THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

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Vol 120 No 1258 ISSN 1175 8716

This Issue in the Journal

A survey of colonoscopy capacity in New Zealand's public hospitals
Andrew Yeoman, Susan Parry

Population screening for bowel cancer is not currently recommended New Zealand (NZ) but is under review. Any tests used to screen for bowel cancer will increase demand for colonoscopy, the 'gold standard' procedure to investigate the large bowel. Consequently it is important to determine the current level of colonoscopy provision for the standard indications. This survey identifies a significant gap between demand and provision of colonoscopy in NZ's public hospitals. This should be addressed with some urgency to ensure people with symptoms of possible bowel cancer and people at increased risk of developing bowel cancer can receive a procedure within the recommended time frame. If population screening for bowel cancer was introduced in NZ, a further significant increase in colonoscopy capacity would be required to ensure waiting times for symptomatic patients did not increase.

Prioritization of patients with rectal bleeding for urgent outpatient colonoscopy—a pilot study
Akanksha Bhargava, Ali Aldameh, Joanna Stewart, Andrew G Hill

We have taken a group of patients presenting to the outpatients with rectal bleeding. We asked them to fill in a form which we used to identify patients at high risk of large bowel polyps or cancer. From this pilot study we have shown the potential for GPs and their patients to fill in such a form prior to being seen in the clinic—which may allow hospital specialists to prioritise patients for colonoscopy.

Chemotherapy prescription patterns in colon cancer: a patterns-of-care survey in New Zealand
Ziad S Thotathil, Jeremy E Long, Ian Kennedy, Michael B Jameson, Jacqui Adams, Marion Kuper

This paper describes the results of a survey conducted by distributing a questionnaire to medical oncologists practicing in NZ at the time of the study (2006). The aim of the study was to document variations in treatment, if any, for patients with colon cancer around the country. The results indicate that although there are slight differences, treatment offered to colon cancer patients are generally in line with international recommendations.

Perceptions of New Zealand adults about reducing their risk of getting cancer
Judy Trevena, Anthony Reeder

This representative survey of New Zealand adults indicates that most are aware that there are things which people can do to reduce their risk of cancer, with a high level of awareness of the cancer risks associated with tobacco smoking and excessive sun exposure, particularly sunburn. Many people are aware that healthy nutrition and physical activity have the potential to reduce cancer risk, but more promotion is needed for specific messages, such as the benefits of eating more fruit and vegetables, less fatty foods, drinking less alcohol, and becoming more physically active.

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Colorectal cancer in New Zealand

Frank A Frizelle

Colorectal cancer (CRC) is the second most common cause of cancer death. It is a major health problem in New Zealand where 2624 new cases of CRC were registered in 2001 (up from 2554 in 1999), with an age-standardised rate of 43.7 per 100,000. In recent years there has been little improvement in survival—the mortality in New Zealand has been relatively constant at 18.6 per 100,000 (http://www.nzhis.govt.nz/stats/cancerstats.html).

This issue of the *Journal* explores some issues that are relevant to colorectal cancer in New Zealand. The aspects of care where improvements might lead to better results are earlier detection, maximising perioperative, surgical management, and better adjunctive therapy. Two (early detection and chemotherapy practices) are explored here.

A recent *Cochrane Review*[1] summarised the data on colorectal screening as:

> Benefits of screening include a modest reduction in colorectal cancer mortality, a possible reduction in cancer incidence through the detection and removal of colorectal adenomas, and potentially, the less invasive surgery that earlier treatment of colorectal cancers may involve. Harmful effects of screening include the psycho-social consequences of receiving a false-positive result, the potentially significant complications of colonoscopy or a false-negative result, the possibility of over diagnosis (leading to unnecessary investigations or treatment) and the complications associated with treatment

Not surprisingly, *BMJ Clinical Evidence* found similar results (http://www.clinicalevidence.com/ceweb/conditions/dsd/0414/0414.jsp), which are summarised in the following table.

Effectiveness	Procedure
Beneficial	Faecal occult blood test [FOBT] (annual or biennial testing, followed by further investigation if positive)
Likely to be beneficial	Flexible sigmoidoscopy (single test, followed by colonoscopy if positive)
Unknown effectiveness	Colonoscopy Combination of faecal occult blood test plus flexible sigmoidoscopy Computed tomography colonography Double contrast barium enema

The Australian HMRC guidelines (http://www.nhmrc.gov.au/publications/synopses/cp106/_files/cp106.pdf), on management of colorectal cancer, support population CRC screening. This report

states that there is Level 1 evidence in favour of screening and strongly recommended organised screening with FOBT (performed at least once every 2 years) for the Australian population over 50 years of age.

In common with the three studies above, the systematic review in this issue of the *Journal* by Kerr et al[2] entitled *Effectiveness of population screening for colorectal cancer* finds (not surprisingly) the same result—i.e. high-quality evidence showing that guaiac-based FOBT screening reduces mortality from CRC. However no such evidence exists for screening with flexible sigmoidoscopy either alone, or in combination with FOBT, although this should be re-evaluated once data become available from four large ongoing trials

Yet New Zealand, unlike Australia and the United Kingdom, has not started screening for CRC. The article by Parry et al,[3] in this issue of the *Journal*, entitled *Prospects for population colorectal cancer screening in New Zealand*, is based the report published in November 2006 entitled *Report of the Colorectal Cancer Screening Advisory Group* (http://www.moh.govt.nz/moh.nsf/pagesmh/5464?Open); it is the third publicly funded report on CRC screening published in the last 10 years in New Zealand.

The 1998 report into population screening

The first New Zealand report (http://www.nzgg.org.nz/guidelines/0046/colorectal_cancer_full.pdf), published in 1998, stated that the benefit of CRC screening was likely to be similar to breast screening, however there were significant differences in regard to the screening tools. Resources (access to colonoscopy) was identified as a major issue, and the report suggested providing more colonoscopy services in the public sector.

The summary of the earlier report states:

- Given the modest potential benefit, the considerable commitment of health sector resources, and the small but real potential for harm, population-based screening for colorectal cancer with faecal occult blood tests is not recommended in New Zealand.
- Population-based screening for colorectal cancer with other modalities, such as flexible sigmoidoscopy, colonoscopy or double-contract barium enema, is also not recommended as there is not yet evidence from randomised controlled trials that screening with any of these modalities reduces colorectal cancer mortality.
- These decisions should be reviewed as evidence of benefit from new faecal occult blood tests and other screening modalities becomes available.
- Colorectal cancer is recognised as an important cause of morbidity and mortality and it is recommended that New Zealand participate in international research in this area.
- Wider consultation and further consideration should be undertaken to develop appropriate advice on surveillance recommendations for groups identified to be at increased risk of colorectal cancer

The 2004 report into high-risk groups

A further report into high-risk patients was issued in *Guidelines on surveillance and management of groups at increased risk of colorectal cancer* (New Zealand Guidelines Group 2004; http://www.nsu.govt.nz/Files/surveillance_managment_CC.pdf)—the key messages from this were:

- The risk of developing colorectal cancer (CRC) for the average New Zealander is 0.6% by the age of 55 years and 5.6% by the age of 75 years.
- Individuals with a personal history of CRC, colorectal adenomas, and inflammatory bowel disease are at increased risk of developing CRC.
- A family history of CRC may increase an individual's lifetime risk of developing this disease.
- The number of affected first-degree relatives and the age at which they were diagnosed with CRC determine this risk.
- Offer colonoscopy every 5 years from the age of 50 years (or from an age 10 years before the earliest age at which CRC was diagnosed in the family, whichever comes first) to individuals at moderately increased risk of developing CRC on the basis of a family history of CRC.
- Individuals with a moderate increase in risk are those with:

  - one first-degree relative with CRC diagnosed before the age of 55 years,

  OR

  - two first-degree relatives on the same side of the family with CRC diagnosed at any age.
- Individuals offered colonoscopy should be informed that it is an invasive procedure and generally safe, but is not totally without risk.
- Where an inherited bowel cancer syndrome is suspected (high-risk individuals), refer to a genetic specialist, family cancer clinic, or familial bowel cancer registry and a bowel cancer specialist to plan appropriate surveillance and management.
- Individuals or families with hereditary CRC syndromes should be offered referral to a familial bowel cancer registry.
- Individuals who have undergone resection of CRC with curative intent should have specialist follow-up over the time period in which the majority of cancer recurrences occur. Individuals free of recurrent CRC for 3 to 5 years should be referred for regular colonoscopy surveillance.
- Individuals who have had high-risk colorectal adenomas identified require continued colonoscopic surveillance. This group includes those initially identified with multiple (>3), large (>10 mm), severely dysplastic or villous adenomas and those with a significant family history of CRC.

- Individuals with longstanding (8–10 years duration) extensive inflammatory bowel disease should be referred for regular colonoscopic surveillance.
- Surveillance colonoscopy should be performed in well individuals by experienced operators with acceptable completion rates to the caecum.

However, in this issue of the *Journal*, Yeoman and Parry[4] report that (despite considerable increase in numbers of colonoscopy in the last few years) at present not all public hospitals are able to offer colonoscopy for these indications—particularly for individuals assessed to have a moderate increase in their lifetime risk of developing CRC on the basis of a their family history of CRC.

Indeed, surveillance colonoscopy for this category is currently only offered by 50% of large centres and 65% of small centres in New Zealand.

The 2006 report

The most recent report (*Report of the Colorectal Cancer Screening Advisory Group* (http://www.moh.govt.nz/moh.nsf/pagesmh/5464?Open) concludes that compared with existing screening programmes, FOBTg CRC screening appears to be cost-effective; however, the benefits are modest (at best).

Other screening modalities (flexible sigmoidoscopy, colonoscopy, and FOBTi) are expected to bring greater benefits, but supporting RCT evidence is not yet available. They are also more expensive, particularly with regard to set-up costs.

If evidence of greater benefit becomes available, then these higher-cost options may in the end represent the best course of action. Evidence of cost-effectiveness of FOBTg is based on overseas populations. CRC incidence is higher in New Zealand and test positivity is unknown—consequently both costs and benefits may differ.

The New Zealand screening environment

The previous public concerns regarding cervical and breast cancer screening in New Zealand especially false negative screening which makes New Zealand a special environment for the introduction of screening in any sort.

In Australia, where CRC screening has started. Access to publicly funded colonoscopy however, has become a significant problem. Patients identified with abnormal screening tests are largely left to be referred either publicly or privately (depending on resources) and this has caused a major problem with public colonoscopy waiting-times.[4]

Symptomatic disease

Other articles in this issue of the *Journal* look at symptomatic disease:

Bhargava et al[5] in *Prioritization of patients with rectal bleeding for urgent outpatient colonoscopy* give some idea who should be prioritised for colonoscopy, however it is a small study and the results need to be interrupted with an understanding about how often is it acceptable to miss or delay the diagnosis of a CRC.

Thotathil et al[6] in *Chemotherapy prescription patterns in colon cancer: a patterns-of-care survey in New Zealand* survey chemotherapy practices in New Zealand and report that chemotherapy prescriptions for patients with colon cancer in

New Zealand—although not uniform—are mostly in line with international recommendations.

Although surgery is often audited and outcomes from CRC are often related to various surgical practices, audited measurers of quality of oncological practices, have lagged behind. Hopefully in the future we may see more New Zealand audit data on oncological practice related to quality of practice and not just describing what is done.

Conclusion

CRC continues to be a major health issue in New Zealand. Despite the development of specialised colorectal units and multidisciplinary treatment, progress has been slow. Continued gains in many areas such as multidisciplinary management, and regional organisational arrangement (the hub and spoke model),[7] will most likely produce better results.

Currently the most significant reduction in colorectal mortality is likely to come from CRC screening. Progress on CRC screening in New Zealand has been incredible slow. The recent Health Research Council decision to fund a study to model the effect of screening on colonoscopy services may help define the resource issue in regard to colonoscopy access.

With the findings of so many international groups in support of CRC screening, it is difficult to believe that New Zealand is that different. Suggestions that CRC screening should wait for better screening test may be futile as this will be a constantly developing field and improvements are invariable in screening as such they can be incorporated as their place becomes established.

As such, it is difficult to see any significant issue, other the under-resourcing of colonoscopy, as a reason not to progress CRC screening.

Competing interests: None.

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THE NEW ZEALAND MEDICAL JOURNAL
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A survey of colonoscopy capacity in New Zealand's public hospitals

Andrew Yeoman, Susan Parry

Abstract

Aims Population screening for colorectal cancer (CRC) in New Zealand is under review and would increase demand for colonoscopy.

This National Screening Unit commissioned survey aimed to determine the current level of colonoscopy provision in New Zealand's public hospitals, the gap in demand and provision for diagnostic and surveillance procedures, and factors limiting colonoscopy capacity.

Method A survey, based on the United States SECAP study, was posted to all public endoscopy units within New Zealand in April 2005.

Results The overall survey response rate was 86% (24/28) . Only 3 of 7 large centres, and 11 of 17 small centres, are able to offer a diagnostic colonoscopy to patients with symptoms suggestive of CRC within 3 months of referral—and at the time of the survey, 828 patients had been waiting greater than 6 months. The majority (85%) of public hospitals offer surveillance colonoscopy for most indications, and at the time of the survey, 2550 patients had been waiting greater than 6 months. Availability of endoscopy nurses and endoscopists are the main factors limiting colonoscopy provision.

Conclusion In New Zealand's public hospitals a significant gap exists between colonoscopy demand and provision. Population screening for CRC would require a significant increase in colonoscopy capacity to ensure waiting times for symptomatic patients do not increase.

New Zealand (NZ) has one of the highest rates of colorectal cancer (CRC) in the world,[1] and within NZ it is the second most common cause of cancer registration and cancer death.[2] In 2002 there were 2588 registrations of colorectal cancer and 1135 deaths from this disease. A person living in NZ has a 5.9% lifetime risk of developing colorectal cancer by the age of 75 years.[3]

Although nationally funded population screening programmes are already in place for cervical cancer and breast cancer in New Zealand, screening for CRC is not recommended although this decision is currently being reviewed.

Three randomised controlled trials (Funen[4], Nottingham,[5] and Minnesota[6]) have provided evidence that screening with Faecal Occult Blood Testing (FOBT) can reduce mortality from CRC. Two of these trials (Funen[4] and Nottingham[5]) were population-based and offered biennial guaiac FOBT to individuals aged between 50–74 years in the Nottingham, England study and 45–75 years in the Funen, Denmark study respectively.

A meta-analysis of the trial mortality data reported in 1996 revealed a 16% mortality reduction in CRC mortality in the population offered screening over an 8–10 year period.[7] In response to this evidence, the National Health Committee convened a working party in 1998 to review the evidence for benefits and risks from the introduction of population screening for CRC in addition to identifying the economic and resource implications of introducing such a programme.[8]

A decision was made not to recommend population-based screening for CRC with FOBT because of the modest potential for benefit, the considerable commitment of health sector resources and the small but real potential for harm. The resource implications for colonoscopy were particularly sizable requiring a 33–40% increase in the total number of colonoscopies being performed in the NZ public health sector. However, the working party report did recommend that surveillance recommendations for groups identified to be at increased risk of CRC be developed. Guidelines for the Surveillance and Management of Groups at Increased Risk of CRC [9] were subsequently released in May 2004.

With completion and availability of final reports for the United Kingdom and Australian FOBT pilot studies of screening for CRC, and in the context of other changes since publication of the initial NHC working party, the National Screening Unit convened an expert Advisory Group to provide the National Screening Unit with strategic advice and recommendations on the appropriateness and feasibility of a population colorectal cancer screening programme in New Zealand.[10] However the introduction of population screening for CRC would increase the demand for colonoscopy.

An assessment of colonoscopy capacity in New Zealand's public hospitals was therefore appropriate. This would determine not only the volumes currently being delivered but identify any gap between demand and provision for both diagnostic colonoscopy, particularly for those with a possible diagnosis of CRC, and surveillance colonoscopy for those at increased risk of developing CRC as recommended in the guidelines published in 2004. These procedures also need to be offered within an appropriate timeframe.

For patients with symptoms suggestive of CRC (rectal bleeding, altered bowel habit) but without alarm symptoms (weight loss, anaemia, or abdominal mass) the National Endoscopy Referral Guidelines[11] recommend a wait of up to 8 weeks. Any review of colonoscopy capacity needs to assess the waiting-time for patients from the time of referral.

If colonoscopy capacity should prove to be constrained and there was a need to increase capacity to meet current demands as well as new demands from population screening for CRC if introduced, factors currently limiting provision of colonoscopy need to be identified.

Quality assurance for interventional procedures such as colonoscopy which can be associated with significant adverse events is increasingly being accepted as the norm.[12,13] This would be fundamental for any CRC screening programme where asymptomatic "well" individuals who may not have CRC will be offered a colonoscopy as the follow-up investigation for a positive FOBT. However the extent to which this is practised in New Zealand's endoscopy units remains to be established as does the number of units offering training in colonoscopy.

If an increase in the available training positions/centres were to planned in the future, the speciality of those consultants currently performing colonoscopy would need to be identified to inform strategies to facilitate this. Currently endoscopy training is not nationally standardised although an endoscopy course has recently been established.[14]

The primary focus of this survey was colonoscopy capacity within New Zealand's public hospitals.

Method

This survey was based on the National USA Survey of Endoscopic Capacity (SECAP) questionnaire commissioned by the Center for Disease Control (CDC) and undertaken by Seeff LC et al.[15]

Permission was obtained from the authors of this questionnaire (Personal Communication, Laura Seeff, 2005) to utilise the published framework and appropriate modifications were made to reflect local practices and infrastructures.

Extensive consultation was undertaken including the Executive of the New Zealand Gastroenterology Society and the National Screening Unit (NSU) Colorectal Cancer Screening Advisory Group. This consultation process led to a revised questionnaire which was piloted among the three district health boards (DHBs) within the Auckland metropolitan area.

The final survey questionnaire, incorporating changes stemming from the consultation process and the pilot survey, posed 39 questions. The survey was dispatched with postage-paid envelopes in April 2005 to all public endoscopy units identified as performing colonoscopy within New Zealand. If no reply was received within 6 weeks, a follow-up letter was sent. No financial incentive was offered for completion of the survey.

The final survey was sent to 28 public hospital endoscopy units performing colonoscopy. Responses were analysed with stratification according to whether being large or small public hospital centres. Large hospital endoscopy centres were defined as those serving the 5 largest population centres within New Zealand: Auckland, Hamilton, Wellington, Christchurch, and Dunedin. These cities cover 52% of the New Zealand population, based on data published in the 2001 census.[16]

The major outcome measures are outlined as follows:

- The annual number of colonoscopies performed, incorporating:
  - Actual numbers
  - Target number
- The number and specialty of colonoscopists providing the service
- Waiting times for colonoscopy in:
  - Symptomatic patients > 50 yrs with possible CRC
  - Those undergoing surveillance
- Factors identified as limiting current colonoscopy capacity
  - Lack of nursing staff and/or colonoscopists
  - Number of unutilised sessions nationally per week
  - Number of extra staff needed to maximise capacity
- Potential to increase capacity
  - The maximum numbers of colonoscopies within individual centres
  - Use of "out of hours" sessions
  - The utility of flexible sigmoidoscopy as a dedicated service
  - The use of non medical endoscopists
- Quality Assurance measures
  - Caecal Intubation rates
  - Routine use of audit
  - Training of endoscopists

Results

The response rate was 100% for large public centres (7/7) and 81% (17/21) for small centres providing an aggregate public system response rate of 86% (24/28) which compares favourably with the SECAP study response rate of 70%.[15]

Additionally, the four non-responding centres were small, representing approximately 7% of the total New Zealand population.

Colonoscopy volumes

In the year preceding the survey the responding public hospitals reported that 18139 colonoscopies had been performed (9486 in large centres and 8653 in small centres). This figure is 20% greater than the 15,075 procedures which was the collective target volume of the respective DHBs

Comparison of current yearly colonoscopy volumes with that collected in 1997 for New Zealand's four main population centres (Auckland, Wellington, Christchurch, and Dunedin) demonstrates a 92% increase in provision from 4286 to 8222 procedures per year.[17]

Provision of colonoscopy by speciality

Among responding public centres 121 consultant colonoscopists are employed comprising (by specialty): 59 (48%) gastroenterologists; 48 (40%) general surgeons; and 14 (12%) colorectal surgeons.

There is then an almost equal split between physician and surgical colonoscopists in the provision of the service, but the majority of procedures in large centres are performed by gastroenterologists and conversely in the smaller centres by surgeons.

