both water and carbon dioxide during colonoscopy.

We expect our findings to reach an extensive audience of colonoscopists through publication of our findings, and to have significant impact in terms of training and practice of colonoscopy.

Dr Ahmir Ahmad, a Senior Research Fellow at St Mark's, led the WAVE study under the supervision of Professor Brian Saunders (image far right).



Continued investment of time and funds in surgical and endoscopic innovations is critical

The NHS Bowel Cancer Screening Programme has helped significantly to diagnose people with bowel cancer earlier. By 2024, everyone aged between 50 to 74 will be invited for screening. The rising incidence of the disease amongst people under 50, which has been documented in leading medical journals such as *Gut* and has been more generally brought to the public's attention through campaigns such as Bowel Cancer UK's, 'Never Too Young,' may lead to screening age changes in the future.

With the potential to diagnose even more patients with cancer earlier, not all these individuals will require invasive surgery and would benefit from treatment with a minimally invasive approach. It is therefore critical to continue researching techniques which will both successfully excise the cancer whilst maintaining quality of life for the patient.

St Mark's remains dedicated to developing its work in this area and building on the successes and firsts of the hospital's current and previous cohort of surgeons and endoscopists, successes that include the development of minimally invasive techniques that facilitate more precise removal of large and complex polyps.

The Wolfson Unit for Endoscopy at St Mark's was the first London unit to be accredited as a Bowel Cancer Screening centre in 2006. Professor Brian Saunders (top, right) is the Director of the Unit and of the Bowel Cancer Screening Service. He is pictured with Professor Siwan Thomas-Gibson, a Consultant Gastroenterologist & Endoscopist at St Mark's.

Education at St Mark's

The Covid-19 pandemic not only impacted our fundraising, it challenged us to rethink how to deliver our courses when in-person meetings were prohibited.

We successfully delivered three topical webinars at the beginning of the pandemic, which were attended by healthcare professionals from across the world:

- IBD management in the COVID-19 era
- Managing surgical risk during the COVID-19 era
- A testing time for colorectal cancer diagnosis: how to respond?

In 2020 we held our annual international congress, Frontiers, as a fully livestreamed event. In 2021 and 2022 we delivered Frontiers as hybrid meetings as Covid-19 restrictions on in-person meetings eased. Our 2022 event, which represents our twentieth congress, has attracted 1,600 virtual delegates from across the world, and 150 healthcare professionals are attending each of the three physical days.



Frontiers 2020 – some of the St Mark's medical faculty in the studio where Frontiers was filmed and livestreamed.



Moving Forward

MAINTAINING OUR FOCUS ON RESEARCH & EDUCATION

As a green site, our new hub at Central Middlesex is helping to protect patient pathways; many of our outpatient clinics are now delivered from this location. It is also enabling us to resume research at pace, particularly projects that require patient participation.

With as many as thirty research fellows at St Mark's at any one time, there is always an active portfolio of projects in need of support spanning all areas of gastrointestinal disease. The Foundation remains committed to sourcing the financial support they require, and we thank those of you that have already donated to our projects over the years. These projects are:

- Advancing disease understanding.
- Identifying more efficient ways of working.
- Taking proactive steps towards a future where personalised treatment will be possible.
- Developing innovations and improving existing treatment protocols to improve patients' survival and quality of life.
- Raising standards of clinical care, nationally and internationally.
- **Helping patients now.**

Covid-19 has brought pre-pandemic clinical pressures to the fore and made the need for research that will alleviate growing clinical pressures whilst enhancing patients' comfort, experience, survival, and quality of life more acute. As these are major areas of focus of St Mark's research, and in keeping with the hospital's commitment to disseminate best practice widely, the Foundation will also maintain its focus on delivering high-quality, annual programmes of education.

Frontiers 2021 - 'Reducing risk in cancer management' session, with Chairs, Mr Danilo Miskovic (fourth from left) and Dr Ana Wilson (second from right).

● ENDOSCOPY+

We will continue to fundraise for a range of research projects over the coming months. We will also be focussed on equipping the endoscopy unit at the new site of St Mark's Hospital with state-of-the-art equipment as a strategic initiative.

Whilst the new St Mark's Hospital at Central Middlesex has first class, modern facilities, including high-quality surgical theatres, an important area requiring further development is the endoscopy unit.

The Wolfson Unit for Endoscopy at St Mark's at Northwick Park is a well-established department that has received significant charitable investment over the years, becoming a cutting-edge clinical, research and teaching facility. It was recently awarded World Centre of Excellence status for the third time in recognition of its achievements in endoscopy practice, research and medical training. It is one of only two UK organisations to be awarded this honour by the World Endoscopic Organisation, highlighting its on-going contribution to screening and treatment of bowel cancer and other related conditions.

Across both sites, St Mark's delivers an endoscopy service which sees over 18,000 endoscopies performed annually.

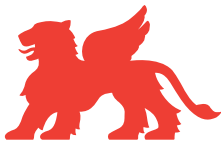


The unit at Northwick Park has six procedure rooms. The unit at St Mark's Hospital at Central Middlesex, which is where St Mark's hub is now based, is smaller and now needs significant investment. Whilst the NHS is funding the development and expansion of the clinical unit, we are planning to support the development of facilities, equipment and people which will enable us to:

- Maintain our status as a centre of excellence.
- Deliver endoscopy skills training courses, high-quality teaching, training and education in our role as a National Endoscopy Training Centre and Endoscopy Training Academy, and cutting-edge live endoscopy demonstrations to national and international audiences as part of St Mark's educational courses.
- Continue with high quality research with the potential to impact future endoscopy practice.
- Maintain high standards of clinical care as we deliver our tertiary and complex endoscopy services.

It also means that our current equipment, which is coming to the end of its life, can be repurposed as teaching aids on our educational courses.

This is one critical area which requires the support of the Foundation and, in due course, more detailed information about the project and fundraising campaign will be available. To express interest to receive this, please email us at: info@stmarkshospitalfoundation.org.uk



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St Mark's Hospital Foundation is dedicated to bringing about a future free from the fear of bowel disease through research, education and dissemination of clinical excellence.

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