

# Patient compliance with colorectal cancer screening in general practice

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**SUMMARY.** A randomized controlled trial to test patient compliance with screening for colorectal cancer in association with general practice health checks was carried out in six practices (three urban and three rural). A total of 1588 patients aged 45–64 years were randomized to one of four intervention groups. In the first group patients were posted a Haemoccult® test (Kline Beckman) kit. This group was not invited for a health check. In the second group patients were posted the Haemoccult test kit, together with an invitation to attend for a health check. In the third group patients were posted an invitation for a health check, which explained that the patient would be offered the Haemoccult test kit by the nurse at the health check. In the fourth group patients were just invited for a health check. It was found that combining faecal occult blood testing with the health check did not reduce attendance at the health check — 43.5% of patients attended when the Haemoccult test kit was offered by the nurse at the health check, 43.6% attended when a test kit was included with the invitation to attend the health check and 42.9% attended when the health check invitation was posted on its own. Overall, compliance with Haemoccult testing was not significantly increased by associating it with a health check (26.2% versus 25.5%) but compliance was higher when the faecal occult blood testing kit was enclosed with the health check invitation than when it was offered at the health check (31.7% versus 20.6%,  $P < 0.001$ ). It is easier and cheaper to combine various screening procedures. Although the overall use of the Haemoccult test in the study population was low, there is no reason why the relatively higher compliance rate obtained on posting the test kit with a health check invitation cannot be achieved in previously unscreened populations with higher expected compliance rates. However, faecal occult blood screening for colorectal cancer should not be undertaken on a population basis until its effectiveness in reducing mortality has been proven by randomized trial.

**Keywords:** colorectal screening; patient compliance; screening effectiveness.

## Introduction

IN England and Wales more than 17 000 people died from colorectal cancer in 1989.<sup>1</sup> The possibility of early detection

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and treatment through screening is attractive. Faecal occult blood testing is a feasible method of screening in general practice, but its effectiveness remains unproven. The issue of effectiveness is being addressed in a number of randomized trials in North America and Europe, including Nottingham in the UK.<sup>2</sup> It is particularly important to assess the practical issues of delivering a service before a screening programme is introduced. If screening by faecal occult blood testing is proven to be effective, there may be a demand for its immediate universal implementation, as happened with screening for breast cancer by mammography. It is important that research into how best to deliver a service is conducted in parallel with trials of effectiveness.

One of the major problems with faecal occult blood screening is limited public acceptance: compliance rates seldom exceed 50%. Various strategies to improve compliance have been assessed in general practice.<sup>3</sup> Test kits distributed in person by general practitioners are more likely to be used than those sent by post,<sup>4</sup> but this is not a responsibility which many general practitioners would be prepared to take on, particularly on a large scale. Involving practice nurses in systematic screening is likely to improve coverage rates greatly.<sup>5</sup> The provision of nurse run health checks, at which screening for factors associated with cardiovascular disease is undertaken together with cervical cytology in women, provides a useful practice model. Although the effectiveness of health checks has been questioned,<sup>6</sup> they have been widely accepted by the public. General practitioners are now encouraged to offer them to patients aged 16–74 years under the terms of the government's new contract. The simplest way of establishing a faecal occult blood screening programme in the UK at the present time would be to include it as an integral part of a routine health check. A compliance rate of 77% has been reported from a study in which test kits were distributed in a hospital-based well woman clinic.<sup>7</sup> This study assesses the effect of strategies for achieving this integration on attendance at health checks and on compliance with faecal occult blood testing. Approval from an ethics committee was obtained for this study.

## Method

The study was based on a four by four matrix, with four different interventions and four practice groups. Each practice group used each intervention for a period of three months. The four interventions were rotated to avoid seasonal bias — at any time each practice was using a different intervention. The faecal blood test used was the Haemoccult® test (Kline Beckman). Each test kit comprised three test cards in a storage envelope, an instruction booklet and a stamped addressed envelope.

## Interventions

There were four intervention groups. In the first group patients were posted a Haemoccult test kit. This group was not invited for a health check. In the second group patients were posted the Haemoccult test kit, together with an invitation to attend for a health check. In the third group patients were posted an invitation for a health check, which explained that the patient would be offered the Haemoccult test kit by the nurse at the health check. In the fourth group patients were just invited for a health check. The primary outcome measures were completion of the Haemoccult kit and attendance at the health check.