Waiting times for colonoscopy

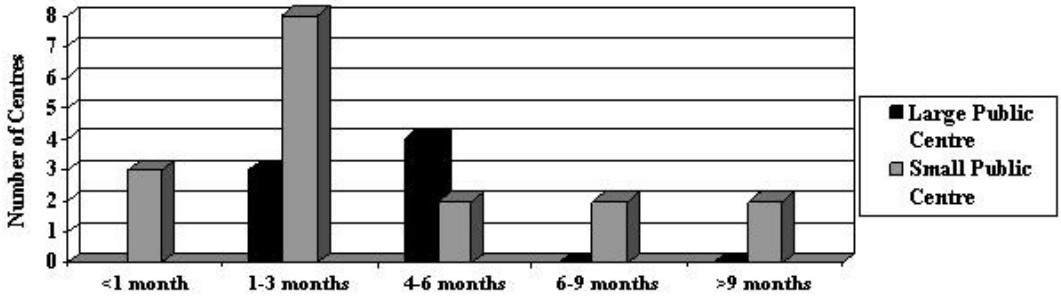
Symptoms suggestive of CRC—Waiting times for colonoscopy depend on the clinical indication for the procedure.

For patients with symptoms suggestive of CRC, the National Endoscopy Referral Guidelines[11] recommend a wait of up to 8 weeks.

Currently 60% of large public centres are unable to provide this service within 3 months compared with 35% for small public centres.

The responding public hospital endoscopy units reported 828 patients (798 collected data, 30 estimated data) aged over 50 years with symptoms suggestive of colorectal cancer to have been waiting > 6 months for a diagnostic colonoscopy at the time of the survey. This figure represents 5% of the total number of colonoscopies performed in the responding hospitals per annum. See Figure 1.

Figure 1. Average wait for colonoscopy in symptomatic patients



Surveillance colonoscopy for individuals at increased risk of CRC—The New Zealand Guidelines for those at increased risk of developing CRC advise surveillance colonoscopy for certain risk groups.[9] At present not all public hospitals are able to offer this, particularly for individuals assessed to have a moderate increase in their lifetime risk of developing CRC on the basis of a their family history of CRC. Surveillance colonoscopy for this category is currently only offered by 50% of large centres and 65% of small centres.

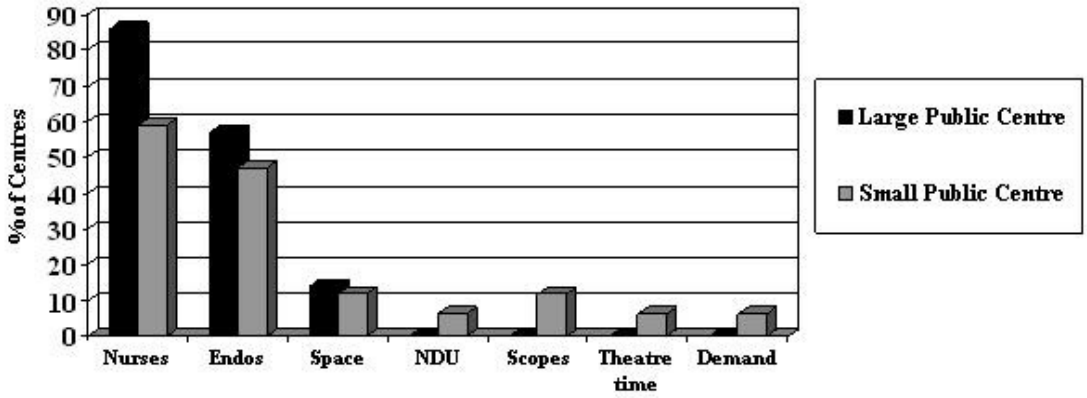
In addition in large centres less than 20% of patients are offered a surveillance procedure within 6 months of the time of referral /due repeat date compared with 80% of patients in small centres. Overall, at the time of the survey, responding public hospitals report 1550 patients to be waiting for a surveillance colonoscopy with another 1000 patients estimated to still be waiting for their procedure 6 months from the time of referral. This figure represents 14% of the total number of colonoscopies performed in the responding hospitals per annum.

Factors identified to limit provision of colonoscopy

A shortage of trained endoscopy nursing staff (85% large centres 59% small centres) and non-availability of endoscopists to perform procedures in free endoscopy unit sessions (56% for large centres and 46% for small centres) are the major factors currently limiting colonoscopy capacity in the public system. Lack of space or equipment play only a minor role in limiting current colonoscopy capacity amongst responding centres.

As a consequence of these deficiencies there are a maximum of 94.5 unutilised half days every week in the public hospital system. See Figure 2.

Figure 2. Factors limiting provision of colonoscopy



Flexible sigmoidoscopy—Flexible sigmoidoscopy has been proposed as a screening test for colorectal cancer, with publication of the baseline findings of the UK and Italy multicentre randomised trial of a single flexible sigmoidoscopy screening to prevent CRC.[18,19]

In New Zealand, flexible sigmoidoscopy is usually used as a follow-up procedure to assess the site of previously removed distal colonic lesions or as a primary investigation in selected cases attending rectal bleeding clinics. At present, the majority of centres do not utilise flexible sigmoidoscopy, with only 3/24 (13%) of responding public units undertaking flexible sigmoidoscopy as a dedicated procedure (i.e. using a flexible sigmoidoscope and not a colonoscope to examine the colon).

In addition the three public units utilising flexible sigmoidoscopy report a combined total of only approximately 600 procedures per year in comparison to 2800 colonoscopies in the same units.

Non-medical endoscopists—Nurse endoscopists have been utilised in other countries to combat the ever-increasing demands on endoscopy services. There are now over 200 employed with the United Kingdom and they have been found to be competent and their role is acceptable to patients.[20,21]

Currently no endoscopy unit in New Zealand employs non-medical endoscopists; only 25% of public centres are willing to do so. Furthermore only two large centres would be willing to employ or train non-physicians to perform colonoscopy or flexible sigmoidoscopy.

Quality assurance in colonoscopy

Quality in the provision of colonoscopy is essential[13] and is of particular importance in the context of CRC screening as procedures are performed in otherwise well individuals.

One outcome measure used to assess quality in the provision of colonoscopy is the frequency with which the endoscopist examines the entire colon as determined by the percentage of cases in which the caecum is documented to have been reached. It is recommended that independent practitioners are able to reach the caecum in 90–95%

of cases.[12] This figure, whilst not a guarantee of quality, is frequently used as a measure of basic competence in the practice of colonoscopy.

At present 10/24 (42%) of public centres report an overall caecal intubation rate of less than 95%. However, the reported figures do not assess the potential impact of trainee colonoscopists for these 10 centres.

Quality assurance in colonoscopy requires organisations and senior medical officers to accept that audit of colonoscopy performance, with feedback, is essential.

Morbidity and mortality occurring as a consequence of colonoscopy is clearly an important component of monitoring quality but at least 50% of public hospital centres do not document this and patient discomfort during colonoscopy is monitored by only a third of units.

Training

There are 49 trainee colonoscopists in public centres comprising by specialty, 11 in gastroenterology, 33 in general surgery, and 5 in colorectal surgery. Large endoscopy units account for all gastroenterology and colorectal surgical trainees, while only general surgery trainees exist in small centres. All respondents state that trainees receive formal training in colonoscopy however no further information is available on what constitutes "training".

Conclusion

Despite an almost 92% increase in colonoscopy volumes for the four large main centres over an 8-year period (1997-2005) in New Zealand's public hospitals, a significant gap exists between the demand and provision of both diagnostic colonoscopy for patients with symptoms suggestive of CRC and surveillance procedures for individuals with an increased risk of developing CRC.

In the year preceding the survey the responding public hospitals reported that 18,139 colonoscopies had been performed. Although this number is 20% greater than the collective annual DHB target of 15,075 procedures, at the time of the survey responding public centres reported over 800 patients waiting more than 6 months for a diagnostic colonoscopy to exclude a diagnosis of CRC and 2500 waiting over 6 months from the time of referral or due repeat date for a surveillance procedure.

The total number of patients reported to be waiting for a colonoscopy (3300) equates to 18% of the reported total number of procedures performed each year. Gaps in colonoscopy provision are more apparent in the large centre public hospital endoscopy units.

Interestingly colonoscopy is largely performed by gastroenterologists in the large centres and by surgeons in the small centres. This has significant implications for the provision of standardised endoscopy training and education to ensure quality assurance with regards to the performance of endoscopic procedures is accepted and practised in all NZ endoscopy units.

The chief factors limiting colonoscopy capacity for both large and small centres are lack of endoscopy nursing staff and available endoscopists. As a consequence of these deficiencies there are a maximum of 94.5 unutilised half days every week in the public hospital system.

To fully utilise this unused capacity responding large public centres report a need for an average of 2.6 full time equivalent (FTE) nurses and 1.2 FTE endoscopists. For small public centres this was reported as an average of 2.1 FTE nurses and 0.75 endoscopists. Full utilisation would result in the provision of 27,400 colonoscopies each year in the public hospital an estimated 51% increase in colonoscopy capacity.

The utilisation of evening and weekend sessions is another potential option for increasing colonoscopy capacity, and although no public centres currently run a regular "out of hours" service for non urgent colonoscopy, 57% of large centres and 35% of small centres would be willing to consider this if there was a significant increase in demand for colonoscopy.

If population screening for CRC using one-off flexible sigmoidoscopy was being considered significant investment and training would be required as currently the majority of endoscopy centres in NZ do not utilise FS as a dedicated procedure.

If utilisation of nurse endoscopists were to be considered to increase the availability endoscopists , currently a factor limiting colonoscopy capacity in most public hospital endoscopy units, considerable education, promotion, and support would be required as only 25% of public units and none of the private units surveyed were willing to employ or train non-physician endoscopists to perform either FS or colonoscopy.

If population screening for CRC using FOBT were to be implemented in New Zealand the additional colonoscopy demand, as calculated for the NZ population in 1996, of 3300 to 4000 colonoscopies would still require a significant increase in colonoscopy resource being the equivalent of 22% of the reported total number of procedures performed annually.

Additional capacity beyond this would be required to ensure that waiting times for both diagnostic procedures in symptomatic patients and surveillance procedures in those at increased risk of CRC did not increase further and preferably were consistently offered within the appropriately recommended timeframes.

Competing interests: The survey was commissioned by the National Screening Unit (NSU) but conducted and reported independently. Dr Susan Parry chaired the NSU-convened Advisory Group on Population Screening for Colorectal Cancer.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Prioritisation of patients with rectal bleeding for urgent outpatient colonoscopy—a pilot study

Akanksha Bhargava, Ali Aldameh, Joanna Stewart, Andrew G Hill

Abstract

Aim Rectal bleeding is a common symptom in general practice and may be associated with colorectal neoplasia. Waiting-lists for outpatient colonoscopies and first specialist appointments are long. The aim of our study was to determine the value of presenting signs and symptoms in prioritising patients with rectal bleeding for urgent colonoscopy.

Method Patients were asked to fill out a 'Bowel symptoms Assessment Questionnaire' at their first visit to a Colorectal Clinic. Patients were then assessed by clinicians who referred them for further investigations as appropriate.

Factors from the questionnaire (e.g. age, family history, perianal symptoms, and so on) were analysed to assess correlation with colorectal cancer or neoplasia. These were analysed using logistic regression, SPSS Answertree and 2×2 tables.

Results 105 patients completed the questionnaire. Thirty patients had colonoscopy/barium enema. Fifteen patients had colorectal cancer (CRC) or neoplasia detected. There was a significant increase in risk of developing CRC or neoplasia in patients above the age of 67 or if they had a positive family history of CRC or neoplasia.

Conclusion We conclude that patients with rectal bleeding, above the age of 67 or those with a positive family history are at a higher risk of neoplasia and should receive priority access to colonoscopy prior to first specialist assessment.

Rectal bleeding is a common referral to the surgical outpatient clinic and is also a common presenting symptom for colorectal neoplasia. Amongst all malignant disorders, colorectal cancer (CRC) is the second most common cause of mortality in both males and females in New Zealand. There were nearly 2500 cases of CRC reported in New Zealand in 2000.[1]

Studies have reported delays ranging from 3–26 months in diagnosis and treatment of CRC (onset of symptoms to treatment).[2–7] These delays can be due to patient factors (delay in seeking treatment), General practitioner factors (delay in identifying patients' symptoms and referral) and hospital factors (delay in first specialist assessment at the surgical outpatient clinic [FSA], delay in getting colonoscopy/barium enema/colonography done, delay in returning to see specialist).[4]

To date, there has been no reliable method to prioritise the population of patients referred to the surgical outpatient clinic with colorectal symptoms for colonoscopy. Studies have shown that general practitioners are unable to accurately identify the cause of rectal bleeding.[8] Hence, GP referral letters often have little information to allow the triage of these patients for investigation.

Given that a major block to avoiding delays in treatment is the wait for a FSA, we sought to identify those patients with rectal bleeding who might be appropriately triaged, in our population, to receive a colonoscopy prior to FSA. If symptoms could be identified that would triage some patients directly to a colonoscopy then valuable clinic space in the surgical outpatient clinic could be avoided.

Thus the aim of our pilot study was to assess the value of presenting symptoms in prioritising patients with rectal bleeding for colonoscopy in a mixed New Zealand population.

Methods

The study included 105 patients that had been referred by GPs to general surgical clinics with symptoms of rectal bleeding over a 6-month period. Their assessment was done at a single centre (Manukau Super Clinic, Manukau, Auckland, New Zealand). At their first appointment, prior to assessment by a clinician they were asked to fill out a comprehensive bowel symptoms assessment questionnaire. This had been prepared using questions based on clinical experience. These included questions regarding the duration of rectal bleeding, its characteristics, associated symptoms such as change in bowel habit and perianal pain, past history of polyps or CRC, age, and family history of CRC.

These patients were then assessed by general surgical consultants and registrars at the clinic and the questionnaire was reviewed in relation to their symptoms. If no obvious cause was identified for the per rectal (PR) bleeding on examination and sigmoidoscopy and/or the clinician was suspicious of colorectal cancer/polyps, then the patient was referred for a barium enema or a colonoscopy.

If an obvious cause was identified, the problem was treated and followed up at the clinician's discretion. Results for further investigations were obtained from Concerto (the computer hospital record system).

The relevant data from the questionnaires was analysed to identify the variables associated with a positive outcome at colonoscopy/ barium enema. A positive outcome was defined as presence of neoplastic polyps or CRC on the study.

Logistic regression was used with positive or negative finding as the binary outcome and age, sex, family history (any family member with CRC or neoplasia), length of time of symptoms, fresh blood on PR bleeding, blood or mucous mixed with stools and symptoms near back passage for <1 or >1 year as explanatory variables

A second analysis was performed using SPSS Answertree software. This is a decision analysis tree which chooses the series of binary splits of variables which best predict the outcome and more closely resembles clinical decision-making. This was more useful for our analysis as the aim of the study was to prioritise patients for colonoscopies. The sample was too small to validate the tree structure formed.

The results of the logistic regression and the decision analysis tree showed evidence of an increased likelihood of a positive colonoscopy if any of the following factors were present.

Therefore, specificity, sensitivity, and positive predictive values were calculated for:

- Positive family history
- Age≥67 years
- Age≥67 OR positive family history
- Male gender

Results

A total of 105 (48 males and 57 females) patients completed the questionnaire; 19 patients were excluded due to lack of a diagnosis in the clinical information available. Thus data from 86 patients (38 males and 48 females) was used for the final analysis, based on their final diagnosis (haemorrhoids, anal fissure, polyps, or colorectal cancer). Thirty patients underwent colonoscopy/barium enema. Fifteen of these

patients had neoplastic polyps or colorectal cancer on colonoscopy/barium enema (Table 1). The mean age of the patients was 47 years (range 19–85).

Table 1. Gender distribution of clinical diagnosis

Variables	Male	Female	Total
Polyps/carcinoma	8	7	**15**
Haemorrhoids	26	33	**59**
Anal fissure	4	8	**12**
Total	**38**	**48**	**86**

Logistic regression showed evidence of an increased risk of positive outcome if patients were of an older age (p=0.01) or if they had a positive family history (p=0.02). None of the other variables could be shown to be associated with a positive outcome (symptom time p=0.64, gender p=0.29, fresh blood p=0.85, blood, or mucous p=0.15 and perianal symptoms <1year p=0.20).

The SPSS Answertree analysis initial split was on family history, with 29% of those with a positive family history being positive—9 of the 15 positives (Table 2: specificity 69%, sensitivity 60%). Inclusion of those with age≥67 years included a further 6 individuals, 3 of which where positive (Table 3: specificity 93%, sensitivity 33% for age as a variable). Presence of a positive family history or age≥67 years were strong indicators for positive findings on colonoscopy—accounting for 12/15 (80%) of the positive patients (Table 4: specificity 63%, sensitivity: 80% for family history OR age). However, this also included 26 of the 71 negatives (37%).

Table 2. Used to calculate the risk of developing CRC or neoplasia with a positive family history and the sensitivity/specificity for family history as a marker of CR neoplasia

Variables	Total number of patients	Patients with cancer or neoplasia	Risk of finding cancer or neoplasia (95%CI)–PPV
No family history	55	6	11% (5–22)
Positive family history	31	9	29% (16–47)
Total	**86**	**15**	**17% (11–27)**

Sensitivity: 60%; Specificity: 69%.

Table 3. Used to calculate the risk of developing CRC or neoplasia with age ≥67 and the sensitivity/specificity for age as a marker of CR neoplasia

Age	Total number of patients	Patients with cancer or neoplasia	Risk of finding cancer or neoplasia (95%CI)–PPV
<67	76	10	13% (7–23)
≥67	10	5	50% (24–76)
Total	**86**	**15**	**17% (11–27)**

Sensitivity: 33%; Specificity: 93%.

Table 4. Used to calculate the risk of developing CRC or neoplasia in patients with age ≥67 or family history and the sensitivity/specificity of these factors as markers of CR neoplasia

Variables	Total number of patients	Patients with cancer or neoplasia	Risk of finding cancer or neoplasia (95%CI)–PPV
Neither of the two	48	3	6% (2–17)
Age ≥67 or family history	38	12	32% (19–47)
Total	**86**	**15**	**17% (11–27)**

Sensitivity : 80%, Specificity 63%

Inclusion of all male patients helped to identify the remaining 3 patients. However, this also picked up 19 patients that did not have positive findings on colonoscopy (63% of the negatives picked up with the 3 variables). Thus several people would be put through unnecessary testing (Table 5: specificity 58%, sensitivity: 53% for male gender only).

Table 5. Used to calculate the risk of developing CRC or neoplasia in males and the sensitivity/specificity of male gender as a marker of CR neoplasia

Gender	Total number of patients	Patients with cancer or neoplasia	Risk of finding cancer or neoplasia (95%CI)–PPV
Male	38	8	21% (11–36)
Female	48	7	15% (7–27)
Total	**86**	**15**	**17% (11–27)**

Sensitivity: 53%; Specificity: 58%.

Discussion

Although the number of patients with colorectal neoplasia in our study was small, it was possible to identify factors that may be helpful in making an urgent request for colonoscopy thereby avoiding a FSA in the surgical outpatient's clinic with its inherent delays and duplication.

In this pilot study patients that have either age≥67, positive family history, or both as variables are at increased risk of CR neoplasia. The positive predictive value for patients being aged≥67 or having a positive family history was shown to be 32%. While none of these findings are new, this pilot study has shown the potential of a structured history based questionnaire in a group of New Zealand patients being given to GPs to fill in prior to FSA.

A larger study could potentially identify other risk factors that could be included in the questionnaire with its consequent potential to divert some high-risk patients directly to colonoscopy

Several studies have shown that age is an important risk factor for CRC. A study by Lam et al in Hong Kong, found that 60 years of age could be used as a reasonable cut off point for screening and identifying patients with CRC.[9] A subsequent study by Mulcahy et al. showed that a higher proportion of patients >50 years of age had bowel

lesions as compared to those <50 years of age.[10] Furthermore, a study by Cade et al (2002), showed when associated with rectal bleeding, age was an extremely strong predictor of CRC.[11]

In 2002, a study by Tan et al showed that age >50 years, male gender, and rectal bleeding had a strong association with CRC. As in our study, they showed that lower abdominal symptoms were not consistent specifically with CRC.[12]

The importance of a family history as a risk factor for CR neoplasia is generally accepted. The prevalence of lesions in asymptomatic patients with a positive family history varies from 10–42%.[13–18] A controlled prospective trial by Guillem et al showed that patients with more than 1 first degree relative with CRC had an even greater risk. This study was also consistent with our findings that older patients with a family history have an increased prevalence of colonic lesions at colonoscopy.[18]

Other symptoms that have been associated with CRC are rectal bleeding patterns (e.g. outlet bleeding, suspicious bleeding, and so on),[19] iron deficiency anemia,[10,12] and lower gastrointestinal symptoms (such as change in bowel habit, abdominal pain).[12] We did not find any correlation between type of rectal bleeding or lower GI symptoms and presence of CR neoplasia in our study. However this is not surprising given our small sample size.

