

Screening for colorectal cancer: a general-practice-based study

JANET MARJORAM

ROBERT STRACHAN

ARTHUR ALLAN

ELIZABETH ALLAN

SUMMARY.

Background. A 2-year study was undertaken to determine the best way of setting up faecal occult blood screening for colorectal cancer in a single general practice in north Birmingham, a district with no pre-existing hospital-based screening programme for colorectal cancer. This programme was set up in close collaboration with the Departments of Surgery and Biochemistry at the local Good Hope Hospital Trust. This facilitated joint meetings between the staff of these hospital departments and the practice manager, who was responsible for organization of the study at the Hawthorns Surgery and also supervised the day-to-day running of the programme. Essentially, the study was organized and run by the practice manager and nurse.

Aim. The study was undertaken to prepare the way for other general practices in north Birmingham to screen selected populations for colorectal cancer.

Method. A Haemoccult test kit was posted to patients together with an explanatory letter. The design of the screening programme was similar to the design of the 'screened arm' of the Medical Research Council (MRC) colorectal screening trial in Nottingham. On completion of the programme, questionnaires were posted to 100 responders and 100 non-responders to assess the level of patient acceptability for the screening study. A total of 3509 patients (1599 men and 1910 women) were invited to take part in the screening.

Results. The response rate was 55.4%. Thirty-nine patients were referred from the screening study for further investigation. Colonoscopy identified nine adenomas in nine patients, and a further 12 patients were found to have colorectal carcinoma.

Conclusions. The findings from the study suggest that this method could be used as a model for other general practices introducing colorectal screening using Haemoccult.

Keywords: colorectal cancer; screening; faecal occult blood.

Introduction

COLORECTAL cancer is the second most common cause of death from malignant disease in the UK, with a mortality rate of 20 000 deaths per year.¹ The incidence of colorectal cancer

is low under the age of 45 years — three new cases each year per 100 000 people. A rapid rise is seen thereafter from an annual incidence of about 30 cases per 100 000 people aged 45–55 years, up to 350 cases per 100 000 people aged over 75 years.² Most colorectal cancers that develop from a pre-existing adenoma can be detected by occult blood in the stool.³ This detection of neoplasia at a premalignant stage consequently leads to an improved outcome.^{4,5}

A combination of the widespread nature of the tumour, its associated high mortality and its premalignant phase makes screening for colorectal cancer worthwhile. Hardcastle *et al* have shown that symptomless colorectal neoplasms can be diagnosed after the detection of occult blood in the faeces. This non-invasive and cheap method has become widely accepted.⁶

In patients with known colorectal cancer, the sensitivity of the test is 72% using Haemoccult when stools are sampled for 3 days. Sensitivity rises to 90% when sampling is for 6 days.

Evidence concerning the acceptability and feasibility of faecal occult blood screening in a busy general practice setting is incomplete.⁷

Observations of particular interest were the practical implications for the staff of the practice, who had not previously been involved in such a screening programme. Other observations included the financial cost to the practice and patient acceptability. The study was undertaken to prepare the way for other general practices in north Birmingham to screen selected populations. Such populations could either be those at increased risk or those in the 50–80 year age group, with annual or biannual rescreening depending on the results of trials of screening in large populations for this tumour.

Method

Patients aged 50–80 years were identified using the practice Meditel computer system and a filter report was set up to exclude those with a Read code in their computer records indicating ileostomy and colostomy. The remaining patients were allocated a study number to ensure accurate identification.

An updated list of 50 patients was generated each week. At this point, the general practitioners (GPs) were able to exclude patients from the study if other illness or domestic situations indicated the test would be inappropriate. This decision was based on the partners' knowledge of their patients through the personal list system.

Haemoccult test kits were posted to the 50 patients with a letter of invitation signed personally by the patient's own GP. An explanatory leaflet and business reply envelope to return the test samples and encourage compliance were also enclosed. Patients collected two small samples of stool from different parts of a single motion, using a cardboard spatula on each of 3 days. The completed kits were returned to the surgery. Patients wishing to be advised of the result of their test were asked to enclose a stamped, addressed envelope. The practice nurse tested all completed packs.

Patients who were found to have a 3-day positive result were invited to attend a clinic appointment, when they were asked to repeat the test over a 6-day period excluding red meats and other foods high in peroxidase from the diet. A list of foods to avoid was given to the patients.⁸ Rescreening was offered to patients

J Marjoram, MAMS, practice manager, and R A Strachan, FRCGP, general practitioner, The Hawthorns Surgery, Sutton Coldfield. A Allan, MD, FRCS, consultant surgeon, and E Allan, BSc, PhD, biochemist, Good Hope Hospital NHS Trust, Sutton Coldfield.
Submitted: 8 August 1995; accepted 27 November 1995.

© British Journal of General Practice, 1996, 46, 283-286.

with negative 6-day results after 3 months, and referral for further investigation was arranged for those with a positive 6-day result. The doctors and practice nurses were available for counselling throughout the programme (Figure 1).

A weekly 2-h clinic was initiated. During this session, patients were counselled by the practice nurse and time was also available for the testing of Haemocult test kits. The GPs also saw patients in their normal surgeries.