### Practice groups

Six general practices were involved, divided for the purposes of this study into four groups: the first group comprised one urban practice in Oxford city, the second group two urban practices in Oxford city sharing premises and practice nurses, the third group one practice in a market town in Oxfordshire (Chipping Norton), and the fourth group two rural practices in Oxfordshire (Grove and Shrivvenham). All the practices were already offering health checks to patients when recruited to the study, predominantly on an opportunistic basis. Only patients who had not previously accepted a health check were invited.

### Selection of subjects

The intention was to recruit about 400 patients from each of the four practice groups, aged 45–64 years. A list of the first 420 patients appearing on the age–sex registers who did not appear on the list of patients who had attended a health check or well woman clinic within three years was drawn up. This was reviewed by the practice staff in order to exclude patients under investigation for bowel problems, or who were considered to be either physically or emotionally unable to perform the test. Patients were then randomized (by household) to one of the four intervention groups. A small number of patients were subsequently withdrawn because they had in fact received a health check — they were not replaced. The final study sample comprised 1588 patients — 828 men and 760 women.

### Haemocult test

The three test cards, comprising the initial Haemocult test, were to be completed on three successive days. Completed cards were sent to the colorectal unit at St Mark's Hospital, London who sent a letter with the test results to both the patient and the general practitioner. Patients with a positive result on any card were asked by their general practitioner to complete six additional test cards, this time with a restricted diet. Patients who had a further positive result were referred for colonoscopy at the John Radcliffe Hospital.

### Statistical analysis

Data was entered on a personal computer using *dBASE* and analysed using *SPSSPC*. Confidence intervals given are based on the standard error of a proportion. Statistical significance is reported at the 5% level and is assessed by means of the chi square test.

### Results

The results are summarized in Table 1. Attendance at health checks was unaffected by the inclusion of faecal occult blood testing. Attendance was 42.9% in the health check only group

and 43.6% overall in the two groups in which the health check was associated with faecal occult blood testing. Use of the Haemocult test was low in all groups, ranging from 20.6% to 31.7%. A small number of those patients sent the Haemocult test with an invitation for a health check (17, 4.3%) completed the test but did not attend the health check. The overall use of the test was not increased significantly by associating it with the health check (26.2% versus 25.5%), although sending the test by post before the health check gave the best result and was significantly better than offering the test at the health check (chi square = 12.7, 1 df,  $P < 0.001$ ).

Compliance with the test was significantly higher in women than in men (30.1% versus 22.0%; chi square = 13.7, 1 df,  $P < 0.001$ ), but there was no consistent relationship between compliance and age within the narrow age band tested (45–64 years). Compliance and attendance varied widely between the six practices. Compliance with the Haemocult test ranged from 14.9% to 36.1% for the test sent by post only, from 8.8% to 33.3% for the test offered at the health check and from 19.6% to 40.0% for the test sent by post with an invitation for a health check. Of those patients attending health checks at which the Haemocult test was offered, 47.4% completed the test (range 26.7% to 69.7% for the six practices). Attendance rates ranged from 11.1% to 57.1% for the health check only; 34.0% to 53.5% when the test was offered at the health check and 18.4% to 50.0% when the test was sent before the health check.

Ten of the 312 patients who used the Haemocult test (3.2%) had a positive result after the initial test but only two (0.6%) had positive tests on the second test. Of these two patients one had multiple polyps and the other a large adenoma.

### Discussion

Overall, the compliance rate for faecal occult blood testing in this study was not high and compared poorly with 53% from postal distribution in Nottingham,<sup>2</sup> with 77% from well woman clinics<sup>7</sup> and with 57% from general practitioner distribution in the consultation.<sup>4</sup> Interestingly, in a recent large study in Oxfordshire using almost identical invitation letters and material a compliance rate of 51% was achieved (unpublished results). The lower compliance rate in this study presumably reflects patient selection: by inviting only those patients who had not yet had a health check the potentially most compliant group were excluded. It is difficult to assess the effect of this low compliance rate when applying the results of this study to the general population, but there is no reason to believe that the previously screened patients excluded would behave in a dissimilar fashion for each intervention to those included in the study except by having a higher rate of compliance overall.