Patients were asked to report symptoms such as fatigue, weight loss, and so on but we did not specifically test our patients for iron deficiency anaemia as this was a symptom-based study. Not all patients underwent a full bowel investigation in this study and it is possible that some patients with neoplasia were not identified. A larger study, where more patients undergo colonoscopy may help identify other symptom patterns consistent with colorectal neoplasia.

From this pilot study we conclude that elderly patients and/or those with a family history of colorectal neoplasia referred with rectal bleeding are at a high risk of colorectal neoplasia. Thus, despite this pilot study's limitations we have identified a group of patients with rectal bleeding who should be offered open access colonoscopy prior to FSA, thus decreasing pressure on surgical clinics. Additional larger studies should aim to refine these criteria further in our population.

If further criteria could be developed utilising larger datasets then it may be possible to give GPs a form to fill in at referral of patients with PR bleeding, thereby enabling those screening such referrals at the public hospital to refer high risk patients directly to colonoscopy rather than undergo time delaying and unnecessary FSAs in surgical outpatient clinics.

Competing interests: None.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Chemotherapy prescription patterns in colon cancer: a patterns-of-care survey in New Zealand

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Abstract

Colorectal cancer is the second most common site of cancer for both men and women in New Zealand (NZ). Survival, especially with metastatic disease, has improved considerably over the last decade with the introduction of new chemotherapeutic agents. A questionnaire-based survey was conducted to document variations in chemotherapy prescription patterns throughout NZ. Out of 25 medical oncologists, responses were obtained from 22 (88%). The patient with stage III colon cancer was offered either 5-fluorouracil/leucovorin, most commonly on the weekly bolus schedule, or capecitabine monotherapy. Chemotherapy was also offered by the majority (65%) of respondents to the patient with 'high-risk' stage II colon cancer.

Several chemotherapy combinations are available in NZ in the metastatic setting, with the most popular being oxaliplatin/capecitabine combination (CAPOX) (35%) or irinotecan/5-FU combination (FOLFIRI) (23%). None of the respondents would commence chemotherapy solely on the basis of a rising carcinoembryonic antigen (CEA). Two-thirds of respondents would recommend chemotherapy for the patient with resectable liver metastases, either before or after surgery. Our survey indicates that chemotherapy prescriptions for patients with colon cancer in NZ, though not uniform, are mostly in line with international recommendations.

Colorectal cancer is the second most common site of cancer for both men and women in New Zealand (NZ), with approximately 2300 new cases and 1200 deaths from the disease each year.[1] Treatment results especially with metastatic disease have improved considerably over the last decade with the introduction of new chemotherapeutic agents.

Currently New Zealand does not have a national guideline on the management of colon cancer following resection, although a recommendation for follow-up is included in a publication from the New Zealand Guidelines Group.[2] Health care in New Zealand is largely government-funded and treatment practices are, at times, limited by funding restrictions. We therefore concluded that there were likely to be differences in chemotherapy prescriptions among oncologists and sought to document the variations.

Materials and Methods

A case-based questionnaire was prepared that presented a variety of clinical scenarios to the participating oncologist. There were 10 questions in all, 4 on adjuvant chemotherapy, and 6 in the metastatic setting (see Appendix 1 for full questionnaire). Where appropriate, a number of responses were offered including the option to enter a treatment plan if it was not already listed. An opportunity to indicate non-publicly funded treatment options was also offered. The questionnaire was mailed (email and/or conventional mail) to a list that included 25 medical oncologists practicing in NZ at that

time. The questionnaires were first sent out in April 2006 and the last response was obtained on 14 August 2006.

Results

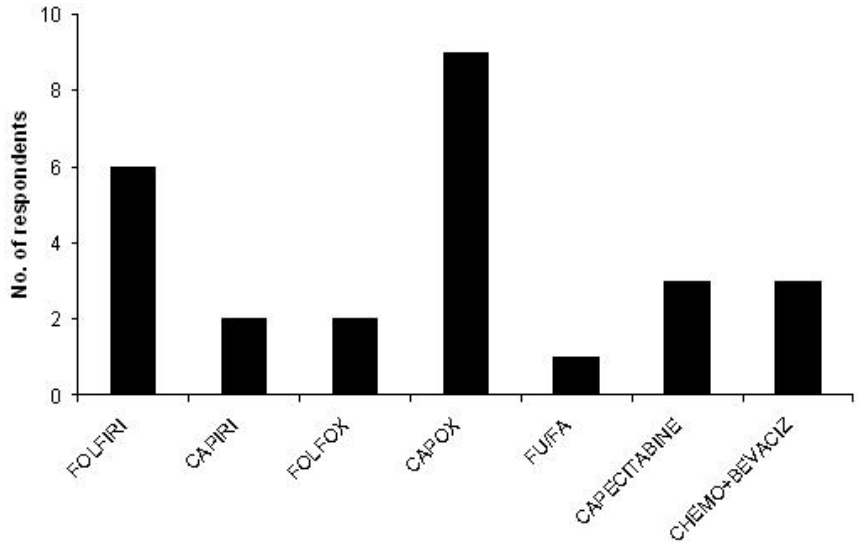
We obtained responses from 22 medical oncologists, thus giving a response rate of 88%. Two of those oncologists indicated that they did not treat patients with colorectal cancer. Thus this left us with 20 completed questionnaires for analysis. Some oncologists indicated a second choice under certain circumstances—i.e. to offer for patients in the private sector. Therefore, the number of responses sometimes exceeded 20.

Adjuvant chemotherapy—The patient with resected stage III colon cancer presented in the clinical scenario was offered adjuvant chemotherapy by all respondents. This was either 5-fluorouracil/leucovorin (5FU/FA) (14/20 or 70%) or capecitabine chemotherapy. Fluorouracil administered on a weekly schedule was most popular (12/14 or 86%). Some oncologists indicated a preference for combination chemotherapy including oxaliplatin through their private practice. These included the FOLFOX, FLOX, or CAPOX combinations (2 each).

Chemotherapy was also offered by the majority of respondents (65%) to the patient with stage II colon cancer presenting with acute intestinal obstruction, while one-third advised observation. Treatment was with either FU/FA or capecitabine. None of the respondents indicated a preference for oxaliplatin-based treatments for adjuvant treatment of the patient with stage II colon cancer with high-risk features.

Metastatic colon cancer—For a patient presenting with unresectable liver disease from a stage II colon cancer treated 2 years previously, all except one oncologist advised combination chemotherapy. Among the combinations, oxaliplatin-based treatments were more used (11/19 or 58%) compared to irinotecan combinations. The most popular combination was oxaliplatin/capecitabine (CAPOX) (9/19, 47%). Bevacizumab in combination with chemotherapy was the preferred option for three consultants in their private practice.

Figure 1. Chemotherapy combinations for metastatic disease



In the event of chemotherapy achieving a complete response of the metastatic liver disease described above, with stable carcinoembryonic antigen (CEA) after 6 months of treatment; the majority (15/20 or 75%) stopped chemotherapy after an additional 2 months. Three preferred to continue chemotherapy until progression and two indicated a preference for consideration of resection. None of the respondents would subsequently reintroduce chemotherapy solely on the basis of a rising CEA.

Most oncologists felt that surgery was an option if chemotherapy made initially un-resectable disease resectable (18/20 or 90%). Of the other two respondents, one would stop chemotherapy to resume at progression while the other would continue chemotherapy for a further 2 months after achieving disease stabilisation.

In the setting of resectable liver metastases, all agreed that surgery should be part of the treatment plan. Two-thirds also felt that chemotherapy should be included, with the majority of those choosing to treat with chemotherapy (80%) offering neoadjuvant chemotherapy, with the remaining 20% preferring adjuvant chemotherapy. In this scenario, 86% of oncologists would offer an oxaliplatin-based combination.

Discussion

This survey documents the variations in the management of patients presenting with colon cancer in NZ. All the main chemotherapy agents in colon cancer—namely 5-fluoruracil, oxaliplatin, and irinotecan—are available in NZ. However, public funding for irinotecan and oxaliplatin is only available for metastatic colon cancer, and bevacizumab is only available through private practices.

All oncologists endorsed adjuvant chemotherapy for the patient with stage III colon cancer, with weekly 5FU/FA combination being the most common prescription. A significant proportion offer capecitabine because of the convenience of oral chemotherapy and limitations in intravenous chemotherapy administration capacity.

The National Institute for Health and Clinical Excellence (NICE) in the UK and the NCCN (National Comprehensive Cancer Network) in the US advise chemotherapy for patients with stage III colon cancer, including capecitabine monotherapy or oxaliplatin and fluorouracil combination (FOLFOX).[3,4] The routine application of adjuvant chemotherapy for stage II colon cancer is not considered standard practice according to current literature,[5,6] and this is reflected in the diversity of treatment recommendations among NZ oncologists reflected above.

Current management of metastatic colon cancer in patients suitable for intensive therapy includes combinations of various active drugs such as 5FU/FA, oxaliplatin, irinotecan, and bevacizumab. In general, modern oxaliplatin and irinotecan-containing combinations have similar efficacy with median survivals of over 20 months[7,8] compared with 11 months using 5FU/FA.[9]

Differing prescribing practices can be assumed to reflect different perceptions with regard to the relative toxicity and convenience of the different regimens. For instance, one oncologist offered 5FU/FA in first-line metastatic colon cancer.

Bevacizumab is an antibody to the vascular endothelial growth factor (VEGF) and was the first commercially available angiogenesis inhibitor.[10] The addition of bevacizumab is associated with modest additional benefits in advanced colon cancer

in terms of response rate and duration[11]—but in the absence of public funding, cost and availability limit its use.

The NCCN recommends the addition of bevacizumab to combination chemotherapy in the first-line treatment of metastatic colon cancer. However, current NICE guidelines do not recommend bevacizumab in the first line metastatic setting in the UK.[12]

Resection of isolated liver metastases from colon cancer has been found to improve outcome in many surgical series.[13,14] All responding oncologists here would prefer to have metastatic liver disease resected. Two-thirds would also offer chemotherapy, either as a neoadjuvant approach or as adjuvant following surgery (which would be oxaliplatin-based in most cases). Chemotherapy has been found to be useful for downstaging unresectable disease, but its use as "adjuvant therapy" after resection of liver metastases is not well defined.[15]

This survey provides a snapshot of treatment practices among medical oncologists in NZ when treating patients for colon cancer. Although there appear to be variations in practice, prescriptions generally follow international recommendations. Where expert opinion is divided, such as in the case of adjuvant treatment of stage II colon cancer or patients post hepatic metastatectomy, more medical oncologists here seem to prefer treatment than observation.

Competing interests: None.

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Appendix 1. Questionnaire

COLON CANCER ADJUVANT

A. 65 yr old male, good general health, presents with acute intestinal obstruction. Exploration reveals a tumour in the transverse colon, T3 adenocarcinoma grade 3, margins free and 4 out of 12 lymph nodes involved with cancer. Stage III colon cancer. What will you offer him?

1. Observation
2. Adjuvant chemotherapy with 5FU/Folinic acid
3. Adjuvant chemotherapy with FOLFOX
4. Adjuvant chemotherapy with Capecitabine
5. Adjuvant chemotherapy with FLOX
6. Other *Specify*…….

B. For the patient in question A, what would be your frequency of administration?

C. For the patient in question A, how many months of treatment would you offer?

D. 65 yr old male, good general health, presents with acute intestinal obstruction. Exploration reveals a tumour in the transverse colon, T3 adenocarcinoma grade 3, margins free and none out of 12 lymph nodes involved with cancer. Stage II colon cancer. What will you offer him?

1. Observation
2. Adjuvant chemotherapy with 5FU/Folinic acid
3. Adjuvant chemotherapy with FOLFOX
4. Adjuvant chemotherapy with Capecitabine
5. Other: *Specify*…….

COLON CANCER METASTATIC

A. 65 yr old male, good general health, operated for carcinoma colon stage II 2 years ago, no adjuvant therapy, now presents with 3 space occupying lesions in the liver. Deemed unresectable. CEA 120ng/ml. What would you offer?

1. Chemotherapy with bolus 5FU/Folinic acid
2. Chemotherapy with infusional 5FU/Folinic acid
3. Chemotherapy with capecitabine
4. Chemotherapy with Irinotecan and infusional 5FU/Folinic acid (FOLFIRI)
5. Chemotherapy with Oxaliplatin and infusional 5FU/Folinic acid (FOLFOX)
6. Chemotherapy with Capecitabine + Oxaliplatin (XELOX/CAPOX)
7. Chemotherapy with Capecitabine + Irinotecan (XELIRI/CAPIRI)
8. Chemotherapy plus Bevacizumab (also tick appropriate chemotherapy option)
9. Other: *Specify*……..

B. The patient in A has a very good response, with complete response radiologically achieved after 4 months of treatment. It is now 6 months since treatment was initiated. CEA stable at 8ng/ml for the last 2 months. What would you do now?

1. interrupt treatment and resume at progression
2. continue treatment for another 2 months before stopping, resume at progression
3. continue treatment until progression or unacceptable toxicity
4. Other: *Specify*……

C. In B above, it was decided to interrupt treatment at 8 months. No evaluable disease at the time. CEA rises to 12ng/ml 3 months later, and 16ng/ml at 4 months out. No evaluable disease on radiology. What would you do now?

1. Continue observation and resume chemotherapy when disease detected, same combination
2. Continue observation and resume chemotherapy when disease detected, different combination (*identify combo*……)
3. Resume chemotherapy immediately, same combination
4. Resume chemotherapy immediately, different combination (*identify combo*……..)
5. Other: *Specify*……..

D. 65 yr old male, good general health, operated for carcinoma colon stage II 2 years ago, no adjuvant therapy, now presents with 3 space occupying lesions in the liver. Deemed unresectable. CEA 120ng/ml. Disease responds initially up to 4 months and then stabilizes at CEA 20mg/ml, with chemotherapy continued. Residual disease includes 2 lesions in the right lobe of liver. What would you do now at 6 months on chemotherapy?

1. Consider surgical resection now
2. Continue chemotherapy until progression or unacceptable toxicity
3. Interrupt chemotherapy after further 2 months of treatment (stable disease as above) and *resume same chemotherapy* on progression
4. Interrupt chemotherapy after further 2 months of treatment (stable disease as above) and *different chemotherapy* on progression
5. Change chemotherapy after total of 6-8 months on initial treatment *without* radiological or biochemical evidence of progression
6. Other: *Specify*……

E. 65 yr old male, good general health, operated for carcinoma colon stage II 2 years ago, no adjuvant therapy, now presents with 2 space occupying lesions in the liver. Deemed resectable. CEA 65ng/ml. What would you offer?

1. Resection of hepatic metastases, then observation
2. Resection of hepatic metastases followed by chemotherapy with 5FU-Folinic acid / FOLFIRI / FOLFOX / Other (*identify combo* ……)
3. Chemotherapy with 5FU-Folinic acid / FOLFIRI / FOLFOX / Other (*identify combo*…….) *then* resection
4. Chemotherapy *alone* with 5FU-Folinic acid / FOLFIRI / FOLFOX / Other (*identify combo*…….).
5. Other: *Specify*…….

F. In the metastatic setting, what is your estimate of the median time to progression in your patients on first line palliative chemotherapy?

THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Perceptions of New Zealand adults about reducing their risk of getting cancer

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Abstract

Aim To assess perceptions about potentially modifiable causes of cancer.

Methods An anonymous telephone questionnaire administered to a sample, 20 years and older, randomly selected from telephone directory listings.

Results Nearly 90% of 438 respondents (68% participation) considered that there were things which people could do to reduce cancer risk. Unprompted, almost two-thirds mentioned nutrition, and more than half suggested "not smoking." Other suggestions included being physically active, and protection from excessive sun exposure. Two-thirds believed they could reduce their own risk, and by interview end this increased significantly to 72%. Half named items which people could consume to reduce risk: more vegetables, fruit or water; less alcohol, fatty foods, and meat. Greatest awareness was of risks from sunburn, secondhand tobacco smoke, sunlamps, eating animal fat, and being overweight, and of the protective effects of eating grains, fruit, and vegetables. Many considered stress, cellular phones, and genetically modified foods as risks, and vitamin and mineral supplements as protective. Few indicated awareness of risks from hepatitis B or alcohol.

Conclusions Greater public awareness about avoiding tobacco smoking and excessive sun exposure suggests gains from past efforts. To achieve similar awareness for other cancer prevention strategies, and to correct misconceptions, comparable resources and efforts are likely to be required.

Cancer is the leading cause of death in New Zealand, accounting for around 28% of all deaths, including 24% of deaths among the 45–64 year age group.[1] Environmental and behavioural factors contribute to a large proportion of cancers and many of these factors are potentially modifiable.[2]

Lung cancer, for example, is the most common cause of cancer death in New Zealand, causing more than 1400 fatalities each year,[1] and most lung cancers are attributed to cigarette smoking.[3] Colorectal cancer has been linked to physical inactivity and to nutrition high in fat or low in fruit, vegetables, and fibre.[4] New Zealand's melanoma mortality rate is among the highest in the world,[3] and most cases of melanoma that occur in high ultraviolet (UV) radiation environments (such as New Zealand in summer) are associated with excessive sun exposure:[5] a potentially modifiable behavioural factor.

If the frequency of these and other behavioural factors that influence the risk of specific cancers were altered, cancer incidence and mortality rates could potentially be reduced. This understanding helped to frame the prevention objectives of the New Zealand Cancer Control Strategy (NZCCS) Action Plan 2005–2010 that relate to

tobacco control, physical activity and obesity, excessive UV radiation exposure, infectious diseases, alcohol consumption, and occupational factors.[6]

Public knowledge is an important prerequisite for behaviour change[7] and awareness of risk factors is associated with increased participation in cancer screening programmes.[8] In addition, although a marked increase in awareness of behavioural risk factors for cancer (such as tobacco smoking, excessive sun exposure, and poor nutrition) has been noted for Australians between 1964 and 2001, it is considered that there remains room for improvement.[9] A US survey found low levels of awareness of risk factors for cancers; for example, fewer than one-third of respondents agreed that a high-fat or low-fibre diet was a risk factor for colon cancer.[7]

Despite its importance for informing and evaluating health promotion and cancer prevention programmes, the measurement of public knowledge and perceptions about cancer has received relatively little attention. Although interest has increased, there have been few studies in New Zealand which permit comparison with findings from Australia,[10,11] the UK,[12] and the USA.[13,14] One exception was a study that investigated young children's knowledge about sun protection behaviours.[15] It has been noted that relatively little is known about population beliefs regarding the relations between diet and cancer.[16]

The current survey was designed to update past surveys, inform NZCCS public health programme development and evaluation, and provide New Zealand data for comparison with overseas studies.

Methods

Sample selection and research procedures were fully described in earlier papers.[17,18] In summary, a national telephone survey was conducted in August and September 2001 among a random sample, 20 years and older, identified from telephone directory listings, supplemented with self-identified Māori from electoral rolls.

The questionnaire was designed to explore perceptions of the causes, prevention, and treatment of cancer as well as provide demographic information. For questions with fixed responses (such as agree/disagree/don't know), the interviewer read out all allowable answers and electronically recorded responses as a numerical code. For open-ended questions, interviewers used numerical codes for the most commonly anticipated answers. All other answers were recorded verbatim and subsequently coded by one researcher, with the coding later checked by another member of the research team. After each response, participants were asked "Anything else?" until they could provide no further answers. All answers were recorded and coded. In statistical tests, values of $p<0.05$ were taken to indicate statistical significance.

Results

A total of 1565 attempts were made to perform interviews, resulting in 1130 contacts, of which 689 were deemed eligible, according to population quotas. Of these, 251 refused to participate, thus producing 438 completed interviews (231 females and 207 males: 64% participation). The population quotas were set so that the age, sex, and ethnicity distributions of the respondents were closely similar to those for the New Zealand population in the 1996 Census, but participating respondents were better educated, contained a larger proportion in full-time employment, and a smaller proportion of those permanently unable to work.[17]

Most participants (n = 393, 90%) replied "yes" to the question *Do you believe that there are things people can do to reduce their risk of getting cancer?* while 5% said

"no" and 6% were "not sure". Participants who replied "yes" were then asked *What types of things?*

The number of potential factors ranged from 0–9 per person, with an average of 2.6 items. The most commonly-suggested measures were related to nutrition (n=268, 68%) and not smoking (n=233, 59%), followed by physical activity (n=102, 26%), a "healthy lifestyle" (n=89, 23%), sun protection (n=88, 22%), avoiding environmental hazards/radiation (n=60, 15%), having medical checkups or self-checks (n=43, 11%), and stress control (n=43, 11%).

