

Institute for Health and Clinical Excellence to support the safe and effective use of nerve blocks for surgery. Under ultrasound guidance it is also possible to insert small catheters into the transversus abdominis plane to give repeat doses of local anaesthetic in the post-operative period. We are investigating the possibility of providing this service at the Royal Lancaster Infirmary.

REFERENCE

1. Guideline for pre-operative cardiac risk assessment and perioperative cardiac management in non-cardiac surgery Available at: <http://www.escardio.org/guidelines-surveys/esc-guidelines/GuidelinesDocuments/guidelines-perioperative-cardiac-care-FT.pdf>

THE CUMBRIA AND MORECAMBE BAY BOWEL CANCER SCREENING CENTRE

Nurse-led cancer screening services

Susan Meyrick, RGN; Helen Mason; Cynthia Stringfellow;
Colin Brown, FRCP

INTRODUCTION

In 1996, Hardcastle and colleagues from Nottingham reported that testing the stools of healthy subjects between the ages of 55 to 75 years for blood (faecal occult blood testing) and providing colonoscopy for positive cases, could result in earlier detection of bowel cancer, with a 16% reduction in overall mortality rates.⁽¹⁾ Similar experiences were reported from Tayside, Scotland, and in other parts of Europe.⁽²⁾ This provided the rationale for planning a national NHS bowel cancer screening programme (BCSP), the third such programme after cervical and breast cancer screening. However, it also raised concerns around the safety of the widespread colonoscopy intervention for otherwise fit subjects, who would be put at risk of perforation and potential mortality risk.

THE TEAM

The Cumbria and Morecambe Bay Bowel Cancer Screening Centre team consists of:

Specialist Screening Practitioners

Sister Susan Meyrick
Staff Nurse Sara Underwood
Staff Nurse Christine Pearson
Staff Nurse Jane Chester
Staff Nurse Claire Speller

Doctors

Dr Colin Brown, Clinical Director
Mr Frank Hinson, Colonoscopy Lead
Dr Nicholas Mapstone, Histopathology Lead

Managers and Administrative Staff

Cynthia Stringfellow, Business Manager
Helen Mason, Administrative and Health Promotion Officer
Anne Hardy, Administrative Officer

PLANNING AND SETTING UP THE CENTRE

The NHS started to systematically focus on improving endoscopy services around 2001.

- The Modernisation Agency facilitated improvements in service efficiency and reducing waiting times using 'service re-design' methodology.
- In 2003, the National Clinical Endoscopy Lead, Dr Roland Valori, led a national service improvement programme through a process of 'clinical engagement'. He appointed Clinical Endoscopy Leads for each of 28 Strategic Health Authorities (SHA). Dr Colin Brown served as SHA Endoscopy Lead for Cumbria and Lancashire from September 2003 to December 2007, and was responsible for leading change in all the local Trust endoscopy services, improving waiting times, providing safer and higher quality services from a patient's perspective, measuring services every six months using a web-based 'global rating scale' (GRS) and supporting peer accreditation of endoscopy services by the Joint Advisory Group for Endoscopy (JAG), a multi-collegiate body. JAG+ accreditation for endoscopy units is required to continue training endoscopists and for provision of bowel cancer screening services.
- Preliminary results from a pilot BCSP centre in Rugby showed that colonoscopy had the potential to detect cancer in 10% and adenoma in 30% of patients offered endoscopy. National experts collaborated to provide training courses and formal accreditation examinations involving direct observation of practical skills (DOPS) for screening endoscopists. The JAG+ accreditation process was set up for endoscopy units and by 2006 the first three bowel cancer screening units participated in the programme

In Cumbria and Lancashire, collaborative planning between the SHA, public health network, primary care trust

(PCT) commissioners and acute trusts led to the planning of two BCSP centres: the Cumbria and Morecambe Bay Bowel Cancer Screening Centre, based at Kendal, opening in the second wave of BCSP implementation in March 2008; with the Lancashire Bowel Cancer Screening Centre, based in Blackpool, following shortly afterwards in April 2008. Service configuration was guided by advice from the National Screening Office.⁽³⁾

ORGANISING AND MANAGING THE SERVICE

Healthy men and women between 60 and 69 years are invited by letter to take part in bowel cancer screening. This invitation process is managed directly from a central hub laboratory office at Rugby, using a database of patients registered with general practitioners (GP).

The Cumbria and Morecambe Bay programme covers the whole of the Cumbria PCT population and the northern portion of the North Lancashire PCT GP surgeries (the old Lancaster City Council boundary). The service is funded centrally from the NHS Cancer Screening Services with each centre receiving a ‘per capita’ annual income of £0.92 per head of total population for each area covered. For the year 2009/2010, the Cumbria population is estimated to be 518,293 and our portion of North Lancashire is 140,089, giving an annual service income of £605,711.

