



## Audit

# Nurse endoscopy in a district general hospital

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**Introduction:** This study describes the first full year of independent practice by a newly appointed nurse endoscopist in a district general hospital.

**Patients and Methods:** Patients underwent either 'one stop' flexible sigmoidoscopy and barium enema or flexible sigmoidoscopy alone. Barium enema results, video photography, clinical follow-up, and histology were used to validate the results of the flexible sigmoidoscopy.

**One stop clinic:** 161 endoscopies were performed, with 104 female patients (65%), and a mean age of 64 years. There was one failed endoscopy due to poor bowel preparation. Abnormalities were identified in 84% of endoscopies. Flexible sigmoidoscopy detected abnormalities not seen on the barium enema in 28 cases, all of which were polyps (18%). Barium enema identified one abnormality within reach of the flexible sigmoidoscope not identified at endoscopy (small polyp in sigmoid; 1%).

**Elective flexible sigmoidoscopy list:** 121 endoscopies were performed, with 65 female patients (54%), and a mean age of 59 years. There were two failed endoscopy procedures, both attributed to poor bowel preparation. Two-thirds of patients had an abnormality on investigation.

There were no complications in either group of patients.

**Conclusions:** The nurse-led endoscopy service has been successfully initiated with a high completion rate for flexible sigmoidoscopies. All significant conditions were identified with 99% sensitivity. Nurse endoscopy is a safe, useful and practical procedure in the setting of this district general hospital.

**Key words:** Nurse endoscopy – One stop clinic – Flexible sigmoidoscopy – Barium enema

Investigation of colorectal symptoms by endoscopy is an integral part of current surgical practice. The demand for colonic investigation has increased as public awareness has been raised, and government targets have raised expectations regarding speed of access to investigation. The lead in the development of non-medical endoscopists was initially from the US, where endoscopic examinations have been carried out by non-medically trained staff since the early 1970s.<sup>1</sup> In the UK, members of the nursing profession have taken on this role. Both the

Society of Gastroenterology Nurses and Associates<sup>2</sup> and the British Society of Gastroenterology<sup>3</sup> have produced guidelines for nurse-led endoscopy. In 1998, guidelines for a training programme for nurse endoscopy in one UK centre were published.<sup>4</sup>

Within one hospital, a colorectal nurse practitioner and endoscopist was appointed for training in 1999. The colorectal nurse practitioner attended the flexible sigmoidoscopy course based at the University of Hull. This training programme required that 35 observations, 35

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withdrawals, and 35 supervised full procedures (flexible sigmoidoscopy) were performed. In addition to these requirements, 50 procedures under intravenous sedation were performed.

After an introductory period at the hospital, the colorectal nurse specialist began unsupervised, independent, endoscopic practice in January 2000. The colorectal nurse practitioner performed two flexible sigmoidoscopy lists per week, the remainder of the time being spent in nurse-led clinics, counselling and audit. One list is a 'one stop clinic' for flexible sigmoidoscopy and double-contrast barium enema (DCBE) where patients have been listed for urgent investigation from surgical out-patients. The second list is an elective list performing flexible sigmoidoscopy only for routine cases.

### Patients and Methods

All data regarding nurse endoscopy patients were prospectively collected. All patients referred for flexible sigmoidoscopy alone were seen initially in the out-patient setting by a member of the medical staff. Patients for the one-stop flexible sigmoidoscopy and barium enema were referred either from clinic, or after consultant review of referral letter, without a clinic appointment. The presenting symptoms were confirmed at the time of endoscopic examination.

Patients undergoing flexible sigmoidoscopy were prepared with sodium picosulphate, and offered the choice of no sedation, or low-dose midazolam sedation. The flexible sigmoidoscopies were performed using either a 60 cm flexible sigmoidoscope, or a 160 cm videoscope (no colonoscopies were performed). A report of the flexible sigmoidoscopic findings at the procedure was produced using a standard computerised report. The data from the reports were saved to a database for analysis and recall using a simple spreadsheet. In addition, at the 'one stop clinic', a report of the DCBE was written-up by the trained radiographer, and then double reported by two consultant radiologists.

Abnormalities found during elective flexible sigmoidoscopy were treated appropriately by biopsy or polypectomy. However, in the 'one stop clinic', polyps were documented, but not biopsied because of the theoretical risk of performing DCBE immediately after biopsy or polypectomy. These patients were listed for a further procedure at a later date.

The study evaluated data from February 2000 to February 2001 – the first full year of independent practice. Data for all patients undergoing flexible sigmoidoscopy by the nurse practitioner are included, and there were no exclusions or unavailable data.