The 'other' suggestions (each proposed by fewer than 10 people) included hereditary factors, positive thinking, drugs, education, and safe sex, while 2% of respondents (n=8) were unable to suggest any risk-reduction measures.

Respondents who said "yes" when asked if there was anything people could do to reduce their risk of cancer (n=393) were then asked *Do you know of any things people can eat or drink MORE of, which will REDUCE their risk of cancer?*

More than half of respondents were able to suggest one or more such beneficial nutritional factors, and among those responding positively the mean number of suggestions per person was 2.2 (range 1–6). The most frequent suggestions were to eat more vegetables (n=156, 40%) or fruit (n = 101, 26%): 169 people (43%) mentioned either fruit, vegetables, or both. Less common suggestions were to drink more water (n=60, 15%), take more dietary vitamin/mineral supplements (n=32, 8%), or eat more of several food types: organic unprocessed food (n=30, 8%), "healthy food" (n=22, 6%), fibre (n=21, 5%), and fish/seafood (n=11, 3%).

The 'other' suggestions (each proposed by fewer than 10 people: n=64, 16%) included eating more whole grains, fresh food, cereals, and garlic, and drinking more tea and red wine. Overall, 53% of respondents (n=208) were unable to suggest any risk-reduction measures.

The same 393 respondents were then asked *Do you know of any things people can eat or drink LESS of, which will REDUCE their risk of cancer?* Again around half of those responding positively were able to suggest one or more such items (average 2.0, range 1–5), with the most commonly suggested ones being drinking less alcohol (n=127, 32%), eating less fat or fatty food (n=96, 24%), meat (n=34, 9%), drinking less coffee/caffeine (n=26, 7%), and eating less processed foods (n=25, 6%), junk food/fast food (n=19, 5%), artificially preserved food (n=19, 5%), sugar (n = 18, 5%), and chemicals in general (n=11, 3%).

The 'other' suggestions (each proposed by fewer than 10 people) made up a relatively large proportion of the suggestions, (n=61, 16%), and included salty food, fizzy drinks, burnt food, dairy food, and contaminated food; 55% of respondents (n=218) were unable to suggest any risk-reduction measures.

All respondents were asked to indicate whether each item on a list of potential risk factors either increased, decreased, or had no effect on the risk of getting cancer. Overall, reasonably good knowledge of risk factors was demonstrated (Table 1). The most commonly reported perception for each risk factor is highlighted in **bold**.

Table 1. Distribution of perceptions as to whether specific risk factors increased or decreased cancer risk (total *n*=438)

	Response			
	Increase risk %	Make no difference %	Decrease risk %	Don't know %
Risk factor				
Perceptions congruent with current scientific understanding				
Sunburn	**96**	2	1	0
Second-hand smoke from other people's tobacco or cigarettes	**93**	4	1	2
Using a sun lamp, solarium or sun bed	**78**	9	3	10
Eating food high in animal fat	**64**	20	4	12
Being overweight	**57**	30	1	12
Eating plenty of bread, cereals or grain	1	8	**89**	2
Being physically active	2	18	**76**	4
Eating plenty of fruit and vegetables	1	22	**70**	6
Perceptions either incongruent with current scientific evidence or inconclusive				
Hepatitis B infection	39	18	1	**42**
Drinking alcohol in moderation or not at all	10	**57**	25	7
Stress	**77**	14	3	6
Cellphone use	**47**	22	2	29
Genetically modified foods	30	20	7	**43**
Vitamin and mineral supplements	3	33	**45**	18

Opinions regarding risk factors for cancer were collapsed into dichotomous variables. For items associated with increased risk of cancer, responses of "increases risk" were collapsed into a separate category and compared to all others ("decreases risk" "makes no difference" and "don't know"), whether the association is supported by evidence (being overweight, eating foods high in animal fat, Hepatitis B infection, inhaling tobacco smoke, being sunburnt, and using a sunlamp) or not (cellular phone use, genetically modified foods, and stress).

Similarly, for protective factors, responses of "decreases risk" were compared to all others, whether a relationship with cancer has been demonstrated (being physically active, eating plenty of fruit and vegetables, drinking alcohol in moderation or not at all, and eating plenty of cereals and grains) or not (vitamin and mineral supplements).

Logistic regression was used to test whether opinions regarding risk factors for cancer were related to the demographic variables of age group (20–39, 40-59, 60+ years, with n = 183, 144 and 111 respectively), gender (207 male, 231 female), ethnicity (391 non-Māori, 47 self-identified Māori), formal educational qualifications (226 with no tertiary qualification, 200 with a tertiary qualification), and employment status (191 not employed full-time, 246 employed full-time). The logistic regression compared people 20–39 and 40–59 years with those 60 years and over. Odds ratios are presented in Table 2 for "increases risk" (for risk factors) and "decreases risk" (for protective factors).

In the full, multivariable model, none of the potential demographic predictors were significantly related to opinions on the risk factors being physically active, animal fat, fruit/vegetable, hepatitis B, sunburn, or vitamin supplements, so the results for these comparisons are not shown. The only ethnic difference was that Māori were less likely to state that the use of sunbeds increased the risk of cancer: adjusted OR = 0.50 (95% CI 0.25–1.00), unadjusted OR 0.56 (0.26–0.97); ethnicity is therefore not shown in Table 2.

Table 2. Unadjusted and statistically significant adjusted ORs (95% CI) for perceptions of risk factors by age, sex, tertiary educational qualification, and employment status. (Adjusted for age, gender, ethnicity, qualification, and employment level, *n*=425.)

Question		Younger†	Female	Qualified	Employed
2nd hand smoke	Unadjusted	4.26 (1.59-11.43)*	0.35 (0.15-0.79)*	3.12 (1.31-7.44)*	1.51 (0.73-3.10)
		1.59 (0.70-3.59)			
	Adjusted	*(1)3.29 (1.05-10.29)*	*0.33 (0.13-084)*		
Overweight	Unadjusted	1.51 (0.94-2.44)	0.99 (0.68-1.44)	1.17 (0.79-1.71)	0.66 (0.45-0.98)*
		1.38 (0.84-2.26)			
	Adjusted	*(1) 2.07 (1.16-3.71)*			
		(2) 2.03 (1.12-3.67)			*0.44 (0.27-0.72)*
Cereal/grain	Unadjusted	1.23 (0.75-2.03)	0.63 (0.42-0.95)*	1.03 (0.68-1.56)	0.74 (0.48-1.12)
		1.69 (0.98-2.91)			
	Adjusted	*(1)1.88 (1.02-3.50)*	*0.49 (0.31-0.78)*		*0.40 (0.23-0.69)*
		(2) 2.77 (1.44-5.33)			
No alcohol	Unadjusted	1.86 (1.04-3.31)*	0.88 (0.58-1.36)	1.15 (0.75-1.78)	1.00 (0.65-1.55)
		1.63 (0.89-3.00)			
	Adjusted	*(1) 1.95 (1.01-3.79)*			
Stress	Unadjusted	0.88 (0.49-1.56)	1.58 (1.01-2.47)*	1.68 (1.06-2.68)*	0.59 (0.37-0.94)*
		0.81 (0.45-1.48)			
	Adjusted			*1.93 (1.18-3.15)*	
Cellular phone	Unadjusted	2.37 (1.45-3.86)*	0.78 (0.54-1.14)	1.01 (0.69-1.48)	1.27 (0.87-1.86)
		1.77 (1.06-2.95)*			
	Adjusted	*(1) 2.18 (1.23-3.87)*			
GM food	Unadjusted	1.84 (1.08-03.14)*	1.52 (1.00-2.30)*	0.79 (0.52-1.20)	0.89 (0.59-1.35)
		1.17 (0.66-2.08)			
	Adjusted	*(1) 2.12 (1.13-3.97)*			

† (1) Greater probability for Age 20-39 than Age 60+ (2) Greater probability for Age 40-59 than Age 60+
* Unadjusted OR significant at p<0.05

Younger people were significantly more likely to identify the dangers of secondhand smoke and being overweight, and the protective effects of eating cereals/grains, and drinking little or no alcohol. They were also more likely to identify the unproven dangers of using a cellular phone, and eating genetically-modified food.

Women were significantly more likely than men to identify the unproven effects of stress and genetically modified food, but less likely to identify the protective effect of eating plenty of cereal/grain and the danger of secondhand smoke.

People with post-secondary qualifications were significantly more likely to identify the risks of secondhand smoke, and the supposed effects of stress. People who were in full-time employment were significantly less likely to identify the danger of being overweight, and the perceived danger of stress, as well as the protective effect of eating cereal/grains.

Initially, the responses of two-thirds of all participants (67%) indicated that they considered that their risk of getting cancer could be either moderately or greatly reduced, or completely eliminated, by their own actions, whereas 28% believed that cancer risk could be either reduced slightly or not at all, and 7% didn't know. It was hypothesised that being asked a range of questions about possible preventive measures would increase respondents' awareness that they could potentially reduce their risk of cancer.

In order to test this hypothesis, the question *Overall, how much do you believe that you can personally reduce your risk of getting cancer by your own actions or behaviour?* was asked twice, first near the beginning and again towards the end of the interview. Responses were recorded on a 5-point Likert-type scale ranging from "completely eliminate" to "not reduce at all" and then collapsed into one of two categories: either *Can reduce* and *Not reduce*.

The *Can reduce* response encompassed beliefs that people could "completely eliminate" the risk of cancer (3% at the start of the questionnaire, 2% at the end), "greatly reduce" risk (22%, 25%) and "moderately reduce" risk (41%, 45%), while *Not reduce* included "slightly reduce" (25%, 21%) and "not reduce at all" (3%, 2%). Anyone who answered "I don't know" (7%, 5%) was excluded.

Overall, there was a slight increase in the belief that cancer risk could be reduced by one's behaviour. A two-sided McNemar test with 393 valid cases yielded a *p*-value of 0.029 for the change.

Discussion

Most (90%) of our sample believed that behavioural and lifestyle choices could affect cancer risk. However, unprompted, there seemed to be confusion about which were considered causal factors. Nutritional factors (mentioned by 68% of respondents) were the most commonly suggested, but only 43% of respondents specifically mentioned eating more fruit and vegetables, fewer than a quarter mentioned eating less fatty foods, and only 3% mentioned fish / seafood.

Awareness of the benefits of not smoking (mentioned by 59%) was quite high, which undoubtedly reflects long-standing and high-profile public health messages. On the other hand, only around one-quarter of respondents said that they could reduce their risk of cancer by being more physically active, or by using appropriate protection against excessive sun exposure, and some responses were vague—for example, 23% suggested that a "healthy lifestyle" would help reduce cancer.

Overall, these distributions of unprompted responses suggest scope for the dissemination of consistent and clear messages that reflect current evidence of the potentially modifiable risk and protective factors for cancer. In particular, clear and specific messages about the health benefits of being physically active, using sun protection and eating more fruit and vegetables, and less fatty food would seem to be required. The Cancer Control Strategy and Healthy Eating Health Action programmes have the potential to make positive contributions here.

When prompted about specific risk factors (Table 1), respondents generally demonstrated good knowledge of the risks associated with sunburn, sunlamps, secondhand smoke, foods high in animal fat, and being overweight. However, there is a need to take note of the high level of concern regarding stress, cellular phones, and

genetically modified foods; and faith with respect to the protective effects of vitamin/mineral supplements, for which there is a lack of demonstrated links with cancer.

Our results are largely comparable with studies in other countries. Half of the New Zealanders surveyed could, unprompted, name foods that potentially reduce the risk of cancer, compared to around two-thirds of Australians in a similar survey.[16] There was also a similar range of suggestions for specific foods: New Zealanders were more aware of the potential protective effect of fruit and vegetables than Australians, whereas more Australians than New Zealanders noted the importance of dietary fibre.[19]

In both surveys, alcohol and fatty foods were suggested most often as items of which to eat less. We also found that a substantial proportion of the population believed that stress could contribute to cancer, as did a recent survey of British adults.[20]

Surprisingly, demographic differences in opinions regarding cancer varied somewhat from those described elsewhere. We found that women were more likely than men to believe that stress and genetically modified foods would increase their risk of cancer, and also less likely to know about the protective effect of eating plenty of cereal/grain and the dangers of secondhand tobacco smoke. One study suggested that females were more aware of risk factors for breast cancer than males, but significance tests for the comparison were not reported.[21]

Women may be more likely to feel that cancer can be prevented by behavioural modification: in a recent Japanese survey respondents were asked how much cancer could be reduced if various factors (such as a viral infection, smoking and stress) were eliminated, and women consistently gave higher estimates than men.[22] Breslow et al (1997) found that knowledge about many risk factors for cancer was lowest among the groups with the greatest age (75 years and older), lowest income, and least education.[7]

Paul et al (1999) found that women who were younger or more educated were more likely to correctly identify the major risk factors for breast cancer,[23] and in a later study found that people who were more educated, employed and female were likely to know more about risk factors for various cancers.[16] Waller et al. (2004) reported that women, older people, and people with more education were more aware of the risk factors for cervical cancer.[24] Wardle (2001) found that being female and being more educated were both associated with identifying more actual (and fewer "mythic") risk factors for cancer.[20] However, we found that the more educated respondents were more likely to think that stress would increase the risk of cancer.

Paul et al (2003) tested for (but did not find any) differences in knowledge due to age,[16] whereas we found that younger people were more likely to be well-informed about the dangers of secondhand smoke and being overweight, and the protective effects of eating cereals/grains, and of drinking little or no alcohol.

On the other hand, younger people were also more likely to believe that using a cellular phone and eating genetically modified food would increase their risk of cancer, despite the current lack of evidence for these links.

In summary, there is clearly a need for readily-understandable and consistent messages that reflect current evidence about risk and prevention. Since our study

sample is socio-economically advantaged (relative to the 1996 Census population) in terms of education and employment, the size of this need is probably underestimated in the current study.

Overall, the main implications of the findings for health promotion and cancer prevention programmes in New Zealand are that the full range of prevention actions identified in the New Zealand Cancer Control Strategy Action Plan 2005-2010 need to implemented.[6] This includes highlighting the cancer risks associated with factors such as alcohol consumption, and the potential for prevention associated with healthy physical activity and nutrition.

The observed higher levels of awareness about avoidance of tobacco smoke and excessive sun exposure suggest that past health promotion efforts in those areas have been effective in raising the public profile of those issues. In turn, this raised awareness has the potential to increase public support for the implementation of further policy and structural change to facilitate the behavioural modifications linked with improved health outcomes. For similar levels of awareness to be achieved for other cancer prevention strategies, comparable resources and efforts are likely to be required.

There is also a need to focus on areas where the greatest potential health gains are likely to be most readily achieved, and to encourage the development of greater balance through the dissemination of evidence-based information about perceived risk factors for which evidence is either weak or currently lacking.

Competing interests: None.

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Acknowledgements: The survey on which this paper is based was funded by a 2000 University of Otago Research Grant. During the project, Dr Reeder and the Social & Behavioural Research in Cancer Group received support from the Cancer Society of New Zealand Inc. The authors also thank everyone involved for their contributions to the development of the questionnaire, as well as Dr Sheila Williams (Department of Preventive and Social Medicine, Dunedin School of Medicine) for her advice on logistic regression.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Prospects for population colorectal cancer screening in New Zealand

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Abstract

Aim In 2005 the National Screening Unit of the Ministry of Health appointed a Colorectal Screening Advisory Group to provide independent strategic advice and recommendations on population screening for colorectal cancer (CRC) in New Zealand.

Method Evidence-based review of relevant literature and assessment of CRC screening using the New Zealand Criteria to Assess Screening Programmes.

Results Guaiac faecal occult blood test (FOBTg), immunochemical FOBT (FOBTi), flexible sigmoidoscopy, colonoscopy, and CT colonography were considered. FOBTg is the only test supported by high quality evidence from randomised controlled trials but has limited sensitivity and achieves modest CRC mortality reduction over time. FOBTi has higher analytical sensitivity than FOBTg and would be assumed to achieve greater mortality reduction. A CRC screening programme requires substantial planning and resources. Currently public hospitals cannot deliver timely diagnostic or surveillance colonoscopy.

Conclusion The Advisory Group recommends that a feasibility study of CRC screening using FOBTi be undertaken. This would help determine the performance of the FOBTi in the New Zealand population and whether the New Zealand health system could support an acceptable, effective and economically efficient CRC screening programme. To optimise the diagnosis and treatment of colorectal cancer there is an immediate need to expand colonoscopy services and to ensure that throughout New Zealand the treatment outcomes for CRC, both surgical and oncological, meet international standards.

Colorectal cancer (cancers of the colon and rectum) is an important cause of morbidity and mortality in New Zealand. Each year approximately 2500 people develop colorectal cancer (CRC) and 1100 people die of the disease.[1] These figures give New Zealand among the highest incidence and mortality rates of CRC in the world.[2,3]

Recently there has been increased interest in the potential of screening (the testing of people without symptoms to identify possible disease) to reduce the burden of colorectal cancer in New Zealand. This potential was highlighted in the late 1990s when a reduction in CRC mortality was demonstrated with faecal occult blood testing (FOBT) in two randomised controlled trials in Nottingham, England and Funen, Denmark.[4,5]

In 1997, in response to these trial results, a working party was established by the New Zealand National Health Committee to make recommendations on the advisability of introducing a publicly funded screening programme based on FOBT screening.[6] This working party did not recommend an FOBT-based population screening programme for CRC because of the "modest potential benefit, the considerable commitment of health sector resources and the small but real potential for harm". [6]

Screening by other modalities (flexible sigmoidoscopy, colonoscopy or double-contract barium enema) was also not recommended because of lack of evidence from randomised controlled trials of mortality reduction. The working party did recommend that consideration be given to the development of advice on surveillance recommendations for groups identified to be at increased risk of colorectal cancer.

Subsequently, Guidelines on Surveillance and Management of Groups at Increased Risk of Colorectal Cancer were developed by a subcommittee of the original working party under the auspices of the New Zealand Guidelines Group.[7] However capacity constraints restrict the ability of public hospitals to provide surveillance colonoscopy as recommended by the guidelines.

Since then, a series of developments has paved the way for a review of the decision regarding population screening for CRC in New Zealand. The development of the National Screening Unit in the Ministry of Health, the establishment of a New Zealand Cancer Control Council and the development of Primary Health Organisations (PHOs) have improved the infrastructure required for introducing new population screening programmes in New Zealand. In addition the New Zealand Society of Gastroenterology has promoted quality control of colonoscopy, has established an endoscopy training course[8] and supported the New Zealand Conjoint Committee for Recognition of Endoscopy Training.

While no further randomised controlled trial evidence in relation to CRC screening by any modality has been published since 1998, several overseas initiatives are significant including recent evaluation reports of the FOBT colorectal cancer screening pilots in both the United Kingdom and Australia.[9–13] The availability of long-term follow-up data in relation to the Nottingham and Funen FOBT trials also provides an opportunity to review the advice of the initial working party.[14-17]

Consequently in early 2005 the National Screening Unit appointed a Colorectal Cancer Screening Advisory Group. The objective of the Advisory Group was:

> …to provide the National Screening Unit with strategic advice and recommendations on the appropriateness and feasibility of a population colorectal cancer screening programme in New Zealand.

The Advisory Group produced a report which is available at http://www.moh.govt.nz/moh.nsf/pagesmh/5464[18]

This paper summarises the Advisory Group's findings and recommendations on screening and other issues in relation to colorectal cancer. It should be considered within the broader context of a range of activities offering potential improvement in the control of colorectal cancer in New Zealand.

Method

The Advisory Group used as its starting point the report and recommendations of the National Health Committee Working Party on Population Screening for CRC.[6] In formulating its recommendations, the

Advisory Group also considered a New Zealand Health Technology Assessment literature review commissioned by the National Screening Unit (NSU), focusing on published data since the 1998 report,[19] and additional literature as referenced in the full report of the Advisory Group.[18] The Advisory Group took particular note of follow-up mortality data from the Nottingham and Funen RCT FOBT trials,[14-17] the final report of the UK Colorectal Cancer Screening Pilot[12] and the final report of the Australia Bowel Cancer Screening Pilot Programme.[11] Two members of the Advisory Group met with staff from the UK CRC pilot screening centre in Scotland, and the Advisory Group also heard presentations from people with particular expertise in CRC screening.