People are invited by letter over a rolling two-year period, which is prompted by date of birth. Each week 333 invitation letters are sent out, so that the target screening population (60 to 69 year olds) is fully covered within a two-year period. The Cumbria and Morecambe Bay programme is due to complete the first round of invitations by June 2010, which coincides with National Office plans to extend the screening age range up to 75.

Screening subjects receive their letter of invitation to take part at their home address and a faecal occult blood testing kit (FOBT) is then posted from the hub laboratory for completion in the privacy of their own home. This test involves collecting three bowel motions, small samples of which are smeared onto a prepared card. The card is then mailed to the laboratory and tested for the presence of blood. People with a positive result are offered a clinic appointment with a nurse, the Specialist Screening Practitioner (SSP), at one of five clinics within the area. Clinic appointments are arranged within 14 days of a positive result with the central hub office,

who book patients into clinics in Kendal, Morecambe, Barrow, Whitehaven or Carlisle. A screening colonoscopy is then booked within a further 14 days at Kendal or Carlisle. Where it is apparent at the screening interview that colonoscopy is not appropriate, for example in the case of very frail patients, or where the offer of colonoscopy is refused, then a computerised tomography (CT) cologram, using an orally administered contrast medium or a conventional barium enema, may be offered.

The programme holds a quarterly coordinating group meeting attended by representatives from pathology, radiology, PCTs and colorectal multidisciplinary teams (MDT). Operational service delivery, safety and quality data are checked and any issues discussed. Representatives from the programme also attend a quarterly North West SHA meeting, where the SHA Clinical Lead reports on progress and updated information. Service performances, breaches in targets and safety issues such as any serious adverse events, are discussed.

The programme is also accountable to the hospital trusts via the cancer wait teams as a proportion of our patients are monitored on the 62-day target from date of positive FOBT to date of first treatment. Compliance with this performance target involves maintenance of acceptable waiting times for SSP appointments and colonoscopy, and ensuring rapid return of histology results, prompt staging cancer scans and prompt referrals to the colorectal cancer MDTs.

The clinical data for each patient is entered onto a national bowel cancer screening database (*Open Exeter*) by the SSPs as detailed later.

There has been a substantial focus for this screening programme in setting up safety and effectiveness monitoring systems. *Open Exeter* has a quality assurance reporting facility, and this has been particularly helpful for us in being able to download colonoscopy performance and safety data, particularly since this is recognised to be the risky component of the service. Some earlier inconsistencies in data input have now substantially improved with increased familiarity with the complex system, a problem common to other centres.

THE ROLE OF THE NURSE SSP

A team of nurses guides the patient and carer through the patient journey. The nurses currently have a background either in endoscopy or gastro-intestinal surgery and receive



Pedunculated polyp

Sessile polyp

Cancer

further training at John Moores University, Liverpool, as Specialist Bowel Cancer Screening Practitioners (ie SSPs). This training is a comprehensive eight-month course at level six (degree level). Nurses are expected to produce three written case studies, a reflective essay and a Practice Learning Portfolio to evidence achieving competencies, benchmarked against a Skills for Health competency framework. A *viva voce* assessment is completed in the last study week.

The clinic appointment

Following a positive FOBt result, a 45-minute appointment is made for patients to see an SSP in a clinic. The SSP explains the significance of the result, reassures the patient and carer that a positive result does not inevitably mean a diagnosis of bowel cancer (the risk being 11%), and alternative explanations are discussed. The patients are usually asymptomatic and may not have had time to come to terms with any symptoms. The speed of the process does indeed fuel significant anxiety in many cases and the SSP provides a calm, professional approach in order to undertake the four main functions of the clinic consultation, which are to elicit a medical history, provide a detailed explanation of a screening colonoscopy procedure, prepare the patient with advice, and to guide patients through a nurse-led consenting process.

Clinical assessment

The SSP checks if there are any bowel symptoms or a history of bowel cancer. Most patients are asymptomatic, however some have had bowel symptoms or rectal bleeding but may have chosen not to see their GP, either because of embarrassment or belief that the problem was trivial, for example, piles. For some, the unexpected opportunity to undertake a screening FOBt test comes as a relief.

The SSP then assesses the patient's clinical general health status and surgical history. This information is used to judge whether patients are fit for colonoscopy. In a minority of cases patients may not be felt to be suitable for colonoscopy and the SSP has the authority to order an alternative test such as barium enema or CT cologram, or rarely to decide that further bowel screening is not appropriate because of poor functional status or significant co-morbidity.

