

Colorectal cancer screening: potential pitfalls

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Abstract

The National Health and Medical Research Council has recently issued guidelines on colo-rectal cancer, and given significant support to Colorectal Cancer Screening. However, the evidence of cost-effectiveness is inconclusive according to the Cochrane Centre.

I argue that it would be wise to undertake trials that are appropriately funded. Otherwise, there is a risk that much money will be spent that cannot subsequently be justified.

The situation

The National Health and Medical Research Council (NH and MRC) has recently issued Guidelines for the prevention, early detection and management of colo-rectal cancer which give significant support to Colorectal Cancer Screening (CRC). The report outlines the evidence in favour of screening asymptomatic people aged over 50, at least each two years by examination of three serial stools for occult blood and colonoscopy for those with a positive faecal occult blood test (FOBT). Such a programme "would be expected to detect 40-80% of cancers, depending on the FOBT test used and the frequency of use" (NH & MRC 1999).

Nonetheless, the Report's recommendations do not have universal support. Among the most significant of the reservations expressed is the report of the Australasian Cochrane Centre (Towler et al 1998). This is a review of the data from four randomised controlled trials and two non-randomised trials of CRC screening involving a total of 443,000 people aged 40 or more in five countries. The authors put the data in practical terms by estimating that if 2/3 of people offered a biennial haemoccult screening programme attended for at least one haemoccult test, 8.5 (95% C.I. 3.6 - 13.5) deaths from colorectal cancer per 10,000 people offered screening would be prevented over a period of ten years. The group concluded that although benefits are likely to exceed harm for populations of high risk of CRC, more information is needed about the harmful effects, community response and the financial costs before widespread screening can be recommended.

One of the outcomes of the three major RCTs that requires explanation is the higher non-CRC mortality in those screened compared with the control group (Mandel et al 1993, Hardcastle et al 1996, Kromberg et al 1996); 198 more total deaths in the screened than in the control groups but 143 fewer deaths from CRC in those screened. There has been debate in the literature about whether these excess deaths were due to colonoscopy. Atkin (1999) and Ahlquist (1997) have drawn attention to the data from the Minnesota and Funen Studies (Mandel 1993, Kromberg 1996) which show that, compared with controls, those screened had an increase in cardio-vascular deaths of 108 patients and a deficit of 87 deaths from CRC. The difference is not statistically significant but the data from Nottingham are unpublished.

Only Robinson (1999) reviewed the mortality rate of surgery for screen-detected carcinoma. There were four deaths within 30 days of surgery in 244 patients; the mortality rate of about 1.6% for colorectal cancer surgery is remarkably low especially for as long ago as 1981-1991 as the mortality rates of colorectal cancer surgery have

been falling in the last decade. In the UK published data show a 30-day mortality rate between 1 and 8% for the surgical treatment of colorectal cancer and large adenomas (Royal College of Surgeons, 1996).

More recently Meagher (1999) has reviewed the 13 English language reports 1985 - 1999 where the results of surgery for CRC were given and where one of the variables studied was the surgeon. For the 17,979 patients it was found that different surgeons achieved significantly different results, with experienced and specialist surgeons achieving significantly better results than other surgeons in terms of anastomotic leak, mortality, local recurrence and five year survival rates. As three of the reports had mortality rates of > 7% and up to 30%, it could be argued that, to replicate the results of the large screening trials, the patients should be operated upon by trained colorectal surgeons whenever possible. It has not been possible to obtain Australian figures for elective surgery mortality for CRC.

The Nottingham data relate to a unit with a high volume of relevant surgery in a teaching hospital environment; whether these figures can be translated to Australia where there are many more surgeons, not all colorectal trained, with some doing small numbers of CRC surgery is conjectural. This is probably behind the NH and MRC suggestion that elective surgery for rectal cancer should be carried out by surgeons with special exposure to and experience of this type of surgery.

The topic of community response raised by the Cochrane Centre is largely taken up by consideration of effectiveness (what happens under trial conditions) and efficacy (what happens in the field). This is illustrated by a recent report from Sweden where breast cancer screening has been highly developed. Whereas in trials the fall in breast cancer mortality rates is about 30% (efficacy), in the field with 600,000 women screened 1986-1996 (effectiveness) the fall in mortality rate was 0.8%, with 16,000 biopsies and 4000 operations including mastectomy for false positive results (Mayor 1999). This factor of the difference between results obtained under trial conditions and in the community at large is a recognised but little appreciated entity.

The 1997 report of the Australian Health Technology Advisory Committee estimated the cost of lifetime biennial screening of adults 50-69 at \$3.09 billion in total (based on Medicare Schedule Fees) and estimated the cost per life saved as \$25,700 for annual FOBT but with wide confidence intervals (Australian Health Technology Advisory Committee 1997). This places it between \$17,000 per life saved for national mammography screening and \$37,500 for cervical cancer screening. The cost is explicable if it is recognised that the average family practitioner cares for 1143 people (Duckett 1999) of whom 215 are 50-69 years old (personal communication, Commonwealth Bureau of Statistics). If these are diligently screened, then in ten years five such practices will collectively prevent 1.075 CRC deaths (Australian Health Technology Advisory Committee 1997).

Some implications

What are the implications? First, it would be unfortunate if the same fate befell CRC screening as that of laparoscopic cholecystectomy where, because of the absence of planning by surgical organisations, we now have no possibility of ever adequately comparing laparoscopic with standard cholecystectomy. It is hard to disagree with the AHTAC recommendation that, given the uncertainties, a CRC screening programme should begin with a number of pilot and feasibility studies which would investigate factors such as cost effectiveness, compliance rates, safety, upper age limit for screening and methodology of FOBT with steering group(s) to oversee aspects such as planning, development, developments elsewhere and outcome of pilot(s).

Second, there is a place for considering the role of the Medicare schedule. Nominally, benefits are not paid for screening procedures; should benefits be paid for ad hoc FOBT and the associated interventions?

If pilots are instituted how are they to be funded; does Medicare break new ground underwriting what is in effect a large investigative project? In any case, how are the associated costs of large pilot studies, clerical, ancillary and information management to be funded, even if insurance funds and Medicare pay for the direct medical and hospital costs? More importantly, without some central data collection and evaluation how will the benefits and costs of FOBT screening ever be determined?

Given the epidemiological, ethical, commercial and political complexities, there seem to be two choices. The first is to let the problem evolve and several billion dollars later we won't know what was gained or lost. The second is for Federal Department of Health and Aged Services not only to fund pilot studies, as apparently planned, but also to call for tenders and fund multiple properly controlled and planned studies over a time scale of several years to provide answers to the above issues rather than political solutions.

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