Compliance with the faecal occult blood test was improved in this study by distributing it by post before the health check rather than at the health check. This is surprising in view of

**Table 1.** Attendance at health check and use of Haemocult test by intervention group.

Intervention group	No. of patients in group	% of patients (95% CI)	
		Attending health check	Using Haemocult test
Haemocult test only sent by post	404	—	25.5 (21.2 to 29.8)
Haemocult test sent by post with invitation for health check	397	43.6 (38.7 to 48.5)	31.7 (27.1 to 36.3)
Haemocult test offered at health check	402	43.5 (38.7 to 48.3)	20.6 (16.6 to 24.6)
Health check only offered	385	42.9 (38.0 to 47.8)	—

CI = confidence interval.

the previous studies which suggest that a personal approach is best.<sup>3,4</sup> The reasons why patients carried out the test were not assessed here, but several theories can be advanced. First, patients may feel encouraged to undertake the test in the belief that the result will be made available and can be discussed at the health check (although in practice this was not always the case). Secondly, patients may feel coerced to perform the test in the knowledge that they may be confronted by the nurse at the health check. Thirdly, some patients may respond only to a personal approach and some only to a postal approach, and sending the kit by post before the health check combines both approaches.

The variation between the practices must be interpreted with caution in view of the small numbers involved, the difference in the extent of previous screening and the effect of seasonal compliance (each practice group carried out each intervention at a different time). However, the variation in compliance was greatest for kits handed out by practice nurses and may well reflect different degrees of enthusiasm in different nurses. Presumably, effectiveness in counselling and enthusiasm about the test could be improved by special training. It is also interesting to note that the practice with the highest response to the postal invitation spent some time 'personalizing' the letter.

The most important finding of the study is that Haemocult testing does not lower the attendance rate at health checks. Although the limitations of multiphasic screening in general practice are well documented,<sup>8</sup> there are logistic and economic advantages in combining screen tests. However, the value of faecal occult blood screening remains unproven. Faecal occult blood tests miss 20–30% of colorectal cancers, and 90–95% of those with a positive test do not have cancer.<sup>9</sup> It would be premature to begin screening before the issue of effectiveness is resolved and the results of randomized trials have shown that the benefit can outweigh the costs. Nevertheless, if the trials show that faecal occult blood testing does reduce mortality from bowel cancer, sending a faecal occult blood test by post with an invitation to attend for a nurse managed general practice health check is probably the recruitment method of choice for most practices. However, the improvement in compliance must be weighed against the waste of resources incurred by non-usage of kits. In a practice with high baseline attendance for health checks and a persuasive nurse the option of distributing a faecal occult blood test at the health check is a feasible alternative with the potential for achieving high compliance rates.

## References

- Office of Population Censuses and Surveys. *Mortality statistics: cause 1989. DH2(16)*. London: HMSO, 1989.
- Hardcastle JD, Thomas WM, Chamberlain J, *et al.* Randomized controlled trial of faecal occult blood screening for colorectal cancer. *Lancet* 1989; **1**: 1160-1164.
- Blalock S, De Vellis B, Sadler R. Participation in faecal occult blood screening: a critical review. *Prev Med* 1987; **16**: 9-18.
- Nichols S, Koch E, Lallemand R, *et al.* Randomized trial of compliance with screening for colorectal cancer. *BMJ* 1986; **293**: 107-110.
- Fullard E, Fowler G, Gray JAM. Facilitating prevention in primary care. *BMJ* 1984; **289**: 1585-1587.
- Waller D, Agass M, Mant D, *et al.* Health checks in general practice: another example of inverse care? *BMJ* 1990; **300**: 1115-1118.
- Cuckle H, Wald N, Butler E. Compliance with screening for colorectal cancer. *BMJ* 1986; **293**: 628.
- South-East London Screening Study Group. A controlled trial of multiphasic screening in middle-age: results of the south-east London screening study. *Int J Epidemiol* 1977; **6**: 357-363.
- Anonymous. Questions about occult blood screening for cancer [editorial]. *Lancet* 1986; **1**: 22.

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