The data collected were used to describe the workload of a colorectal nurse practitioner in this unit. In addition,

collating and comparing the reports for the flexible sigmoidoscopy and the DCBE allowed us to assess the outcomes of the procedures performed. Video photography, clinical follow-up, and histology were all used where appropriate to validate the results of the flexible sigmoidoscopy.

### Results

During the study period, there were 282 patients who underwent flexible sigmoidoscopy performed independently by the colorectal nurse practitioner. These patients were in two groups, 161 attending the 'one stop clinic' and 121 attending the elective list.

#### *'One stop clinic' patients*

There were 161 patients who attended for flexible sigmoidoscopy as part of the 'one stop clinic', 104 female (65%) and 57 male. The median age of patients in this clinic was 65 years (range, 25–95 years). The median wait from clinic to endoscopy was 23 days (range, 0–106 days). Presenting features of the patients at the 'one stop clinic' were recorded as follows: altered bowel habit, 36%; bleeding PR, 56% (both, 13%); pain, 20%; and others, 30% (anaemia, abdominal mass, mucus PR, weight loss).

There was one failed endoscopy, which was documented as being due to poor bowel preparation. The findings at the flexible sigmoidoscopies are shown in Table 1. The group of findings described as 'others' includes inflammation, rectal ulcer, haemorrhoids and extramucosal lesions. Presence of all polyps during this period was confirmed by review of video photographs.

The correlation between flexible sigmoidoscopy and DCBE showed that flexible sigmoidoscopy had detected abnormalities not seen on DCBE in 28 cases (18%). The abnormality missed on DCBE was one or more polyps in all cases.

DCBE identified one abnormality within reach of the flexible sigmoidoscope that was not identified at endoscopy (small polyp in sigmoid, histology benign; 1%).

All left-sided tumours and polyps greater than 1 cm were seen on both DCBE and flexible sigmoidoscopy. In the right colon, DCBE identified 3 cases (2%) of isolated diverticular change, 2 cases of right sided polyps, and one carcinoma at the hepatic flexure.

#### *Elective flexible sigmoidoscopy list*

There were 121 patients who underwent elective flexible sigmoidoscopy by the nurse practitioner, 65 female (54%) and 56 male. The median age was 56 years (range,

Table 1 Outcome – 'one stop clinic'

|            | Diverticular disease | Polyps | Tumour | NAD | Other |
|------------|----------------------|--------|--------|-----|-------|
| Patients   | 73                   | 76     | 10     | 26  | 32    |
| Percentage | 46                   | 48     | 6      | 16  | 20    |

Table 2 Outcome – elective flexible sigmoidoscopy list

|            | Diverticular disease | Polyps | Colitis | Tumour | NAD | Other |
|------------|----------------------|--------|---------|--------|-----|-------|
| Patients   | 32                   | 46     | 10      | 4      | 39  | 6     |
| Percentage | 27                   | 39     | 8       | 3      | 33  | 5     |

28–91 years). The median wait from clinic to endoscopy was 32 days (range, 0–131 days). There were 108 new patient endoscopies and 13 follow-up endoscopies.

There were 2 failed endoscopy procedures, both of which were documented as being due to poor bowel preparation. Endoscopic findings are recorded in Table 2.

No patient from this group has been found to have left colonic or rectal disease on any subsequent investigations performed.

#### All patients

The total number of flexible sigmoidoscopies performed by the colorectal nurse practitioner in the first year of independent practice was 282. Of these, 99% were judged successful and abnormalities were identified in 77%. No patient required in-patient stay after the procedure, and there were no complications. The colorectal nurse practitioner successfully identified 99% of significant conditions when compared with back-to-back DCBE.

#### Discussion

This study has shown how the use of a nurse-led endoscopy service in the setting of a district general hospital can be a successful and useful addition to the colorectal department. There is undoubtedly an increasing demand on endoscopy services, both in terms of number of investigations requested and due to the desire to keep waiting times low to meet public expectations and bureaucratic targets. The role of screening flexible sigmoidoscopy remains controversial in this country, although there are several case-control studies suggesting a significant reduction in colorectal cancer mortality associated with this practice.<sup>5-7</sup> If this were to be introduced, then clearly the demand for endoscopy would rise further.

Providing a nurse practitioner endoscopy service has been shown to be cost effective, the service costing around two-thirds of a physician-staffed endoscopy

service.<sup>8</sup> Several groups have assessed public acceptance of nurse endoscopists, and all report that patients respond favourably to nurse endoscopy.<sup>9-12</sup>

The development of non-physician endoscopy is now accepted throughout the world, and is supported by numerous studies comparing nurse endoscopists with physician endoscopists.<sup>8,9,13,14</sup> These studies show no difference in the complication rates, or the rate of identification of lesions between nurse endoscopists and physician endoscopists. There are small, statistically significant differences reported in the length of endoscope inserted, but the differences are small, varying between 2 cm<sup>9</sup> and 5 cm<sup>13</sup> during full insertion of the flexible sigmoidoscope. These differences have not led to any demonstrable difference in outcome and are unlikely to be of clinical significance. One study<sup>13</sup> has shown a statistically significant increased duration of endoscopy when performed by nurse endoscopists, but the increase was less than 2 min and not associated with any increase in complications, so again is not clinically relevant.