Explanation of colonoscopy

The consultation is designed as a reassuring and orientating process for patients, encouraging participation, partnership and collaboration on the part of patients.⁽⁴⁾

The SSP uses a 'story board' to describe the colonoscopy procedure itself, showing pictures of normal bowel and common bowel conditions such as polyps and diverticular disease, and also photographs of the endoscopy unit. Patients and carers are encouraged to ask questions and the SSP gives a realistic expectation of the experience of a colonoscopy, including the length of time the procedure will take (20 to 90 minutes, average 40 minutes), advising on the sedation used to control anxiety, and also to give a realistic expectation of discomfort that might be expected. It is important that patients do not have an unrealistic expectation of a colonoscopy, and that it is not always pain-free and doesn't involve a state of unconsciousness. Patients are entitled to be fully informed.⁽⁵⁾

Preparation advice

It is important that the patient is as prepared physically and emotionally for colonoscopy as soon as possible. Local

protocols have been written in order to prepare the patient, which accord with nationally published guidelines, including protocols for patients taking insulin or warfarin. Bowel preparation with the osmotic laxative Fleet Phospho-soda is used. This may result in dehydration and haemodynamic instability, so the SSP gives advice on how to minimise risk. Four litres of oral clear fluid combats dehydration and is usefully supplemented with isotonic drinks or Diorolyte. The SSP will use Moviprep as an alternative to Fleet if it is considered that a sodium phosphate solution is contraindicated.

The patient is usually sedated with midazolam and pethidine, and patients need to provide for transport home and home care. On occasions when home care is not available, an overnight hospital stay is required for safety reasons. An appointment for colonoscopy is arranged with the patient for within two weeks and the patient is given written and verbal instruction on how to find the endoscopy unit and the SSP's card with contact name and telephone number.

Nurse-led consent

In contrast with other screening tests (breast and cervix) bowel cancer screening has an inherent risk of doing damage to the patient. The risks quoted include a bleeding rate of 1:150, a perforation risk of 1:1500, which doubles if a polypectomy is performed. Death is rare with a risk around 1:10,000.⁽⁵⁾

Further test limitations include failure to detect polyps (less than 2% risk over 10mm size, 14% risk less than 10mm) and rare risk of missed cancer.⁽⁶⁾

University Hospitals of Morecambe Bay NHS Trust supports nurse-led consent. A previous patient satisfaction survey undertaken by the endoscopy service at Westmorland General Hospital showed that 89% of the patients would be happy for nurses to consent. Following this, training of the nursing team was completed twelve months ago. SSPs explain that colonoscopy is the 'gold standard' test for bowel cancer but that it does have limitations and risks. The patient is given the consent form to take home together with leaflets explaining the consent process and the colonoscopy. Written information reinforces the verbal information and discussion at the SSP clinic. Patients are also informed of their right to withdraw consent at any time.

Attendance at colonoscopy

An SSP is present at each colonoscopy list to support patients and record the results. The SSP welcomes patients into the endoscopy unit and makes the necessary checks on the patient's preparation. The bowel preparation needs to have worked and not harmed the patient. Compliance with medication advice is checked. Warfarin should have been stopped for five days and the international normalised ratio (INR) checked and less than 1.5. Blood glucose should be within the range of 5 and 10mmol in diabetic patients. Valid written consent is obtained and the SSP will countersign to confirm this. Crucially, there is a further opportunity for the patient and carer to seek clarifications and reassurances.

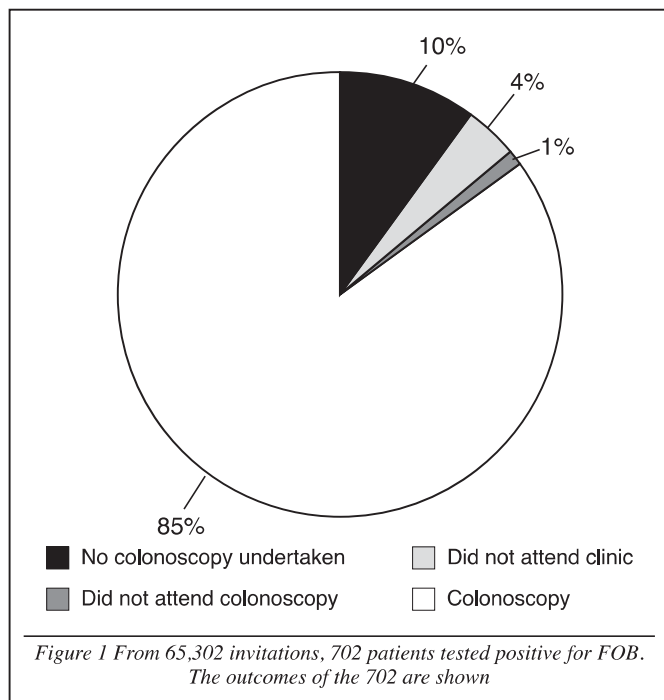
In the endoscopy procedure room, the SSP links to the *Open Exeter* database via laptop and records specific features of the examination such as the duration of the test, the level of comfort/discomfort, level of sedation, the extent of the examination, pathology detected and endoscopic treatment provided. The data recorded is later available for audit and