A distinguishing referral letter facilitated 'fast track' hospital outpatient appointments for those patients with 6-day positive results. This system ensured an outpatient appointment within 2 weeks of receiving the referral letter at the hospital. Colonoscopy then followed within the next 3 weeks.

Two questionnaires, one designed for responders and one non-responders, were devised in the practice with the assistance of a member of the local Medical Audit Advisory Group (MAAG). Patients were asked a number of questions to determine: whether they had heard about the screening programme before receiving their invitation; whether they would have preferred to have received a clinic invitation rather than a Haemocult test kit in the post; whether the initial letter explained the programme satisfactorily; and whether they would take part in the screening programme again.

Throughout the screening programme, a record of all invitations and test results was maintained on the practice computer by a member of the practice staff.

Ethical approval was granted by the local ethics committee.

Results

Results of the main study

Out of the 3509 patients (1599 men and 1910 women) in the target population, 81.9% were offered screening over the 2-year period. The remaining 18.1% (365 men and 415 women) were

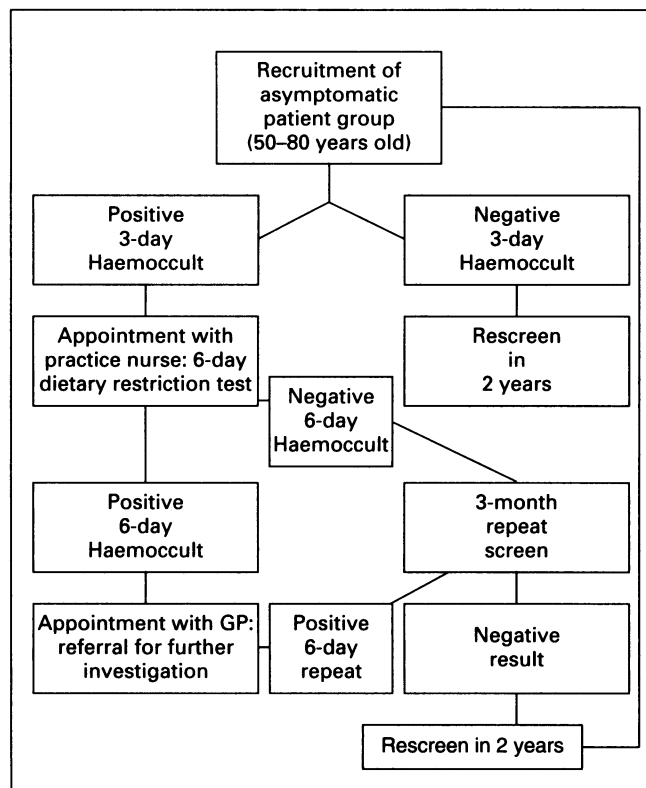


Figure 1. Colorectal screening protocol.

excluded. A total of 567 patients (218 men and 349 women) did not return their Haemocult test pack and 997 (519 men and 478 women) failed to respond.

In all, 862 men and 1083 women responded, i.e. a total of 1945 out of the 3509 (55.4%) patients who were offered screening. Eighty-seven (4.5%) gave positive results, with 32 (1.64%) patients having positive results on dietary restriction. Thirty-six out of 55 patients with negative results on dietary restriction accepted rescreening after 3 months and seven (19.4%) gave positive results on testing with dietary restriction (Table 1). A total of 218 men and 349 women (16.2%) out of the patients offered a test returned the kits and declined to take part (Table 3).

Results of the questionnaire

Out of the 200 questionnaires sent to patients, the response rate was 142 (71%). Fourteen per cent of patients had heard about the screening programme before receiving their invitation. Eleven per cent indicated that they would have preferred the first contact to be in the clinic situation. However, 64% out of that 11% completed the test. Sixty-eight per cent considered that health screening was important and 82% felt that the initial letter explained the tests properly. Ninety per cent of the responders indicated that they would take part in the screening programme again.

Results of further investigation

Among the 39 patients referred from the Hawthorns Surgery for further investigations, colonoscopy identified nine adenomas in nine patients, 12 colorectal cancers in a further 12 patients, of whom five were Dukes A, two were Dukes B and the remainder Dukes C. Diverticular disease was found in a further 12 patients. Three patients had haemorrhoids and a further three refused investigation (Table 2).

Practice experience

The total expenditure was £8545.59 over the 2-year period: the cost of the Haemocult test packs was £4101.88 (48%), 2 h per week of nursing time and 3 h per week administrative time came to £2734.59 (32%), stationery costs were £1281.84 (15%), and

Table 1. Results.

	Total number	Men	Women
Three-day FOB* positive	87	40	47
Six-day FOB* positive (dietary restrictions)	32	17	15
Three-month repeat positive	7	4	3

*FOB, faecal occult blood.

Table 2. Age at outcome.

	Number	Age range (years)
Adenoma	9	57-78
Dukes stage A	5	62-76
Dukes stage B	2	71-85
Dukes stage C	5	62-79
Other bowel disease	12	59-80
No bowel disease	3	57-71
Refused investigation	3	55-78

postage (5%) amounted to £427.28. There were no additional costs incurred as the Haemoccult test packs included all the necessary equipment.