New Zealand information considered by the Advisory Group included a survey of colonoscopy capacity in New Zealand commissioned by the NSU[18] and consumer acceptability research on CRC screening commissioned by the NSU.[21]

The Advisory Group considered colorectal cancer screening against the New Zealand Criteria to Assess Screening Programmes developed by the National Health Committee (NHC).[22] These criteria are based on accepted international criteria, including World Health Organization (WHO) principles for the introduction of population screening programmes adapted for the New Zealand context. The NHC criteria have been used in recent years to consider potential screening programmes for several conditions, including screening for prostate cancer and HIV screening in pregnancy.[23,24]

The eight criteria for assessing screening programmes are designed to ensure that all the relevant information is available to people making a decision about whether or not to establish a screening programme. A screening programme is more than just a screening test and includes the identification of eligible people, invitation to screening, information about screening, the offer and delivery of the screening test, delivery of test results, assessment and diagnosis if the test is positive, the offer of treatment and monitoring and evaluation of the screening programme. The sum of these activities is called the "screening pathway",[22] and the NHC criteria relate to all aspects of this screening pathway.

Four colorectal cancer screening modalities were comprehensively assessed. These were guaiac based faecal occult blood test (FOBTg), immunochemical FOBT (FOBTi), flexible sigmoidoscopy and colonoscopy. Colonoscopy can be used as a screening test but is also the follow up investigation for positive FOB tests or abnormal flexible sigmoidoscopy. The findings of the assessment of CRC screening against the NHC criteria and the recommendations of the Advisory Group are summarised below.

Assessment against the criteria

The condition is a suitable candidate for screening—Colorectal cancer (CRC) is a major cause of illness and death in New Zealand. Each year about 2500 people develop CRC and about 1100 people die of the disease. Colorectal cancer is clearly an important health issue in New Zealand.[1] Also, there is an early stage at which most CRC could be detected or prevented through screening. Therefore it is a suitable candidate for screening.

There is a suitable test—There is a range of available screening tests. The Advisory Group considered faecal occult blood tests (FOBTg and FOBTi), flexible sigmoidoscopy, colonoscopy and other options such as CT colonography. Each test has certain advantages but there are also limitations to each one.[19] Faecal occult blood tests have the advantage of simplicity and low cost but have poor sensitivity (especially for FOBTg) compared with other tests.[19,25] FOBTi has higher sensitivity but lower specificity than FOBTg, so FOBTi is likely to miss fewer people with CRC but result in more unnecessary colonoscopies being performed. The interpretation of FOBTg results is more subjective and less amenable to quality control than FOBTi which can be automated.[25] Flexible sigmoidoscopy is more invasive than FOBT but has higher sensitivity; however it only examines the distal colon (compared with colonoscopy, which examines the entire colon).[19,20,26–27] Colonoscopy has the highest sensitivity and specificity of all the tests considered but is also the most invasive and therefore requires stringent quality control.[28-29] CT colonography is considered to have potential for screening but still requires development and was not considered further by the Advisory Group.[30–33]

There is an effective and accessible treatment or intervention for the condition identified through early detection—There is access to surgery (the primary treatment) for colorectal cancer throughout New Zealand but outcomes may vary, especially for rectal cancer.[34–39] For potentially curable but at-risk groups of patients with CRC, chemotherapy and radiotherapy, used in conjunction with surgery, improve outcomes and are available in New Zealand.[40,41]

The increase in CRC mortality rates for Māori between 1980 and 2001 could reflect both physical and cultural barriers to treatment.[42] Early treatment of CRC identified at an early stage through screening can lead to a better outcome, provided that the health system has the capacity to support it and the programme is designed to minimise or avoid inequalities.

There is high quality evidence, ideally from randomised controlled trials, that a screening programme is effective in reducing mortality or morbidity—The only modality for which there is randomised controlled trial (RCT) evidence is FOBT. A meta-analysis of the two population based trials offering biennial FOBTg revealed a statistically significant 16% reduction in CRC mortality over an 8 to 10 year period.[4–6] But there are limitations of this test; in particular, 50% of cancers will be missed because of its low sensitivity.[25]

A separate shortcoming of FOBTg is difficulty with interpretation and quality control. Comparisons between FOBTg and FOBTi have shown that FOBTi has a higher analytical sensitivity to detect faecal blood.[25] It is therefore assumed that it will achieve at least the same or greater reduction in mortality within an organised screening programme as FOBTg, where randomised controlled trials showed a statistically significant reduction in CRC mortality.[4–6]

There are no results from randomised controlled trials assessing the feasibility, safety and mortality reduction of screening using flexible sigmoidoscopy or colonoscopy.

The potential benefit from the screening programme should outweigh the potential physical and psychological harm (caused by the test, diagnostic procedures and treatment)—In the FOBT trials reported to date, physical harms as a consequence of follow-up colonoscopy were less than had been anticipated based on the data available to the previous working party; however this is dependent on rigorous quality control.[16,17] Similarly, with regard to psychological harm, the data from the trials and the United Kingdom pilot have been reassuring.[12,13,43,44]

The health care system will be capable of supporting all necessary elements of the screening pathway, including diagnosis, follow-up and programme evaluation—Screening is more than offering a test, and currently New Zealand cannot offer any CRC screening programme because of lack of capacity.[18] The implications for colonoscopy and pathology services are of particular concern.

An effective CRC screening programme would require substantial workforce planning, service expansion and capital investment so that the New Zealand health system could support it. This is crucial for colonoscopy services since all four screening modalities considered by the Advisory Group require colonoscopy either for follow-up diagnosis or first line screening. The results of a colonoscopy capacity survey in New Zealand in 2005 identified significant delays in the provision of colonoscopy, which may be affecting outcomes from colorectal cancer.[18] This is despite the fact that the number of colonoscopies performed in the main centre public hospitals has almost doubled between 1997 and 2005.

Existing public hospital colonoscopy capacity is insufficient to deliver timely diagnostic colonoscopy for individuals with symptoms suggestive of CRC, and it is also insufficient to deliver timely surveillance procedures for those identified at increased risk of CRC as outlined in the Guidelines for the Surveillance and Management of Groups at Increased Risk of Colorectal Cancer.[7,45]

Based on the results of the 2005 colonoscopy capacity survey, nationally 930 patients with symptoms were estimated to have been waiting more than 6 months for a diagnostic procedure, and 2790 patients at increased risk of CRC were estimated to have been waiting more than 6 months for a surveillance procedure.[18] Significant additional expansion would be required to support a national screening programme

There is consideration of social and ethical issues—Potentially, the social and ethical issues are profoundly complex, and any CRC screening programme would need to be carefully planned, implemented and monitored to ensure that participants are well-informed of test limitations and to maximise benefit while minimising harms.[16,46]

Possible harms of screening include false positive and false negative tests and rarely significant adverse events as a consequence of colonoscopy. At present, in the absence of widespread screening, the outcome for Māori with CRC is worse than for non-Māori, probably due to differential access to services.[47] The risk of increasing inequalities must also be taken into account so that the potential benefits of screening are distributed evenly among all population groups in New Zealand.

Adequate resourcing, particularly with regards to colonoscopy services, would be important to avoid displacing services for the investigation of people with symptoms and surveillance for those at increased risk of developing CRC.

There is consideration of cost-benefit issues—Compared with existing overseas screening programmes, FOBTg CRC screening appears to be cost-effective; however, the benefits are at best modest.[48,49] Other screening modalities (flexible sigmoidoscopy, colonoscopy and FOBTi) are expected to bring greater benefits but supporting RCT evidence is not yet available. They are also more expensive, particularly with regard to set-up costs. If evidence of greater benefit becomes available, these higher cost options may in the end represent the best course of action. Evidence of cost-effectiveness of FOBTg is based on overseas populations. CRC incidence is higher in New Zealand and test positivity is unknown; consequently both costs and benefits may differ.

Results and Discussion

The issues in relation to colorectal cancer screening are complex and have implications for New Zealand. The potential to reduce CRC mortality with biennial FOBTg has been demonstrated in two randomised controlled trials in Nottingham, England and Funen, Denmark.[4,5] It is unclear whether the magnitude of benefit shown by the trials can be maintained over time.[14–17] Participation in the UK pilot study mirrored that in the RCT, indicating that FOBT is acceptable to the general population.

Although the New Zealand acceptability study indicated that most would proceed with an FOBT if offered it, we still do not know if a screening programme in New Zealand could achieve the same results. The poor sensitivity of FOBTg (it will miss 50% of cancers) raises additional questions about its acceptability as a screening test to health professionals, notably general practitioners, as well as consumers. A separate shortcoming of FOBTg is the subjective nature of the interpretation of the test result, which causes difficulty for quality control.

FOBTg has been used in a pilot programme in the UK but resulted in repeat testing:

> "The majority of test-positive results in the UK Pilot have come from repeat-testing; this has caused long screening histories in many participants and may be overly-burdensome in a national programme. Consideration should be given to tests which provide more definitive results on the first round of screening (e.g., immunological tests) - these warrant further evaluation."[12]

Because of the difficulties in interpreting the test and also problems of quality control, FOBTg testing is not well supported by pathologists in New Zealand. The newer immunochemical tests (FOBTi), where reading can be automated, are preferred. FOBTi are also more sensitive, and there is expectation that this would translate into greater mortality reductions, although there is no RCT evidence.

The higher positivity of FOBTi would lead to a greater demand for colonoscopy, and this is a concern. But test positivity can be adjusted, allowing a degree of control. A further advantage of FOBTi from the consumer perspective is that no dietary preparation is required. However the acceptability to the New Zealand public of these FOB tests (whether guaiac or immunochemical) is unknown. Test positivity in a New Zealand population (which has a higher incidence of colorectal cancer than countries where the RCTs were conducted) is also unknown. Therefore the colonoscopy requirements to support a screening programme to achieve the intended mortality reduction are uncertain.

Provision of colonoscopy services is crucial to an FOBT-based screening programme since colonoscopy provides the definitive diagnosis following a positive screening test. Further information on colonoscopy requirements is required before embarking on an FOBT screening programme to avoid compromising services for people with symptoms or those at increased risk of colorectal cancer, for whom the service guidelines are not currently met.

The other primary screening test modalities (flexible sigmoidoscopy and colonoscopy) would place a heavier burden on endoscopy services than FOBT-based screening, and it is hard to argue for these in the absence of RCT evidence of benefit.

Conclusion

To assist the introduction of an effective CRC screening programme the Advisory Group recommended that a feasibility study of CRC screening using FOBTi be undertaken. A feasibility study of CRC screening using FOBTg or FOBTi would inform a decision on whether the New Zealand health system could support a national CRC screening programme that achieves high participation rates and is acceptable, effective and economically efficient.

The Advisory Group recommends a feasibility study rather than a pilot study because New Zealand presently lacks the capacity to meet current requirements for the investigation of people with symptoms of CRC or to offer surveillance to those at increased risk of CRC, even without a screening programme. A feasibility study would provide key information on programme specifications, which would serve as a basis for developing a full pilot study and a plan for expansion of colonoscopy, pathology and related services.

In addition to workforce planning, an effective CRC screening programme would need to address social and ethical issues, such as delivering a safe programme that meets people's expectations whilst preventing any increase in inequalities through the programme.

With regard to optimising the diagnosis and treatment of colorectal cancer, the Advisory Group made several recommendations that should improve outcomes for CRC in New Zealand regardless of whether a screening programme is in place.

In addition to the urgent expansion of colonoscopy services, there is an immediate need to ensure that throughout New Zealand the treatment of CRC, both surgical and oncological, is based on a multidisciplinary approach with audited outcomes meeting international standards.

The Advisory Group also recommends an ongoing programme of research into the control of colorectal cancer in New Zealand and factors driving inequalities.

Recommendations

Based on these findings, the Advisory Group offers the following recommendations:

Screening

Screening using faecal occult blood tests

It is recommended that:

- A feasibility study of CRC screening using FOBTi be undertaken in New Zealand. The study would address several key research questions specific to New Zealand and assess feasibility by monitoring the acceptability and impact of screening on participants and service providers across the screening pathway
- The feasibility study design should incorporate an initial phase that determines optimum positivity rates of the chosen FOBTi(s). This phase may involve comparing the performance with that of the FOBTg used in the published randomised controlled trials and United Kingdom pilots
- A feasibility study is a pre-requisite to a decision regarding a pilot study.

Screening using flexible sigmoidoscopy

It is recommended that:

- Any further consideration of screening for CRC by one-off flexible sigmoidoscopy be deferred until the results of the United Kingdom and Italian multicentre trials are available
- Opportunities to contribute to further clinical trials in this area be pursued.

Screening using colonoscopy

It is recommended that:

- Any further consideration of screening for CRC by colonoscopy be deferred until the results of randomised control trials are available. No randomised controlled trials are currently in progress
- Research opportunities addressing the potential of CRC screening by colonoscopy be pursued. In this regard, New Zealand has been invited to participate in the Nordic multicentre RCT, involving CRC screening by one-off colonoscopy, and this opportunity should be drawn to the attention of the Ministry of Health and the New Zealand Cancer Control Council.

Optimising the diagnosis and treatment of CRC

Implementing the following recommendations will improve outcomes from colorectal cancer in New Zealand. Their implementation is essential to the development of the infrastructure and processes that are needed for a successful CRC screening programme.

Colonoscopy capacity

It is recommended that:

- Colonoscopy capacity be expanded with some urgency to ensure timely provision of diagnostic colonoscopy within the public health sector for people with symptoms suggestive of CRC
- Colonoscopy capacity be expanded with some urgency to facilitate the availability of surveillance procedures for those at increased risk of CRC as

outlined in the Guidelines for Surveillance and Management of Groups at Increased Risk of Colorectal Cancer.[7]

Guideline for groups at increased risk of colorectal cancer

It is recommended that the implementation of the Guidelines for Surveillance and Management of Groups at Increased Risk of Colorectal Cancer[7] be monitored with regard to both education of medical practitioners and provision of adequate colonoscopy capacity.

Referral guidelines for diagnostic colonoscopy

It is recommended that evidence-based guidelines identifying high- and low-risk symptoms for CRC be developed with the aim of optimising referral and improving utilisation of colonoscopy for diagnostic purposes.

Quality assurance in colonoscopy

It is recommended that:

- The relevant professional bodies in New Zealand develop and promote agreed quality parameters for the technical performance of colonoscopy and the continuous quality improvement process for colonoscopy. This work would include the development of and resourcing for structured and standardised training in colonoscopy. Recognition of training by the New Zealand Conjoint Committee for Recognition of Endoscopy Training (New Zealand Society of Gastroenterology, New Zealand Committees of the Royal Australasian College of Physicians and Royal Australasian College of Surgeons) should also be promoted as a prerequisite for independent practice.

Treatment for CRC

It is recommended that:

- The treatment of CRC, both surgical and oncological, be based on a multidisciplinary approach with audited outcomes meeting international standards
- The resources required to provide appropriate and timely colorectal cancer treatment services be considered as part of any work on CRC screening and surveillance.

Inequalities in CRC outcomes

It is recommended that factors identified as contributing to the increasing CRC mortality rates among Māori and Pacific peoples be investigated and addressed with urgency.

Cancer Registry information

It is recommended that current initiatives to expand the Cancer Registry to include clinical stage, survival and treatment modality for colorectal and other cancers are supported and progressed with some urgency. Such initiatives have implications that are broader than screening.

Pathology reporting for colorectal neoplasia

It is recommended that the relevant professional bodies reach a consensus on:

- The staging system to be used in reporting colorectal cancer to the Cancer Registry
- The classification of and information required in reporting colorectal neoplasia.

Pathology workforce

It is recommended that the policy work on CRC screening and surveillance assesses the impact on the pathology workforce and identifies specific actions that might be required.

Improving outcomes from CRC for Māori

It is recommended that in order to optimise outcomes for Māori, any CRC-control programme, including screening, should

- Adopt a 'Hauora' model to address health and wellbeing
- Include the following features:

  alliances with relevant Māori health organisations (such as the Māori Medical Practitioners Association, Māori Nurses Organisation, Māori development organisations and iwi/Māori groups)

  mechanisms (including prioritisation, resources and performance incentives) to ensure Māori participation in the planning and provision of the programme

  use of te reo Māori (language), in addition to English, in information, health promotion and other materials relating to the programme

  complementary measures to determine the programme's success in Māori terms.

Ongoing programme of research into the control of colorectal cancer in New Zealand and factors driving inequalities

It is recommended that there is ongoing research on colorectal cancer screening that complements research across the cancer control continuum.

Review of recommendations

The above recommendations should be reviewed when results of a New Zealand FOBTi feasibility study, the United Kingdom and Italian multicentre randomised control trials on flexible sigmoidoscopy and any new RCT-based research on other screening modalities become available.

Competing interests: None.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Systematic review of the effectiveness of population screening for colorectal cancer

Jane Kerr, Peter Day, Marita Broadstock, Robert Weir, Susan Bidwell

Abstract

Aim To estimate the effectiveness of colorectal cancer screening with faecal occult blood testing (FOBT), flexible sigmoidoscopy (FS), and combinations of FOBT and FS in preventing colorectal cancer (CRC) deaths.

Method A systematic review was conducted examining randomised controlled trials (RCTs) published between 1997 and 2004 inclusive. A systematic search of Medline, Embase, Current Contents, and the Cochrane Library was undertaken. Studies that evaluated screening with FOBT, FS or combinations of FOBT and FS, were appraised. A meta-analysis of population-based trials of FOBT was conducted.

Results Four RCTs were identified that examined FOBT screening. The three trials that investigated guaiac-based FOBT found CRC mortality was reduced in the screening group. In the two population-based trials, the pooled relative risk was 0.86 (95%CI 0.79–0.93). A fourth RCT was identified, with shorter term follow-up, which considered FOBT screening combined with FS compared with FOBT alone. No significant reduction in CRC mortality was reported in this trial.

Conclusion There is high-quality evidence showing that guaiac-based FOBT screening reduces mortality from CRC. No such evidence exists for screening with FS either alone, or in combination with FOBT, but this should be re-evaluated once data become available from four large ongoing trials.

At present, there is no routine organised population screening for colorectal cancer (CRC) in New Zealand. Concerns about high rates of mortality[1] and morbidity[2] from CRC in New Zealand have led to calls for population screening for the disease.

Proposed methods include faecal occult blood testing (FOBT), flexible sigmoidoscopy (FS), and combinations of these. In order to update a literature review completed in New Zealand in 1998,[3,4] a systematic review was conducted of the evidence for the clinical effectiveness of population screening for CRC using FOBT, FS, and FOBT and FS combined.[5] This paper focuses on CRC mortality and incidence. Colonoscopy, double contrast barium enema, and computed tomographic (CT) colonoscopy have also been suggested as possible screening tests but were not considered in this review due to the absence of new randomised controlled trial (RCT) efficacy data since 1998.

Methods

Search strategy—A systematic search of Medline, Embase, Current Contents, and the Cochrane Library was conducted. Extended searching included the DARE and Health Technology Assessment databases, clinical trial and guideline resources, and references from retrieved publications. Searches were limited to material published from January 1997 to November 2004 inclusive.

Study selection—Studies were eligible for inclusion in the review if they were full reports of RCTs that compared the clinical effectiveness of FOBT screening with no screening. Studies evaluating other screening methods including FS, and combined FS and FOBT approaches, were also considered. When there was more than one version of the study, the version with the longer follow-up was used.

Data extraction and synthesis—Data relevant to study quality and statistical precision were extracted using design-relevant checklists.[6] Key data extracted included characteristics of the study population, intervention and control group, sample size (by study group), number of screening rounds, duration of follow-up, and management of patients who were screen positive.

Results data for CRC incidence and mortality risk ratios, and positive predictive values, were either obtained directly from the studies or derived from available information. An analysis of numbers needed to screen (NNS) to prevent one CRC death was based on an intention to screen basis, using the groups that subjects were originally randomised to, although the limitations of this measure are recognised.[7] Confidence intervals for the NNS were calculated using the method suggested by Altman for number needed to test.[8]

The most recently published data, examining the effectiveness of screening with FOBT in reducing CRC mortality from the population-based RCTs, were used to conduct a meta-analysis. As there was no suggestion of heterogeneity, a fixed effects model meta-analysis was undertaken, using Stata (version 7.0) software.[9]

Full details of search terms, sources, study selection, and appraisal methods are provided in the NZHTA report.[5]

Results

Efficacy of faecal occult blood screening—The current review identified four RCTs comparing FOBT screening with no screening. Three of these trials used the guaiac test Haemoccult/Haemoccult II. The other trial used an immunochemical test (reverse passive haemaggutination) plus a health questionnaire.[16] Study design details are included in Table 1.