quality assurance purposes. The SSP is ideally placed to act as advocate for the patient, understanding what has happened and why, in order to interpret the findings to the patient and carer prior to discharge.

Follow up

Prior to discharge, the SSP provides discharge advice and a report of the test, both verbally and in writing. Patients and carers are advised of any possible warning signs to look out for which might indicate that all is not well after the procedure and how to access available help. A 24-hour helpline telephone number is given.

Follow up is determined by risk-stratification of polyps to determine if further colonoscopy is needed (see table 1).⁽⁷⁾ All patients with cancer are referred to the colorectal MDT.



COLONOSCOPY

Each endoscopy list is scheduled to accommodate four patients per list, less than a routine NHS list. This scheduling is to accommodate the more detailed examination involved and also the higher rate of polypectomy needed.

The procedure is undertaken under conscious sedation, typically 25mg pethidine and 2mg midazolam. A screening colonoscopy usually takes around 30 to 45 minutes to perform, with a careful intubation to the caecal pole and ileocaecal valve and photos taken in the caecum.

A more comfortable and quicker test is achieved with the Scopeguide® magnetic imager, which allows visualisation of internal loops and twists of the colon. This allows the colonoscopist to logically reduce these loops and to achieve a straighter scope position, by applying axial torque to the instrument, reducing its length inside a patient, and sometimes using patient positional changes. Scopeguide® imagers have been leased for the Kendal and Carlisle endoscopy units for the BCSP programme. This equipment is then available for other NHS lists and to facilitate advanced training for other endoscopists when not needed for BCSP lists.

The BCSP programme requires a detailed withdrawal examination from caecum to anus (a minimum of eight minutes) to ensure that the mucosa has been examined as fully as possible and that pools of residual fluid have been removed by suction. Earlier evidence showed that a withdrawal examination of more than six minutes detected twice as many polyps as examinations taking less than six minutes. Prior to test completion, the colonoscope is retroverted within the rectum to examine the low rectum just inside the anus, to minimise the risks of missing a low rectal cancer or polyp. The SSP nurse present in the colonoscopy list has an important safety role as an assistant during colonoscopy. She observes and checks with the operator the caecal anatomy and presence of the ileocaecal valve, thus confirming completeness of the examination. The SSP times the withdrawal examination and checks that retroverted examination of the rectum has been performed. All this data is recorded on the BCSP computer system data base.

When cancer is recognised, the lesion is biopsied and site documented. Sometimes cancer is only detected after histological examination. All cancer cases are referred to the colorectal MDT teams.

Benign adenoma polyps take two main macroscopic forms:

- spherical or lobulated lesions attached by stalks of normal tissue to the bowel lining (pedunculated)
- flat spreading (sessile) lesions with wide attachments to the bowel wall

Pedunculated polyps can be removed by polypectomy – passing a snare loop down the biopsy channel of the colonoscope, sliding the opened snare wire loop over the polyp and tightening the snare loop at the level of the stalk and then passing a diathermy current through the wire loop to cut the polyp away from the bowel wall. Sessile polyps are removed by the technique of endoscopic mucosal resection. Indigo carmine dye is sprayed via the biopsy channel onto the flat polyp to define the lateral margins. The lesion is then removed from the bowel circular muscle layer by a submucosal injection of ‘lifting solution’ containing colloid, adrenaline and dye. Complete polyps, or fragments of polyp are then captured within a net for histological examination.