Despite the duration for which nurse endoscopy has been established, and the wealth of data supporting its use as a safe and cost-effective investigation that is acceptable to patients, there has not been a general acceptance by primary-care physicians. In the only study to date assessing acceptability of nurse endoscopy to general practitioners, 72% of respondents declared that they had reservations about the nurse-led endoscopy service.<sup>12</sup>

In our study, the correlation between the positive findings at flexible sigmoidoscopy and those at DCBE was good, and a significant number of small polyps not seen on DCBE were identified. Other authors have also described the inaccuracy of DCBE in the detection of rectosigmoid polyps,<sup>15</sup> and we support the use of flexible sigmoidoscopy as a complementary examination to DCBE in the investigation of suspected colorectal cancer.

Our experience has shown high completion rates and good identification of abnormalities by a nurse-led flexible sigmoidoscopy service. The first year of

independent practice by the nurse endoscopist has shown that this service is rapidly attainable in the district general hospital setting. The service provides cost and waiting-list benefits, while remaining acceptable to patients and without compromising patient safety or diagnostic yield.

## References

1. Spencer RJ, Ready RL. Utilisation of nurse endoscopists for sigmoidoscopic examinations. *Dis Colon Rectum* 1977; **20**: 94–6.
2. Society of Gastroenterology Nurses and Associates Practice Committee. Performance of flexible sigmoidoscopy by registered nurses for the purpose of colorectal cancer screening. *Gastroenterol Nurs* 1997; **20**: S1–4.
3. British Society of Gastroenterology Endoscopy Section Working Party. The nurse endoscopist. *Gut* 1995; **36**: 795.
4. Duthie GS, Drew PJ, Hughes MA, Farouk R, Hodson R, Wedgwood KR *et al*. A UK training programme for nurse practitioner flexible sigmoidoscopy and a prospective evaluation of the practice of the first UK trained nurse flexible sigmoidoscopist. *Gut* 1998; **43**: 711–4.
5. Selby JV, Friedman GD, Quesenberry Jr CP, Weiss NS. A case control study of screening sigmoidoscopy and mortality from colorectal cancer. *N Engl J Med* 1992; **326**: 653–7.
6. Newcomb PA, Norfleet RG, Storer BE, Surawicz T, Marcus PM. Screening sigmoidoscopy and colorectal cancer mortality. *J Natl Cancer Inst* 1992; **84**: 1572–5.
7. Muller AD, Sonnenberg A. Protection by endoscopy against death from colorectal cancer. *Arch Intern Med* 1995; **155**: 1741–8.
8. Wallace MB, Kemp JA, Meyer F, Horton K, Refael A, Christianson CL *et al*. Screening for colorectal cancer with flexible sigmoidoscopy by nonphysician endoscopists. *Am J Med* 1999; **107**: 214–8.
9. Maule WF. Screening for colorectal cancer by nurse endoscopists. *N Engl J Med* 1994; **330**: 183–7.
10. Gertler S, Murray J, Akashi K, Jonas G. Flexible sigmoidoscopy performed by nurse endoscopists [Abstract]. *Gastrointest Endosc* 1991; **37**: 263.
11. DiSrio JA, Sanowski RA. Sigmoidoscopy training for nurses and resident physicians. *Gastrointest Endosc* 1993; **39**: 29–32.
12. Basnyat PS, West J, Davies P, Davies PS, Foster ME. The nurse practitioner endoscopist. *Ann R Coll Surg Engl* 2000; **82**: 331–2.
13. Schoenfeld P, Cash B, Piorkowski M, Kita J, Ransohoff D. Effectiveness and patient satisfaction with nurse-performed sigmoidoscopy. *Gastrointest Endosc* 1999; **49**: 158–62.
14. Schoenfeld P, Lipscomb S, Crook J, Dominguez J, Butler J, Holmes *et al*. Accuracy of polyp detection by gastroenterologists and nurse endoscopists during flexible sigmoidoscopy: a randomised trial. *Gastroenterology* 1999; **117**: 312–8.
15. Cheong Y, Farrow R, Frank CS, Stevenson GW. Utility of flexible sigmoidoscopy as an adjunct to double contrast barium enema examination. *Abdom Imaging* 1998; **23**: 138–40.