After 18 years follow-up in the Minnesota RCT, CRC mortality was significantly reduced in the annual group (21% reduction) and the biennial group (17% reduction). CRC incidence in the annual and biennial screening groups was also significantly reduced in this trial, by 33% and 21% respectively (see Table 2).[10,11] After a median of 11.7 years follow-up in the Nottingham trial, a 13% reduction in CRC mortality was reported for those in the screening group compared to the control group.[12] However, there was no significant difference in CRC incidence between the screening and control groups (see Table 2).

After 17 years of screening (nine screening rounds) in the Funen-1 trial, CRC mortality was reduced by 16% in the screening group compared with the control group, although this was reduced to an 11% reduction when treatment complications were included (see Table 2).[13] This result was not statistically significant, in contrast to estimates at shorter follow-up periods, including 10 years.[14] Results at 14 years follow-up were of borderline significance.[15]

Pooling the most recent data from the Nottingham and Funen-1 trials (excluding treatment complications) estimated that screening reduced the risk of death from CRC by 14% [RR = 0.86 (95% CI 0.79-0.93)]. Adding the results for biennial screening from the Minnesota RCT[10] made no difference to the pooled rate ratio [RR = 0.85 (95% CI 0.79-0.92)]. There was no evidence of heterogeneity between studies using Cochran's Q test.

Table 1. Characteristics of trials of faecal occult blood screening with or without flexible sigmoidoscopy screening

Variables	Minnesota[10,11]	Nottingham[12]	Funen-1[13]	Jiashan[16]	Funen-2[20]
Study population	Minnesota, USA, volunteers aged 50-80 years	Nottingham, UK, aged 45-74 years	Funen, Denmark, aged 45-75 years	Jiashan County, China, aged ≥ 30 years	Funen, Denmark, aged 50-75 years
Intervention	Guaiac FOBT, predominantly rehydrated	Guaiac FOBT, unrehydrated	Guaiac FOBT, unrehydrated	Immunochemical FOBT(reverse passive haemagglutination test) plus structured health questionnaire	Once only Guaiac FOBT + FS
Control	Usual care	Usual care	Usual care	Not reported	FOBT alone
Study groups	Annual screen 15,570 Biennial screen 15,587 Control 15, 394	Biennial screen 76,466 Control 76,384	Biennial screen 30,967 Control 30,966	Once only screen 94,423 Control 97,838	Once only Intervention group 5495 Control 5483
Screening rounds	Annual group: 11 Biennial group: 6	≥3	9	1	1
Participation rate	First round: Annual group 90% Biennial group 89% Average compliance Annual 75% Biennial 75%	First round: 53% Overall (after re-inviting non-responders) 59%	First round: 67% Further rounds: 91-97%	One-off screen: 66.4%	FOBT +FS: 40% FOBT alone: 56%
Follow-up	18 years	Median 11.7 years	17 years	8 years	2-5 years
Management of positive screen	Colonoscopy	Colonoscopy	Review plus colonoscopy	Flexible sigmoidoscopy	Colonoscopy

The report of the Jiashan trial provided data that allowed for calculations of the relative risks for CRC incidence and cumulative mortality following screening with an immunochemical FOBT.[16] The only statistically significant result pertaining to incidence and mortality was a 32% reduction [RR = 0.68 (95% CI 0.54-0.87)] in mortality from rectal cancer in the screening group compared to the control group. Incidence of rectal cancer was not significantly reduced. In addition, for both colonic cancer and overall colorectal cancer, there was no significant reduction in mortality or incidence. This may reflect the fact that most screen positive participants underwent evaluation of only the distal part of the bowel, by flexible sigmoidoscopy. It was not clear whether an intention to treat analysis was used in this trial, nor whether cluster randomisation was taken into account. Overall results are presented in Table 2.

Efficacy of flexible sigmoidoscopy screening—No completed RCT was identified which evaluated the impact of flexible sigmoidoscopy (FS) on colorectal cancer incidence and mortality. However, three large multi-centre trials are currently underway, with two exploring one-time screening[17,18] and one exploring repeated screening.[19] Incidence and mortality data will not be available until at least 2008 for the two one-off screening trials, and not until 2010–2012 for the repeated screening trial.

Efficacy of flexible sigmoidoscopy screening and faecal occult blood testing combined—One RCT, the Funen-2 trial, reported limited CRC incidence and mortality data for 5495 persons registered for once-only FOBT and FS testing compared with 5483 persons receiving FOBT alone.[20]

At 24–62 months follow-up, 11 versus 14 persons died of CRC for combined versus FOBT-only groups (p value not reported), and the CRC incidence rate of those screened in the combined screening group was 3.6 compared to 5.9 per 1000 in the FOBT-only group (p=0.24). The predictive value of a positive test for CRC was 2.8% after FOBT followed by FS, and 5.4% after FOBT alone. Subjects and physicians were unaware of FOBT results before FS and the criteria for a positive test resulted in 18.6% of the combined screening subjects having a full colonic examination compared to 2.3% after a positive FOBT test. See Table 2 for overall results.

Table 2. Results of trials of faecal occult blood screening with or without flexible sigmoidoscopy screening

Variables	Minnesota[10,11]	Nottingham[12,28]	Funen-1[13]	Jiashan[16]	Funen-2[20]
CRC mortality: Effectiveness RR (95%CI)	Annual screening RR 0.67 (0.51–0.83) Biennial screening RR 0.79 (0.62–0.97)	0.87 (0.78–0.97)	CRC mortality (including treatment complications): 0.89 (0.78-1.01) CRC mortality alone: 0.84 (0.73–0.96)	0.85 (0.71–1.03)	0.78 (0.36–1.73)
NNS to avoid one CRC death (95% CI)	Annual screening: 268 (169 – 645) over 18 years Biennial screening: 499 (NNSH3740 - ∞ - NNSB234)[1] over 18 years	826 (470 – 3390) over 11.7 years	449 (250 – 2184) over 18 years	2778[2] over 8 years	1813 (NNSH812–∞–NNSB428)[1] over a range of 2–5 years
CRC incidence: Effectiveness RR (95%CI)	Annual screening: RR 0.79 (0.62–0.97) Biennial screening: RR 0.83 (0.73–0.94)	0.99 (0.92–1.07)	1.02 (0.93–1.12)	0.98 (0.86–1.13)	1.37 (0.88–2.15)
Positive predictive value for CRC	Annual screening: 0.87%- 4.53% Biennial screening: 1.12% (1 of 6 slides positive) 6.13% (6 of 6 slides positive)	First screen = 9.9% Later invitation to those who refused first screen = 17.1% Rescreen = 11.9%–13.3%	First screen = 17.2% Ninth screen = 16.5% Rounds 2-8 range = 5.2%-18.7%	FOBT + questionnaire = 0.66%	First and once-only screen FOBT+FS: 2.8% FOBT: 5.4%

1) NNSH number needed to screen (harm), NNSB number needed to screen (benefit)

2) Insufficient information for confidence interval calculation

Discussion

There was high-quality evidence that screening with the guaiac FOBT Haemoccult reduces mortality from CRC. However, the three trials examining this screening test had important differences in their design. FOBT rehydration was undertaken in most screening in the Minnesota trial, but not the Nottingham and Funen-1 trials.

Rehydration increases the proportion of positive tests (which decreases the positive predictive value) and the number of diagnostic work-ups escalates. A higher rate of participants undergoing diagnostic work-up (with removal of adenomas) may explain why follow-up papers from the Minnesota RCT report a reduction in incidence of CRC, compared to both the Nottingham and Funen-1 trials, which found no difference

in incidence of CRC between screening and control groups.[11] Nevertheless, test rehydration inflates screening costs, as well as increasing potential screening harms from the more invasive diagnostic tests.

Currently, rehydration of guaiac-based FOBTs is not recommended by major organisations such as the World Health Organization[21] and the American Gastroenterological Association,[22] or by the manufacturer.[23]

Another important difference was in the method of participant recruitment. Since both the Nottingham and Funen-1 studies used population-based sampling, their results are the most applicable to organised population screening programmes (the Minnesota study used a volunteer population). Of interest in this respect is that participation rates for at least one round in these population-based RCTs was between 59–67%. This was similar to the participation rate (66.4%) of the Jiashan trial, which also invited members of the general public. The Minnesota RCT participation rate was higher (89–90% for the first round).[5.]

Despite these differences, the three trials estimated reduced rates of CRC mortality in the screening groups, although CRC mortality was not significantly reduced after longer-term follow-up in the Funen-1 trial. Evidence from ongoing follow-up of the two trials in which screening has stopped (Minnesota and Nottingham) suggests that this mortality reduction has been sustained. However, CRC mortality was not significantly reduced after longer term follow up in the Funen-1 trial for the population to whom screening has continued to be offered; Kronborg et al suggest that this lessening of risk reduction is likely to be due to smaller numbers of subjects being screened as the number of screening rounds increases.[13]

Pooled estimates of the two population based trials examining guaiac FOBT (Nottingham and Funen-1) or the three guaiac based RCTs (Minnesota, Nottingham, and Funen-1) suggests that screening resulted in significantly reduced colorectal cancer mortality. These results are similar to those found by Towler et al[24] who estimated a 16% reduction in mortality from colorectal cancer in a meta-analysis of earlier results. The Towler meta-analysis included the Minnesota, Nottingham, and Funen-1 trials (though with shorter-term follow-up) plus data obtained by personal communication from the Gothenburg RCT.[25]

The Jiashan trial was the only eligible study that evaluated an immunochemical test and was therefore included for comparative purposes. Nevertheless, differences in age and healthcare environment somewhat limit the clinical relevance of this study. It was difficult to evaluate what influence the young average age of the study population in this RCT may have had on the efficacy of screening to reduce CRC mortality. However, given the overall youth of the study population (and therefore the probable lower incidence of CRC in such a group) the impact of screening would likely have been reduced in this trial.

The investigators justified their choice of start age by explaining that CRC occurs approximately 10 years earlier in Chinese than in Westerners; this ethnic difference also limits how applicable the results of the Jiashan RCT are to the New Zealand population.[16]

Since the management of screen positive participants differs from that of the three studies that examined guaiac FOBTs, the results from this study are not directly

comparable. Although the evidence from this study suggests that a reduction in rectal cancer may be achievable with the use of an immunochemical test, for the reasons outlined above and in the results section this evidence is less robust than that provided by the other three RCTs included in this section.

Although population-based surveillance using flexible sigmoidoscopy has been investigated,[26] no large RCT of this method has been completed that provided incidence and mortality data. Three large ongoing trials are investigating flexible sigmoidoscopy as either one-off or repeated screening for average-risk men and women aged from their mid-50s.

Preliminary results are promising in terms of feasibility and acceptability. However, incidence and mortality data will not be available before 2008 for the two trials investigating one-off screening (*personal correspondence,* Professor Wendy Atkin, principal investigator, Flexible Sigmoidoscopy Screening Trial, 15 February 2005; *personal correspondence,* Dr Carlo Senore, SCORE Trial, 16 March, 2005), and until 2010–2012 for the trial of repeated screening (*personal correspondence,* Dr Schoen, investigator, The Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial, 23 February 2005).

The Funen-2 trial with FOBT followed by FS had a short follow-up period and non-repeat screening and was not designed as a mortality study. The trial evidence does not support a FOBT and FS combined screening strategy in asymptomatic middle-aged populations over screening involving FOBT alone. These results could reflect poor compliance in the combined screening group and, in those attending, few additional positive results from FOBT that were not already reported by FS.

The Norwegian Colorectal Cancer Prevention (NORCCAP) trial[2] comparing FS screening with no intervention considered FOBT and FS combined compared with FS alone within the trial intervention arm. Data on CRC incidence and mortality is expected to become available in late 2007 (*personal correspondence,* Professor G. Hoff, Investigator, NORCCAP Screening Trial, 8 March 2005).

Conclusion

This review has examined the efficacy of screening for CRC using FOBT testing with or without FS. The estimated reduction in CRC mortality resulting from screening with guaiac-based FOBT in large randomised controlled trials with long follow-up provides support for the use of this test. No such evidence exists for screening with FS either alone, or in combination with FOBT, but this should be re-evaluated once data become available from four large ongoing trials.

To replicate the mortality reductions found in the FOBT trials, participation in a screening programme would need to be equivalent or higher. Screening acceptability may represent one of the biggest challenges for FOBT screening. This paper has not examined other issues of relevance to the use of screening for colorectal cancer screening, including risk of harm from screening, resources available for the management of screen positive individuals and the economic implications resulting from screening. These are discussed further in the full report of the systematic review.[5] Such factors are important considerations that may influence the decision to introduce a colorectal screening programme based on FOBT testing.

Competing interests: None.

Disclaimer: Views expressed in this article do not necessarily represent the views of the Ministry of Health.

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Acknowledgements: The Ministry of Health funded this research and allows the *NZMJ* to publish this article. We acknowledge contributions to the NZHTA report by Sarah Hogan, Susan Parry, Ann Richardson, Simon Baker, Bronwyn Petrie, and Terri Green.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Caecovesical fistula: a rare manifestation of carcinoma of the caecum

Giovanni Losco, Roger Rees

Colovesical fistula is uncommonly associated with carcinoma of the colon. It is especially rare with caecal carcinoma. As colon cancer has its highest incidence in New Zealand and registrations are forecast to continue to rise,[1] it is of interest to highlight this unusual manifestation of the disease. We report a case of caecal carcinoma presenting with symptoms associated with fistula between the bladder and the intestinal tract.

Case report

A 77-year-old Caucasian woman, who had had a hysterectomy and radiotherapy for endometrial cancer 18 years previously, was admitted with 3 weeks of watery diarrhoea, faecal incontinence, and a weight loss of 7 kg over 2 weeks. She had no urinary symptoms. She was anaemic (haemoglobin 90 g/L) with normal biochemistry. A faecal specimen was negative for common pathogens.

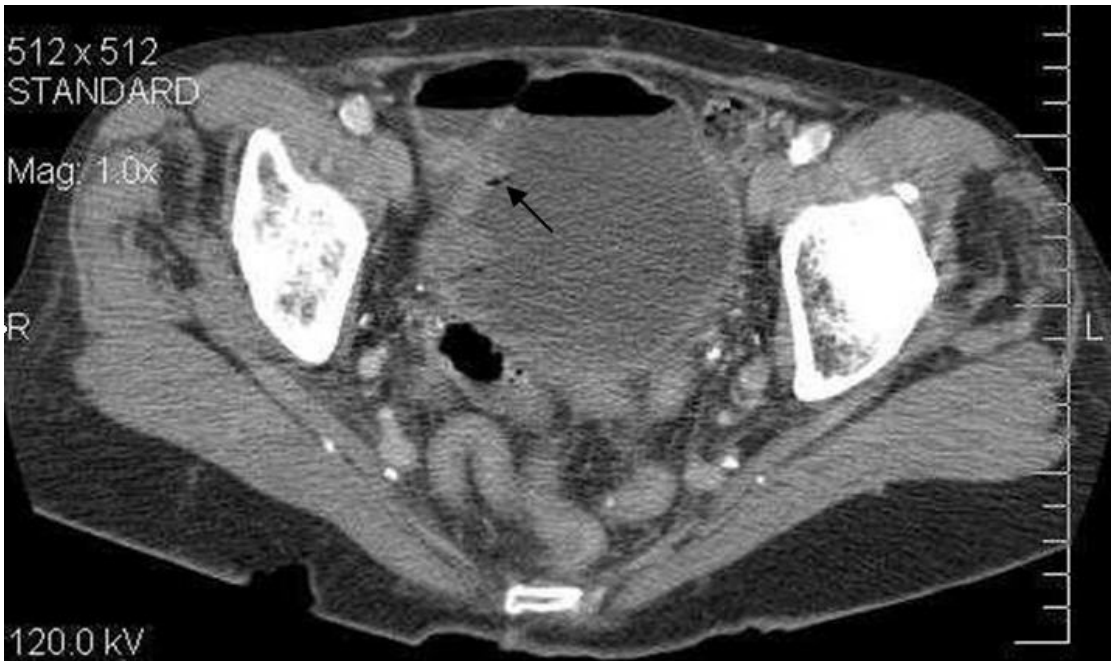
On day 2, she developed frank haematuria. Renal ultrasound was normal but demonstrated a large clot in the bladder. Her urine output decreased over the following days to less than 10 mL per hour with extended periods of anuria by day 5, despite being clinically euvolaemic with normal renal function (creatinine 0.07 mmol/L).

Her diarrhoea continued and the small volumes of urine passed appeared faeculent. Microscopy and culture demonstrated various enteric organisms. Catheterisation did not improve symptoms, paradoxically diminished bladder output and worsened the diarrhoea. Computed tomography (CT) of the abdomen demonstrated an irregular thickening of the bladder wall with the impression of intramural gas (Figure 1).

The bladder was noted to abut the caecum but the bowel was unremarkable. Colonoscopy to 30 cm was normal, but an extrinsic element prevented intubation above this level. Cystoscopy demonstrated mild inflammation of the upper bladder wall. CT colonogram revealed a massive amount of fluid in the colon, a large amount of gas in the bladder and again showed the bladder to abut the caecum. No colonic lesions were identified. A creatinine performed on the faecal specimen was 5.1 mmol/L, strongly suggesting urine in the faeces.

Although our imaging techniques had not convincingly visualised a colovesical fistula, we now had a very high clinical index of suspicion supported by several clues. We thus decided to proceed to laparotomy where a caecal cancer adherent to the posterior bladder wall was found.

Figure 1. CT image of the abdomen showing the bladder



(The arrow indicates intramural gas in a thickened area of bladder wall. Note the large amount of gas inside the bladder)

Right hemicolectomy and partial cystectomy were performed. The histology showed a Dukes B moderately differentiated mucinous adenocarcinoma and a malignant caecovesical fistula. The appendix was not identified and thorough review of the patient's medical record does not reveal an appendicectomy.

The patient was discharged home after a brief period of rehabilitation with referral to our oncology service.

Discussion

The incidence of enterovesical fistula is estimated as 2 patients per 10,000 hospital admissions.[2] The majority of these occur in the sigmoid colon or rectum (81%) and 10% occur in the ileum.[3] Only 110 cases of caecovesical fistula are described in the literature.[4] Over 100 of these are appendiceal in origin, most secondary to appendicitis and 4 due to appendiceal malignancy.[5] The remaining cases are true caecovesical fistulae.

Various reported causes include inflammation, amoebic infection, Crohn's disease, carcinoid tumour, caecal diverticulitis, and mucinous adenocarcinoma of the caecum.[4,6]

By contrast, the causes of colovesical fistula, according to one study, are: diverticulitis (52%), Crohn's disease (18%), carcinoma of the colon (11%), non-colonic pelvic cancer (9%), external beam radiation (4%), and "other" (6%).[3]

A review of 1100 cases of colovesical fistula found that around half of all patients present with faecaluria, abdominal pain, pneumaturia, or dysuria. One-fifth of patients experience diarrhoea and only 1 in 20 patients pass urine rectally.[3]

In our case, diarrhoea (secondary to passage of urine rectally) was the predominant presenting symptom. The rarity of this phenomenon (compared to the common findings of air or faeces in the urine) has been attributed to intracolonic pressures being higher than intravesical.[3]

We elected to perform partial cystectomy as it was felt that adequate margins would be achievable and this procedure causes minimal morbidity.[7] Carne et al concluded that there is no difference in local recurrence or long-term survival between partial or total cystectomy, whereas dissection of the cancer off the bladder alone invariably leads to local recurrence.[8]

The patient's history of pelvic radiation is probably unrelated as primary cancer was the mechanism of fistula formation and there was no evidence of significant adhesions in the pelvis intraoperatively.

Colon cancer remains a significant cause of morbidity and mortality in New Zealand. This case is part of a tiny subset of colovesical fistulae: caecovesical fistula secondary to mucinous adenocarcinoma. Our report demonstrates an unlikely cause of diarrhoea and highlights the difficulty that a range of (radiological and endoscopic) imaging techniques has in diagnosing this condition.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

A case of misdiagnosed interrupted aortic arch as primary hypertension for almost two decades

Ibrahim Sari, Vedat Davutoglu, Serdar Soydinc, Orhan Ozer

Abstract

Hypertension is an increasingly important medical and public health issue. Appropriate diagnosis and treatment of hypertension is very important in both reducing the morbidity, mortality, and cost related to it. Interrupted aortic arch (IAA) is an uncommon and usually lethal congenital malformation. It is very rarely encountered in adult patients who generally present with nonspecific symptoms and hypertension. Substantial collateral circulation must be present to maintain blood flow to tissues below the aortic interruption and thus to enable survival.