Low risk	1 or 2 small (<10mm) adenomas	Faecal occult blood test in two years if < 70 yrs old
Intermediate risk	3 or 4 small adenomas OR at least 1 adenoma ≥10mm	Three-yearly colonoscopy surveillance until two negative examinations
High risk	≥ 5 adenomas OR ≥ 3 adenomas, of which at least 1 is ≥ 10mm	Colonoscopy after 12 months followed by three-yearly colonoscopy surveillance until two negative examinations

Table 1 Surveillance after adenoma removal (Surveillance guidelines are based on the BSG guidelines⁽⁷⁾)

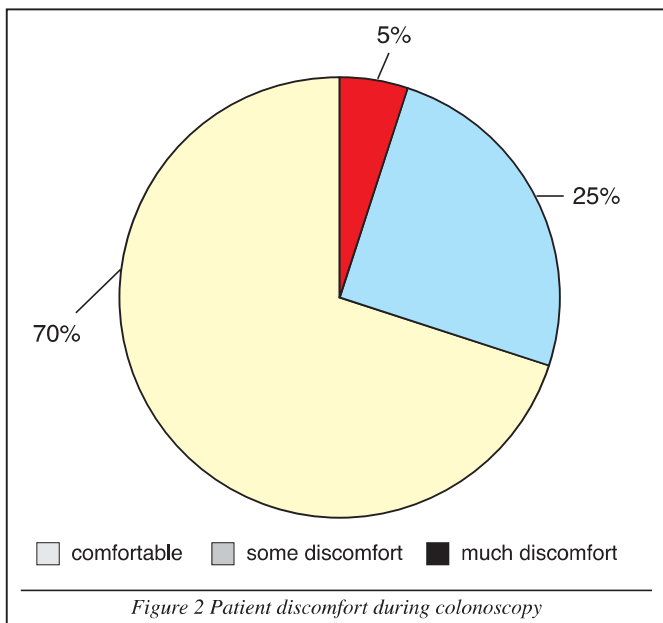


Figure 2 Patient discomfort during colonoscopy

SERVICE OUTCOMES AND PERFORMANCE

From the beginning of operation (31 August 2008) until 21 September 2009, the following outcomes have been recorded. The data is derived from a combination of figures available on the BCSP website and from the BCSS *Open Exeter* system:

Number of invitations issued	65,302
Number of kits returned	40,232
Self-referrals	888
Number of patients attending SSP clinic	673
Patients who did not attend	29 at SSP clinic 9 at colonoscopy
Number of colonoscopies carried out	595
Completion rate	96%

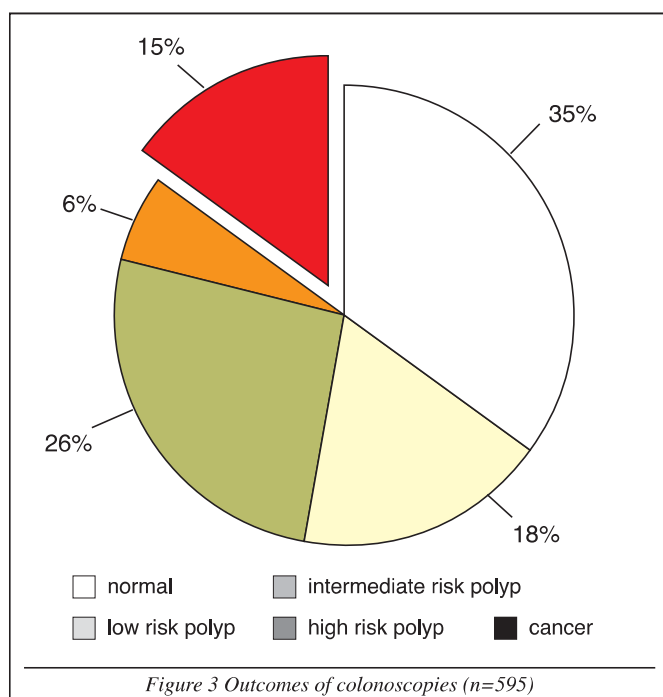


Figure 3 Outcomes of colonoscopies (n=595)

There have been two adverse incidents reported so far to the National Office due to unplanned admissions. One patient had a recurrent post-polypectomy bleed and another experienced an anaphylactic reaction to intravenous sedative medication. Both were self-limiting episodes.

HEALTH PROMOTION

A health promotion project has been undertaken to raise public awareness and to support better engagement of the public with this new screening serviced. Staff have taken a roadshow with stand and information and promotional materials to all the major towns in Cumbria, and Morecambe and Lancaster, using market places, supermarkets and shopping centres, and have met large numbers of the general public.

Posters and information leaflets have also been sent to golf clubs, social clubs, working men’s clubs, Royal British Legion clubs, bingo halls and bowls clubs in Cumbria and Morecambe Bay. Women’s Institute and Age Concern organisations have included information about the service in magazines.

In the future, locality related uptake rate information should be available to provide intelligence and allow targeted interventions to improve uptake rates at locality level.

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