

Colorectal cancer prevention

It is crucial to identify the precursor adenoma — the only meaningful way of achieving this is by colonoscopy

THE BIOLOGY OF COLORECTAL CANCER provides an important opportunity for cancer prevention, as most cancers in the lower bowel evolve from polyps (adenomas). Removal of adenomas markedly reduces the subsequent risk of disease. Consequently, the rational aim of any prevention program should be not only to detect early cancer but also the precursor adenoma. The strategies to reduce mortality include:

- investigation of high-risk symptoms such as rectal bleeding — often by colonoscopy;
- colonoscopic surveillance for those with a personal or family history of colorectal cancer or polyps; and
- screening, beginning at age 50 years, of individuals of average risk, who account for 85% of sporadic cancers.

The practice of colorectal cancer prevention in Australia has been largely influenced by recent National Health and Medical Research Council (NHMRC) guidelines. An attempt to finalise these guidelines began in 1997 and their slow gestation may have rendered them insensitive to more recent data and not typical of practice worldwide. Three of the major NHMRC recommendations remain controversial.

Patients with a single first-degree relative with colorectal cancer diagnosed over the age of 55 do not have a sufficiently increased risk to warrant colonoscopic surveillance.

The NHMRC guidelines quote a twofold increase in risk in this group. A recent analysis of 27 case-control and cohort studies indicates that the relative risk is 2.25 and that this risk doubles with more than one relative affected.² We believe that a doubling of lifetime expected risk of colorectal cancer in men from 1 in 18 to 1 in 9 (only slightly lower in women) is sufficient to advocate colonoscopic surveillance on a five-yearly basis starting at the age of 40, irrespective of the age of the relative.

Patients with a single adenoma < 1 cm in size not showing any villous component need colonoscopic follow-up only at 4–6-yearly intervals.

This recommendation is mainly based on the US National Polyp Study.³ It is difficult to reconcile these data with other reports. For example, Rex et al³ showed “miss-rates” of 5% for colorectal cancer, and polyp “miss-rates” ranging from 6% to 15%, even in experienced hands. Therefore, there needs to be considerable flexibility in planning postpolypectomy surveillance.

Two articles in this issue of the Journal, by Yusoff et al (page 151)⁵ and Bampton et al (page 155),⁶ have used strict application of NHMRC guidelines in a public hospital setting in an attempt to reduce the number of patients undergoing colonoscopic surveillance, and, in particular, to increase the follow-up intervals after polyp removal. These authors are to be commended for attempting to improve the efficiency of scarce resources. However, a decrease in the

number of colonoscopies performed is not necessarily a desirable endpoint if it results in decreased detection (and removal) of polyps or cancers.

Individuals deemed to be of average risk should be offered only faecal occult blood testing (FOBT) annually and sigmoidoscopy may be “considered” five-yearly after the age of 50 years.

It is puzzling that the introduction of any population-screening program for colorectal cancer in Australia is to be effectively delayed for five years until the completion of three pilot studies of FOBT. These will clarify issues of implementation and compliance, without focusing on the more urgent aim of reducing colorectal cancer mortality. Mandel et al⁷ showed nearly a decade ago that annual FOBT (using hydrated Hemoccult) reduces mortality by 33%. That success rate has been confirmed by other large clinical trials in the United Kingdom⁸ and Scandinavia,⁹ although the best possible reduction in mortality using FOBT is unlikely to exceed 40%.

Recently, Lieberman and Weiss¹⁰ also questioned the combination of FOBT and flexible sigmoidoscopy, and estimated that this approach would miss 24% of advanced neoplasia in the right colon — an unacceptably high “miss-rate” in terms of prevention. Finally, of continuing concern to any screening program is that 8% of colorectal cancers occur in those under 50 years of age. Should this group be considered in the future?

If health authorities are serious about colorectal cancer prevention, it is crucial to identify the precursor adenoma. The US National Polyp Study³ has estimated a potential to reduce mortality by 90% with adenoma removal. The only meaningful way of achieving this is by colonoscopy. Why is this concept not being embraced?

The arguments against colonoscopy have been its cost, the risks involved, resource availability and compliance.

- A cost-benefit model by Bolin et al,¹¹ using accurate Australian data, has placed the cost effectiveness of 5–10-yearly colonoscopy at about the same level as annual FOBT. Although the initial cost may be high, the benefit is greater.

- Risk has been generally overestimated by the failure to distinguish between diagnostic and therapeutic colonoscopy, as the risks of perforation and bleeding increase when therapeutic polypectomy is undertaken (but are justified by the fact that a disease process is being treated). Rex and Lieberman recently emphasised the safety profile of colonoscopy, with no perforation reported in the first 6000 screening examinations.¹²

- The objection that colonoscopy-screening examinations will overwhelm existing medical services also appears groundless. We estimate that colonoscopic screening in the Australian population over the age of 50 on a 10-yearly basis would result in an increase of only two to three colonoscopies per week for each certified colonoscopist.

■ The issue of compliance is also crucial to the effectiveness of any screening program, and almost all FOBT programs highlight a rapid diminution in participation after the first year, rendering it no more likely than colonoscopy to achieve good compliance. At least, the latter has the virtue of not needing to be repeated more than every 5–10 years, and we are still exploring the concept of a once-only screening colonoscopy.

In the future, it is possible that improved accuracy of virtual colonoscopy (either by magnetic resonance imaging or computed tomography scanning) will make this modality a serious contender for a screening role. At present, its accuracy is insufficient.

The 5-year mortality rate from colorectal cancer in Australia remains high at around 40% in both men and women. A reduction in mortality can be achieved by a variety of measures, including the prompt investigation of rectal bleeding; and colonoscopic surveillance from age 40 of all individuals with a first-degree relative diagnosed with colorectal cancer or polyps. For individuals at average risk, a menu of screening options, beginning at age 50 years, should be available. The menu would include annual FOBT with 5-yearly flexible sigmoidoscopy or 5–10-yearly colonoscopy. The accuracy, limitations and risks of these tests should be the focus of discussions with a doctor, and the choice then made by the individual, rather than by authoritarian prescription.

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