A 40-year-old man presented with general malaise, frequent headaches, weakness in his legs, and hypertension. He had suffered from effort intolerance since childhood. Physical examination revealed upper limb hypertension. Lower-limb pulses were not palpable. Transthoracic echocardiography, aortography, and gadolinium contrast-enhanced magnetic resonance angiography revealed complete interruption of the aortic arch just distal to the origin of the left subclavian artery. The present case describes an unusual case of IAA, in which the diagnosis was delayed until the age of 40 years.

A complete physical examination would have ensured the correct diagnosis was made much earlier.. As our case implies, physical examination maintains its pivotal role in the diagnosis of some forms of secondary hypertension, although various high-tech diagnostic tools are needed for confirmation.

Interrupted aortic arch (IAA) is an uncommon and usually lethal congenital malformation. Unless treated surgically, almost all infants die within the first month of life.[1] IAA is defined as complete luminal and anatomic discontinuity between the ascending and descending aorta.[2] The present report describes an unusual case of IAA, in which the diagnosis was not made until adulthood.

Case report

A 40-year-old male sales representative presented with general malaise, frequent headaches, weakness in his legs, and hypertension. He had suffered from effort intolerance since childhood. His hypertension was diagnosed 15 years earlier and he was using a beta-blocker. Physical examination revealed upper limb hypertension. Lower-limb pulses were not palpable. Transthoracic echocardiography showed severe left ventricular hypertrophy and aortic interruption just below the left subclavian artery.

Aortography revealed complete interruption of the aortic arch just distal to the origin of the left subclavian artery (Figure 1). A gadolinium contrast-enhanced magnetic resonance angiogram demonstrated complete interruption of the descending aorta and markedly developed collateral circulation (Figure 2). There was no associated cardiac

anomaly other than the IAA. The patient underwent successful surgical repair but hypertension persisted requiring medication.

Figure 1. Aortography from right brachial puncture showing complete lack of continuity in the descending aorta. Note the prominent dilatation of the left subclavian artery.

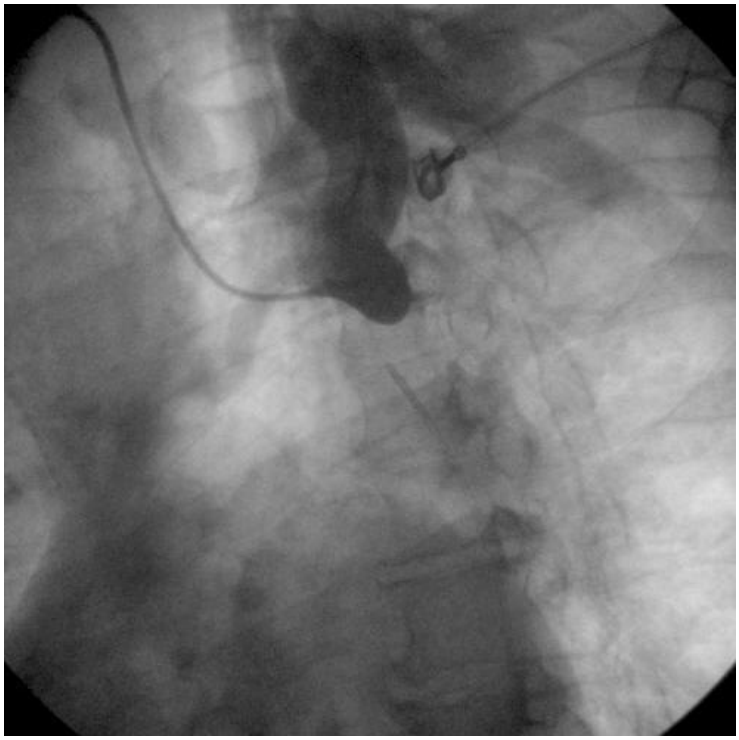
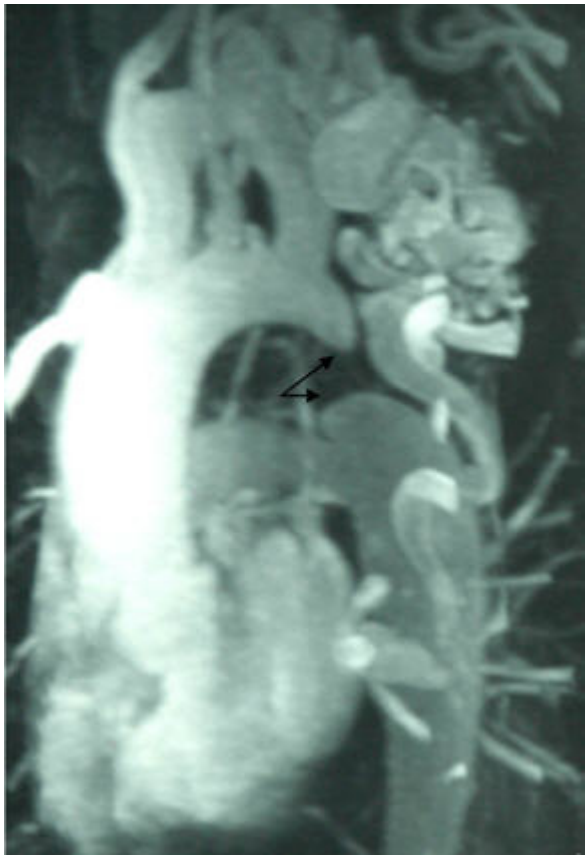


Figure 2. Magnetic resonance angiogram showing complete interruption (arrows). Note the extensive well developed collaterals.



Discussion

IAA is a rare congenital malformation defined as complete absence of flow between two portions of the aorta. In infants, its clinical presentation often involves severe congestive heart failure and if left untreated, most affected infants die within days.[3]

This anomaly is very rarely encountered in adult patients. Substantial collateral circulation must be present to maintain flow to vital organs and tissues below the aortic interruption and thus enable survival. In the few documented cases in adults, presentation has ranged from lack of symptoms to detection of hypertension, headache, malaise, differential blood pressures in the extremities, limb swelling and ischaemia, and weakness in the lower extremities.[4–6] Beyond symptomatology, a complete physical examination is the initial and most important diagnostic tool in this situation.

Hypertension is an increasingly important medical and public health issue. Appropriate diagnosis and treatment of hypertension is very important in reducing

both the morbidity, mortality, and cost related to it. Undergraduate medical teaching routinely emphasizes the importance of detailed history taking as well as a comprehensive physical examination in patients with hypertension.

The Joint National Committee VII concurs that physical examination is very important, especially in detecting underlying secondary causes of hypertension.[7]

In ancient times, diagnosis of diseases used to rely completely on physical examination. In the modern era, numerous diagnostic techniques have been incorporated into our daily medical practice. The central, vital role of a careful physical examination in directing the utilisation of sophisticated diagnostic techniques is well illustrated in this case.

The present case describes an unusual case of IAA, in which the diagnosis was not established until the age of 40 years even though the patient was under regular medical follow-up and treatment for hypertension since childhood. A complete physical examination would have ensured the diagnosis was made much earlier.

Transthoracic echocardiography, angiography-aortography, and gadolinium contrast-enhanced magnetic resonance angiography proved diagnostically helpful in this case.

In conclusion, physical examination maintains its pivotal role in patients presenting with hypertension, as in every speciality of medicine, and directs the use of various high-tech diagnostic tools for confirmation the diagnosis.

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No privacy in death

Derek Willis

The respect for a patient's confidentiality is at the core of a functioning therapeutic relationship. Without a guarantee of confidentiality, a patient may choose not to divulge sensitive information and therefore a healthcare professional may not form a full and rounded clinical picture. This could result in a delayed or incorrect diagnosis. If a patient views a clinician in particular or clinicians as a whole as being untrustworthy, they may not attend in the first place. The Privacy Act 1993,[1] whilst not exclusively concerned with medical information, tries to legislate against improper use of confidential information.

However I would argue that, as the legislation stands, the high regard that is given to confidentiality when a patient is alive is forgotten by the New Zealand system once they die.

I have two main arguments to support this stance. Firstly the fact that there is no provision to have sensitive information written on the death certificate that is known to the registrar but is not necessarily publicly accessible. This means that if a practitioner wishes to be honest they must record the exact diagnosis and cause of death, no matter the effect that this may have on the family of the person who has died.

I also believe that a person's privacy is compromised by the fact that information on their death certificate is relatively easy to access. Indeed, one can apply to have a copy of the death certificate and pay $26 for the certificate and a search fee.[2] Anyone can therefore know the diagnosis/cause of death that is recorded on the certificate.

For example let us suppose a patient is diagnosed as having a sexually transmitted infection such as HIV. They have requested that this information is not divulged as they are concerned about the effect that this will have on their family. This is respected as an autonomous choice by the patient's healthcare team during their life. If a person were to subsequently die from this, by law the doctor filling in the certificate has to be honest as to cause of death. Not only that but once the death is recorded in the computer system one can apply to have a copy. Thus on someone's death what was requested to be withheld information becomes public knowledge and one could argue that the effort that the medical team has put into respecting the patient's wishes has been wasted.

I appreciate that there are times when a healthcare professional has a duty of care to society as a whole and not just to that patient, as stated by the New Zealand Medical Council.[3] Where there are such conflicts of duty, sometimes the duty to the many does outweigh the duty to that individual—e.g. reporting of communicable disease and declaring someone unsafe to drive. However I would argue that the epidemiological data could still be collected without compromising a patient's confidentiality respected.

I also feel that the level of access of information to the public is probably inappropriate. The balance of the harm of breeching the patient's confidentiality is not, in my opinion, outweighed by the benefit that society gains from knowing the diagnosis.

Competing interests: None.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

The Treatment of Uterine Fibroids

Contributed by Dr Young. Published in the N Z Med J 1907;6(24):10.

PREGNANCY AND FIBROIDS—Whilst fibroids are usually associated with sterility, yet pregnancy is of frequent occurrence in the fibroid uterus, as shown by Kelly's cases—266 married women with fibroid uterus had 542 pregnancies, an average of 2.03, 402 children were born at term and there were 140 miscarriages. Statistics quoted by Pozzi give only 36 abortions in. 307 cases.

In many cases fibroids have no effect on labour, but they may cause malpositions of the foetus, delayed labour and mechanical obstruction, as well as post partum hemorrhage, and delayed involution of the uterus, and they increase liability to septicaemia.

The mortality of labour in these cases is very high, variously estimated at from 25 to 55 per cent for mothers and 57 to 66 per cent for children. Consequently some obstetricians advise that in all cases before the child is viable an abortion should be produced, and the fibroid dealt with at a later stage.

Undoubtedly, as in all cases of pregnancy, the mother is the first consideration, but with a small fibroid near the fundus, more especially a pedunculated one, there can be little danger in waiting and watching the progress of the pregnancy. In the early stages of pregnancy, if the tumour blocks the pelvis, an attempt may be made to raise it up out of the pelvis. If pressure symptoms are marked and not relieved by rest, or if the tumour is growing rapidly, laparotomy is indicated in most cases. Myomectomy or hysterectomy is to be performed according to the condition found.

As regards hysterectomy Thurmin gives the results of all published cases of pregnancy with fibroids, operated on since 1885, showing a mortality of 89 per cent for total abdominal hysterectomy and 11 per cent for supravaginal amputation. It is obviously safer to perform hysterectomy than to let them go on to term.

In the case of large fibroids which give no acute symptoms it is right to wait if possible, well into the ninth month of pregnancy and then perform a Porro-cesarian section, deliver the child and remove the uterus. Where labour has already set in and the fibroid is causing obstruction it should, if possible, be pushed up past the presenting part. Failing reduction, rather than cause damage by dragging the child past the tumour, perform Porro-cesarian section.

THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

A case of adenoid cystic carcinoma of the lacrimal gland: MRI findings

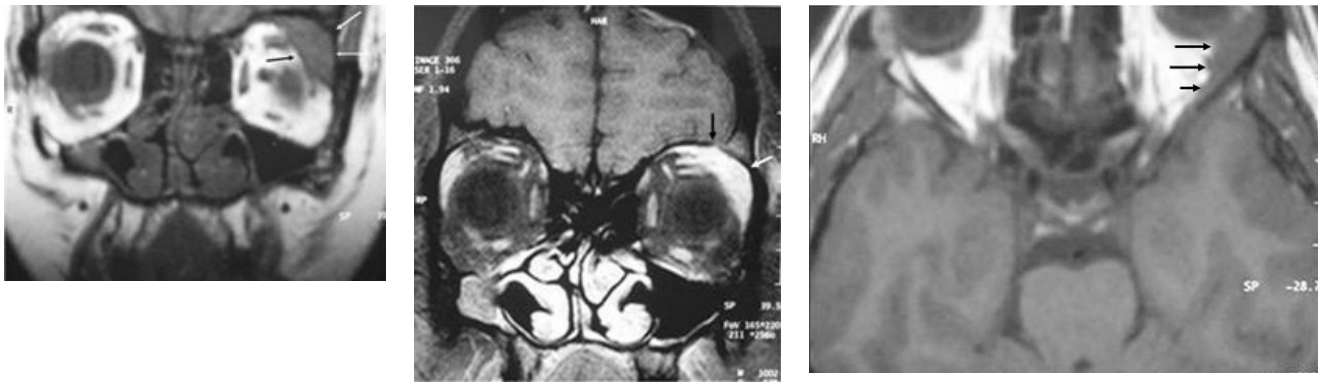
Guner Sonmez, Aptullah Haholu, Hakan Mutlu, Ersin Ozturk, Onur Sildiroglu, Oguz Bilgi, Cinar Basekim, Esref Kizilkaya

A 22-year-old female patient presented to our hospital with persistent eyelid swelling over the previous 3 months plus periocular pain and headache. Physical examination revealed ptosis, and swelling and redness in the lateral of the right eyelid.

A soft-tissue mass in the right lacrimal fossa was observed—exhibiting regular margins and moderate contrast involvement, isointense with muscle in T1W images, and homogeneous and hyperintense in T2W images (Figure 1A–C).

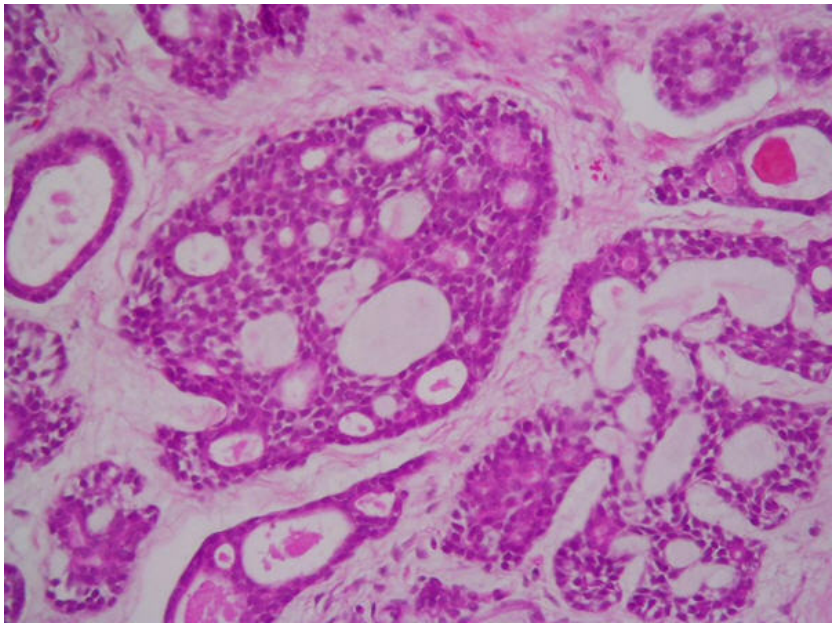
Figure 1. (A) A mass lesion (2×0.8×0.5 cm) in the left lacrimal gland—ellipsoid in shape with regular margins and extending towards the superior-lateral rectus muscles—can be seen in T1W coronal MRI; (B) Moderate contrast lesion enhancement is seen in post-contrast images; (C) Extension towards the apex is seen in T1W axial pre contrast images

(A) **(B)** **(C)**



Adenoid cystic carcinoma was diagnosed after histopathological examination of the mass (Figure 2). Preoperatively the patient was given intra-arterial and systemic chemotherapy. The tumor was completely excised. Postoperatively the patient received chemotherapy and external beam radiation.

Figure 2. Epithelial cells showing a cripriform pattern in sections stained with haematoxylin and eosin (×200)



Discussion

Adenoid cystic carcinoma is a tumour rarely seen in the lacrimal gland. It is more often seen at younger ages, particularly in the fourth decade.[1–3] It represents 1%–6% of all orbital malignancies.

Lacrimal gland tumours are classified as epithelial or non-epithelial. These tumours may imitate an inflammatory pseudotumour, pleomorphic adenoma, and dermoid cyst—both clinically and radiologically.[4]

Inflammatory pseudotumours are usually isointense to hypointense relative to muscle on T1-weighted images, they have a relatively hypointense T2 signal compared to other tumours.

Pleomorphic adenomas demonstrate an isointense internal signal on T1-weighted images, a hyperintense signal on T2-weighted images, and moderate contrast enhancement. Dermoid cysts are hyperintense on T1-weighted and T2-weighted images.

The prognosis is rather better in young patients compared to older adults. This results from less histopathological aggression compared to older adults, in whom they exhibit fairly rapid growth and invasion. Early diagnosis is therefore important.

Patient history and clinical features are important in the differential diagnosis of lacrimal gland lesions. In addition, since clinical findings may vary from patient to patient, orbital imaging is required to confirm diagnosis.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Medical education costs and student debt

The editor of the *Medical Journal of Australia* has recently mused on this important topic, the reason being that Australia has recently moved towards full-fee paying for medical students. He points out that medical course fees in the USA are about US$120,000 in public medical schools and US$225,000 in private schools. And in Australian medical schools, fees range from A$31,000 to A$36,000 per year for 5–6-year undergraduate programs and from A$25,000 to A$35,520 per year for 4-year graduate-entry programs.

This will, as we also know, lead to student debt which in turn will encourage early migration for higher salaries and increased diversion of graduates to the higher income specialties. Both undesirable. Any solution?

Methuselah recommends free education and bonding for 2–3 years, as we had in New Zealand in the past.

Med J Aust 2007;186:433

Tobacco company funding for medical research?

The University of Virginia School of Medicine is to accept funding for medical research from tobacco company Philip Morris—to the tune of US$20 million.

This rather perverse happening has excited much comment, mostly adverse. For example, the American Medical Association, the American Public Health Association, and the editor of the academic journal *Tobacco* have all condemned the news.

Simon Chapman, professor of public health at the University of Sydney and editor of *Tobacco Control* is quoted as saying "A medical school taking funding from the tobacco industry is like a peace studies school taking funding from terrorists."

Methinks Prof Chapman has got it right.

BMJ 2007;334:496

Demise of nursing in the UK—again

We recently (*NZMJ* 18 May 2007) abstracted a paper in which two academic nurses offered their views on this topic. Some vigorous responses have followed, including one which claims that the authors show an astonishing lack of insight into the causes of this decline.

The respondent goes on to say that their main premise seems to be that what is wrong with UK nursing is that not everyone has a degree, and therefore nurses are unable to understand how to do their jobs! His view is that with the "switch from an 'apprenticeship' form of training to the academic regimes we have now has ruined UK nursing."

Strong words, but your reviewer has to confess that he has heard this viewpoint from colleagues in New Zealand as well.

Journal of the Royal Society of Medicine 2007;100:208–10

Hypotensive transient ischaemic attacks

Significant postural hypotension in the elderly is common and is usually secondary to medication. Transient ischaemic attacks (TIA) are also common in this age group and many elderly people may demonstrate both of these health problems. The cause of TIA is usually considered to be reversible brain ischaemia, and hypotension is not usually regarded as a significant factor.

In this paper, the authors demonstrate, with the aid of tilt-testing, that TIA may be caused by postural hypotension in some patients. So, a good idea would be to perform lying and standing blood pressure estimates and review medication in such patients.

Internal Medicine Journal 2007;37:498–501

What's new in the treatment of postmenopausal osteoporosis?

Bone pain and fractures bedevil the health of postmenopausal women. It is known that bisphosphonates, the most commonly used treatment for established osteoporosis, inhibit osteoclast-mediated bone resorption and reduce the risk of vertebral fracture. In particular, two bisphosphonates, alendronate and risedronate, have also been shown to reduce nonvertebral and hip fractures in women with osteoporosis.

But compliance with these tablets is poor—about 50% of subjects don't take them.

In this paper, an international research group demonstrate that a once-yearly infusion of zoledronic acid during a 3-year period significantly reduced the risk of vertebral, hip, and other fractures.

Obviously eliminates the non-compliance and presumably would be cost effective.