Impact on staff in the practice

Collaboration with the Departments of Surgery and Biochemistry at the local Good Hope Hospital Trust facilitated training of the practice nurse, who received one day's training in the Department of Biochemistry for testing of the faecal occult blood papers.

A 2-h weekly clinic with counselling available with the practice nurse was instituted. The testing of the Haemoccult kits was also undertaken in this session. In addition, patients were counselled by their own GP during normal surgery hours. The clinic sessions were poorly attended.

Staff time taken to generate letters of invitation, make up packs and record the results of the tests averaged 3 h each week. The administration was absorbed by existing staff and formed part of the daily routine. In anticipation of enquiries from patients, an instruction sheet was prepared outlining responses to possible patient queries. In an attempt to minimize anxiety and stress associated with screening programmes, a practice decision was made not to post invitations on Fridays as no staff would be available at the weekends to answer queries.

Discussion

The patient compliance rate of 55.4% in this programme was similar to that seen in the much larger MRC study conducted in Nottingham.³ In the MRC study, patients were recruited using letters purporting to be from their GPs. It is generally accepted that when GPs invite their own patients to participate in studies the compliance rate increases.

The percentage of screening-detected cancers that were Dukes A tumours was less than that reported in the Nottingham study, but still worthwhile at 42%.

The number of patients with a positive test (2% of those who responded) was exactly that reported by the Nottingham group. As this programme was designed in a very similar way to the screened arm of the Nottingham study, these similarities are expected. The differences that do exist are probably the result of the large difference in sample size: 1900 patients screened in this programme compared with 60 000 patients screened in the Nottingham study.

The Nottingham study was reaching its conclusion after 10 years and there would have been more local awareness of colorectal cancer screening in that area.

The concept of the screening programme and the potential advantages to the screened group were explained by representatives from Good Hope Hospital, and the partners' enthusiasm was maintained throughout the study. This factor is probably of central importance to the smooth-running of a successful screening programme of this nature, as suggested by Hobbs *et al.*⁷ It gave opportunities for discussion of the correct place for faecal occult blood testing. It ensured that all partners were aware that

the test was not suitable for investigation of symptomatic patients because of the low sensitivity of the test, implying a significant false-negative rate. Symptomatic patients are best referred for prompt formal investigation after initial digital rectal examination, and ideally, sigmoidoscopy.^{9,10}

The enthusiasm of the practice staff was further maintained by the fact that they were responsible for the entire screening programme; in contrast, in the south Birmingham and Nottingham studies, the participating hospitals were involved to a much greater degree.

The patient questionnaire demonstrated that this method of screening, using a list of suitable patients generated by the practice computer is acceptable to the patients. This may be an advantage over the opportunistic method of screening used by the south Birmingham group.⁷

A positive result in any screening programme may be received with negative feelings, but support at the right time may help considerably.¹¹ This was why a counselling service was set up throughout the programme. This trauma is perceived to be a particular problem in patients with false-positive results, who it is sometimes difficult to reassure that they do not have serious disease.¹²

In the event, uptake by anxious patients of the counselling facilities was not great. This suggested that the patients did not feel a particular need for counselling. It was felt that patients' concerns could be dealt with in normal surgery time. This important aspect could be explored by a trained counsellor in future studies.

There are obvious cost implications in screening for colorectal cancer. The loss of monies amounting to £1000 from the failure of patients to return unused Haemoccult packs is a cause for concern. Consideration could be given to inviting the target group to request Haemoccult test kits.

Currently, the efficacy of screening for colorectal cancer is being assessed by several large-scale controlled studies. One such study from Minnesota¹³ clearly shows that annual faecal occult blood screening with rehydration of the faecal occult blood samples decreases the 13-year cumulative mortality from colorectal cancer by 33%. The results of the MRC Nottingham study, in which biannual rescreening is used, are eagerly awaited.

A further approach is selective screening of high-risk groups based on family histories,¹⁴ although some studies have found faecal occult blood testing to be adequate in this context.¹⁵ Whichever of these methods is eventually shown to be the best, we hope that this communication will prove useful to other general practices wishing to set up a colorectal screening programme for its patients, especially in areas where there is no ongoing programme coordinated by a local hospital.

At a time when many changes are occurring in general practice, following the more widespread introduction of the fundholding system, there is a need for a logistic study to work out the feasibility and practicability of faecal occult blood screening. This could then be used as a model by other practices to screen high-risk or elderly populations for colorectal cancer.

Table 3. Response to screening invitation.

	Men	Women	Total
Invited	1599	1910	3509
Responded	862	1083	1945
Declined	218	349	567
Non-responders	519	478	997

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Acknowledgments

We thank Mrs Moira Cummins, practice nurse, and other members of the primary health care team, the patients for taking part in the programme, and Dr David Wall, West Midlands Regional Advisor in General Practice, for constructive comments on drafts of this article. The study was funded by Sutton Municipal Charities.

Address for correspondence

Janet Marjoram, The Hawthorns Surgery, Sutton Coldfield B72 1DL.



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