N Engl J Med 2007;356:1809–22

THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

PHARMAC's updated guidelines for cost-effectiveness analyses, with new discount rate

Further to inviting feedback in the *Journal* last year,[1] PHARMAC has now released its revised Prescription for Pharmacoeconomic Analysis (PFPA).[2] We are very grateful for the interest expressed in the document across the health sector (and more widely), and the quality of input we received. This input has helped us finalise revised guidelines that we believe both reflects and can enhance international best practice and will help generate significant benefits for the Health Sector in New Zealand over the coming years.

The PFPA describes the approach that PHARMAC takes when undertaking cost-utility analysis (CUA), and also guides pharmaceutical suppliers when undertaking their own economic analyses to support new funding applications. This type of analysis provides information on which pharmaceuticals offer the most health gains from a limited budget (i.e. the relative cost-effectiveness of a pharmaceutical). Cost-effectiveness is clearly an important decision factor, although but one of the nine Decision Criteria that the PHARMAC Board considers when making funding decisions.[3] Knowledge of PHARMAC's approach helps understanding of decisions made and provides comfort that a robust framework is being applied—including that different funding applications are assessed in a fair and consistent way.

Following the publication of the first version of the PFPA in 1999, the revised guidelines for CUA (PFPA version 2) have followed an extensive review that has included expert advice from New Zealand and overseas and wide consultation. This process has generated considerable interest both nationally and internationally in the revised document.

Consultation responses were received from a range of organisations and individuals including clinicians, District Health Boards, health economists, pharmaceutical suppliers, and other government agencies. Consultation responses were broadly supportive overall of PHARMAC's revised CUA methodology, including the risk-free discount rate[1] and direct patient healthcare costs.[1] Responses were wide-ranging, and commented on the perspective of analyses, treatment comparators, statistically non-significant events, measuring quality of life, indirect patient costs, and generic pharmaceutical prices.

All consultation responses were considered by PHARMAC staff and the PHARMAC Board, and a number of changes to the document were subsequently made. Key amendments to the PFPA from the first version include:

- Lowering the discount rate PHARMAC uses to assess the future value of funding decisions to 3.5%;[1,4-6]
- The inclusion of direct patient healthcare costs;*
- The use of statistically and/or clinically significant treatment effects;

- The use of the Graphic Appraisal Tool for Epidemiology (GATE) to critically appraise clinical trials (www.epiq.co.nz);[7] and
- The inclusion of future generic pharmaceutical prices.

In addition, version 2 of the PFPA contains substantially more information on appropriate data sources for deriving relative clinical efficacy and recommendations for obtaining and assessing clinical data.

The new risk-free discount rate of 3.5% is the most significant change in the revised PFPA. Compared with the previous risk-adjusted rate of 8%, the reduced rate in effect means that medicines with high up-front costs but enduring benefits will be more cost effective than with the higher discount rate.† The overall impact of the change is likely to be relatively small, but may affect the relative cost-effectiveness ranking of new funding proposals. We reiterate that PHARMAC however also takes into account other factors (including patient need, total cost and government health priorities) when making funding decisions (i.e. not just cost-effectiveness).[3]

Further details of the key amendments to the PFPA, the content and discussion of the consultation responses, and the revised PFPA itself (version 2),[2] can be found on the PHARMAC website at http://pharmac.govt.nz/pharmo_economic.asp

The PFPA provides important insights into the detailed structure that PHARMAC uses for its economic analyses of pharmaceuticals. We think that such transparency is important and benefits everyone interested in the detail on how PHARMAC performs these analyses.[4–6,8–25]

While not everyone will agree with PHARMAC's funding decisions every time, we hope it is apparent that PHARMAC has an established and rigorous approach to making the necessary difficult trade-offs,[8,26–38] helped by well-researched and well-documented policies in the PFPA.

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PHARMAC
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Footnotes:

* The revised PFPA states that direct patient healthcare costs in CUAs should be restricted to healthcare costs that government partially subsidises, and should be based on the cost to government plus the additional cost to the patient. These costs include general practitioner visits, pharmaceutical co-payments, and home or continuing care.

† PHARMAC's new risk-free (3.5%) discount rate applies solely to the measurement of costs and benefits in CUAs. It does not apply to budget impact analyses, which still use the risk-adjusted discount rate (currently 8%).

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Vol 120 No 1258 ISSN 1175 8716

Use of ototoxic eardrops: a position statement from the New Zealand Society of Otolaryngology Head and Neck Surgery

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Ototoxicity secondary to systemic aminoglycoside use is well known, and such therapy is usually accompanied by appropriate monitoring measures. It is now understood that there is a small risk (in the order of 1:1,000 to 1:10,000) of damage to the cochlea or vestibular labyrinth following the use of eardrops containing aminoglycoside, in circumstances where the drops may penetrate into the middle ear. This applies where there is a direct pathway to the middle ear due to a tympanic membrane perforation, patent grommet or in certain mastoid cavities where the middle ear is open.[1] There is no risk from use of these drops in otitis externa where the tympanic membrane is intact.

Australian,[2] American,[3] British,[4] and Canadian[5] expert committees have recently promulgated guidelines on the use of potentially ototoxic drugs in patients whose ears are at risk, as above.

The Council of the New Zealand Society of Otolaryngology Head and Neck Surgery unanimously agreed on the statement shown in the box, which is based on the Australian and United States guidelines.

STATEMENT FROM THE NEW ZEALAND SOCIETY OF OTOLARYNGOLOGY HEAD AND NECK SURGERY ON THE USE OF EARDROPS WITH OTOTOXIC POTENTIAL IN THE PRESENCE OF TYMPANIC MEMBRANE PERFORATION, VENTILATION TUBES AND MASTOID CAVITIES WITH OPEN MIDDLE EAR

1. It is preferable to use non ototoxic drops in the presence of tympanic membrane perforation, ventilation tubes and mastoid cavities with open middle ear.
2. If potentially ototoxic eardrops are used then they should be used only in the presence of infection and discontinued immediately after infection has resolved. The treatment should preferably be limited to a maximum of two weeks.
3. If potentially ototoxic eardrops are prescribed for the treatment of ear infection, with either a tympanic membrane perforation, ventilation tube or open middle ear/mastoid cavity, then the reason for use and the potential ototoxicity should be discussed with the patient/parent and documented (risk 1:1,000 to 1:10,000).
4. If potentially ototoxic drops are prescribed, then the patient should be advised to return to the doctor if vertigo, hearing loss or tinnitus develop during or soon after treatment.
5. Use of potentially ototoxic eardrops is acceptable in the presence of an intact tympanic membrane.

In essence, the Society recommends avoiding, wherever possible, the use of potentially ototoxic drops in patients with ears at risk.

However, potentially ototoxic agents may need to be used in certain circumstances—e.g. lack of therapeutic response to other agents, resistant organisms, non-availability, or non-affordability of non ototoxic agents. In these situations, potentially ototoxic drops may reasonably be used, but treatment should be limited to the period when the

ear is actually discharging, and the principles of informed consent apply—i.e. the patient should understand the risks, alternative treatments, and requirement to report symptoms which might suggest damage to the inner ear. The Society does not believe routine audiometric monitoring is warranted by the risks of ototoxicity providing the treatment is of short duration (ideally no more than 14 days).

Careful and regular suction toilet to clear aural secretions and occasional use of systemic antibiotics play an important part in the management of inflammatory external/middle ear disease, but most cases will require administration of topical antibiotics, the effectiveness of which is increased by combination with a topical steroid. Unfortunately nearly all of the preparations available for this use contain aminoglycocides and the most effective non ototoxic alternative is very expensive. For this reason, the New Zealand Society of Otolaryngology Head and Neck Surgery is currently making a submission to PHARMAC recommending adequate subsidy of Ciprofloxacin/Hydrocortisone drops, which in many situations will be the most appropriate non ototoxic preparation to use.

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Vol 120 No 1258 ISSN 1175 8716

Health Practitioners Disciplinary Tribunal: Professional Misconduct (05/11D)

Charge

Dr Pieter Johannes Gouse pleaded guilty to the charge of professional misconduct. He pleaded guilty to the following particulars:

1. First consultation

On or about 19 October 2000, being Dr Gouse's initial consultation with his patient he undertook a re-diagnosis without:

- Documenting a full assessment of his patient's mental state
- Adequately documenting his patient's psychiatric history
- Recording his patient's diagnosis.

2. Risperidone

Between 19 October 2000 and 8 November 2000, in managing changes to Dr Gouse's patient's dose of Risperidone:

- He failed to adequately manage his patient's medication in that he reduced her dose of Risperidone too rapidly.

3. Return from Australia

At a consultation on or about 18 January 2001, when Dr Gouse's patient's presentation had altered, he failed to document:

- His diagnostic formulation
- An assessment of his patient's mental state
- His patient's symptoms
- His patient's psychiatric history
- An adequate treatment plan
- The rationale for his plan of treatment.

4. Clozaril

When prescribing Clozaril:

- Dr Gouse did not document his rationale for not following the manufacturer's recommended dosage regime when titrating Clozaril.

5. Ongoing care after commencement of Clozaril

Dr Gouse failed to provide adequate ongoing care while his patient was on Clozaril in that he:

- Failed to provide adequate direct clinical reviews over the Clozaril trial

- Failed to adequately document at anytime during the trial his patient's mental state.

6. Failed to adequately document care of his patient

When Dr Gouse had pleaded guilty to these particulars counsel for the Director of Proceedings withdrew the other remaining particulars of the charge.

Finding

The Tribunal found Dr Gouse guilty of professional misconduct.

Background

The case concerned the management of a 62 year old patient who had a history of Schizophrenia since her first admission to hospital in 1974. Dr Gouse saw her for the first time on 19 October 2000 There were no clinical notes of this consultation.

At this consultation Dr Gouse determined that the patient did not have Schizophrenia or Schizo-Affective Disorder but was depressed with psychotic features. Dr Gouse therefore concluded it was appropriate to change that patient's medication. Dr Gouse reduced her Risperidone (anti-psychotic medication) dosage rapidly and changed her anti-depressant medication from Nortriptyline to Citalopram.

The Risperidone was reduced rapidly from about (the starting dose was not perfectly clear) 6-8 mg per day to 1 mg per day over a period of one month. Expert evidence recorded that this was too rapid a withdrawal of the anti-psychotic medication and likely to lead to a re-emergence of psychotic symptoms.

While visiting her daughter in Australia in December 2000 the patient's mental state deteriorated rapidly.

On 18 January 2001 the patient had an urgent psychiatric review with Dr Gouse. He made a decision to change her medication by increasing the Risperidone back to 6 mg per day but there were no notes to show his observations of her mental state, his assessment of her symptoms and his re-evaluation of her diagnosis.

On 15 February Dr Gouse saw the patient and a decision was made to commence her on Clozaril and reduce the Risperidone.

Clozaril is a drug which is prescribed to control Schizophrenia in patients who have been resistant to treatment. It has potentially serious side effects which include a risk of bone marrow suppression. It is a drug which requires careful monitoring to minimize side effects and to establish efficacy.

The dosage prescribed by Dr Gouse was not the same as that as recommended by the manufacturer. The absence of notes meant Dr Gouse's reasons for the change were not recorded nor was there any information about the patient's mental state. Dr Gouse did not regularly review that patient to assess her mental state or the emergence of side-effects.

Reason's for Tribunal's Finding

The Tribunal was satisfied the lack of notes made by Dr Gouse amounted to malpractice. The Tribunal considers note taking is an important part of a medical practitioner's role. It should show a doctor's observations, history, the thinking about

the diagnosis and a plan. It is necessary for the proper clinical management of the patient.

The Tribunal was satisfied Dr Gouse's clinical failures in the management and control of Risperidone and Clozaril also amounted to malpractice.

Penalty

The Tribunal ordered that Dr Gouse:

- be censured; and
- pay a fine of $2000; and
- pay 30% of the costs of the prosecution and the Tribunal.

The case concerned events in 2000 but there was evidence that showed concerns about Dr Gouse's note taking still remained in 2005. In addition the Tribunal was concerned about the clinical failings relating to Risperidone and Clozaril. The Tribunal was of the view that Dr Gouse would benefit from a brief period of supervision.

The Tribunal imposed conditions as follows, however these were not upheld on appeal (see note under heading "Appeal"):

- That Dr Gouse be supervised by a Medical Council approved supervisor for a period of eighteen months from the date of the order, to supervise his note-taking and recording of clinical records, and prescribing practices, particularly relating to cases in which a decision was made to change the diagnosis and the reasons for the consequences of this decision.
- Dr Gouse is to undertake face to face meetings with the supervisor on at least two occasions during this eighteen month period and to have regular offsite reviews by the supervisor. The supervisor is to provide a report to the Medical Council at the end of the eighteen month period.
- The costs of the supervision are to be met by Dr Gouse.

Name Suppression

The Tribunal denied Dr Gouse's application for permanent name suppression. The Tribunal concluded the public interest outweighed on balance the interests of the Doctor.

Appeal

Counsel for Dr Gouse appealed the Tribunal decision in regard to penalty and name suppression. The High Court granted Dr Gouse interim name suppression until the appeal was heard.

The High Court allowed the appeal in relation to the conditions of practice. The conditions were set aside. In all other respects the appeal was dismissed.

The full decisions relating to the case can be found on the Tribunal web site at www.hpdt.org.nz
Reference No: Med05/11D.

THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Diana Manby Mason

Dr Diana Mason was an outstanding doctor of her time. She was enthusiastic about her profession. Her courage, hard work, high standards, colourful, forceful personality and caring attitude towards her patients ensured successful general and obstetrical practice whilst her intelligence ensured the respect of colleagues.

Diana's gifts as a public speaker, and interests outside work, made her a local celebrity. Flamboyant hats and long dangling earrings were a trademark that ensured that she could not be overlooked in a crowd.

Contemporary male colleagues loved Diana but younger female colleagues often found her forbidding at first. Longer acquaintance revealed a softer kinder side. She was devoted to her playwright husband Bruce and her family.

Diana was not afraid to speak out when asked. In an address to the Wellington Branch of the New Zealand Medical Women's Association in the early 1970s, during a time when married women doctors with children were frustrated by barriers that prevented entry into many specialties, Diana showed no sympathy.

She told members that any woman doctor in this country could successfully specialise in any specialty that they aspired to, providing that they were prepared to work. This even included neurosurgery. Whilst many members thought this unrealistic at that time, Diana's vision eventually proved correct.

When asked by the Society for the Protection of the Unborn Child (SPUC) to speak on their behalf because of approaching abortion law changes, Diana unhesitatingly did so and served upon its executive eventually becoming an outstanding National President. This and other activities lead to her receiving an OBE in the 1970s, but there was a downside. Sharp divisions within the profession and public life created by the abortion law debate at times spilled into professional and personal life. Diana, like others who spoke on either side of the abortion debate, was sometimes made to bear the price of this.

In the late 1980s, Diana became only the second woman in its long history to serve as President of the Wellington Division of the New Zealand Medical Association. Always a believer of the maintenance of high professional standards, Diana was later elected to the Central Disciplinary Committee of the New Zealand Medical Association where she served for many years. Wellington is now the poorer for the passing of such a talented colourful personality.

Glenys Arthur (Neurologist, Wellington) wrote this obituary.

THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1257 ISSN 1175 8716

Becoming a doctor: surviving and thriving in the early postgraduate years

Jo Burnand. Published by Churchill Livingstone (Elsevier), 2007. ISBN 97807295375822.Contains 224 pages. Price AUD$41.25

This pocket guide to becoming a doctor is a guide for those making the transition from student to house surgeon. It is mainly based on the Australian heath system but the authors have researched (and give some useful comments on) how the health system works in New Zealand. It is useful for a New Zealander to learn how the Australian heath system works for those of us who are contemplating either fellowship or locums in Australia.

Chapters cover a number of topics from choosing your first hospital, coping with the stress of the job, to advice for females in training. I enjoyed the chapter on comparing the different heath systems between the two countries with some historical background. I also thought there was good advice on time management, writing notes, and coping with the stress of the job. The appendices contain a number of useful Internet sites.

Overall I thought this was a useful book for trainee interns to read when they are planning their step up to house surgeons. It would also be useful for doctors contemplating swapping between Australia and New Zealand heath systems. The other group of people it may be useful for would be junior registrars preparing for interviews, as it contains good coverage of Treaty of Waitangi and other favourite interview questions.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Learning to consult

Rodger Charlton (ed). Published by Radcliffe Publishing Ltd (Oxford, UK), 2007. ISBN 9781857758528. Contains 296 pages. Price £24.95

Over the last decade there has been a growing interest in the process known as the clinical consultation leading one doctor to describe the consultation as the "central act of medicine". As a result, medical schools throughout the world have included courses on communication and consulting skills. This book from Warwick Medical School is an attempt to teach consulting skills to undergraduate and postgraduate trainees in medicine.

Given that my job as a surgeon involves some fairly challenging consultations I was looking forward to reading this book. Overall the book is a good read. I found many helpful pointers and I enjoyed the more intellectual chapters which outlined the scientific base for the advice given. Some of the chapters were a little difficult to see a place for—namely the one on clinical examination which had a little too much on measuring the blood pressure, and the one on prescribing in general practice, which seemed a little out of context. In addition, the book has perhaps gone beyond its remit in including a chapter on CME and CPD. The book tends to be General Practice orientated.

In its favour the chapter on Advanced Communication Skills I found very interesting and helpful. The more basic chapters such as History Taking and Problem Solving and the Diagnostic Process were also informative. The strength of the book lies in its core topics. These are well done and cover the subject well.

Thus in this book is a little bit of something for everyone. However, perhaps its comprehensiveness is its greatest weakness. The needs of the undergraduate are fundamentally different to those of the specialist trainee. I am not sure that I would recommend this book for undergraduates.

Probably the niche that this book would fill best is that occupied by the GP trainee, which (when I think about it) is really no surprise as it was written by GPs.

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1258 ISSN 1175 8716

Foundations of clinical psychiatry (3rd edition)

Sidney Bloch, Bruce S Singh (eds). Published by Melbourne University Press, 2007. ISBN 9780552853209. Contains 642 pages. Price AUD$64.95

The stalwart of Australian psychiatry textbooks has come of age! With the new 3rd edition, Foundations has entered the internet age.

In addition, many of the chapters in the 3rd edition have been substantially revised and some new ones added.

There are many good things to say about the book, so I shall get two—of my three quibbles—out of the way: for a third edition, there are a surprising number of typographical errors scattered throughout the book. Also, to my mind, the quality and tone of the chapters was somewhat uneven, however, other readers may disagree. Certainly, all the authors are renowned in their areas.

This book is an introduction to psychiatry, rather than an in-depth textbook. From the trainee's point of view it is an excellent "back-to-basics" text when a quick reference is required. For the medical student, or clinician first entering mental healthcare, it is a useful introduction to the subject. And for the GP with an interest in Psychiatry it is a very helpful text. Indeed, some chapters seem specifically targeted to the GP (with one explicitly addressing "Psychiatry in General Practice").

To augment the chapter about the mental state examination, a series of short (30–90 second) video vignettes has been created, in order to illustrate various phenomenologies such as grandiosity, blunted affect, etc. These vignettes are accessible via a dedicated website as Quicktime videos. However, I was not able to access them from my work PC; I am not sure if a similar problem would occur from a PC in a hospital's library or tutorial room.

Luckily, I had no such problems with my personal Apple Mac computer at home. I imagine that seeing these videos would be very helpful for the student first grappling with recognising psychiatric symptoms.

This is an excellent addition to an excellent text.

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Vol 120 No 1257 ISSN 1175 8716

International Travel and Health (2007 edition)

Published by WHO (Geneva), 2007. ISBN 9789241580397. Contains 227 pages. Price US$22.50

The aim of this 227-page regularly-updated World Health Organization (WHO) publication is to assist medical and public health professionals who provide health advice to travellers. The book is comprehensive and accurate, covering the breadth of travel health including good summaries on how to avoid drinking unsafe water and mosquito avoidance.

The difficult area of which immunisations should be offered and advice on malarial prophylaxis are also covered, with instructions to individualise recommendations based on overall risk. Unfortunately, the statement that "the duration of the visit and the behaviour and lifestyle of the traveller are important in determining the likelihood of exposure to infectious agents and will influence decisions on the need for certain vaccinations or antimalarial medications" is not followed through with guidance specific enough to undertake the individualisation task.

In addition, country-specific tables only provide information on yellow fever country requirements and brief notes on malaria thus making it difficult to make recommendations for visits to specific countries and even more difficult to apply to specific areas visited within a country.

This is not a book that I would describe as a must, particularly as it is available (and regularly updated) as a web-based document (http://www.who.int/ith/en/). Other travel resources are easier to use for those who provide regular advice to travellers.

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