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This Issue in the Journal

“It’s a small price to pay for life”: faecal occult blood test (FOBT) screening for colorectal cancer—perceived barriers and facilitators
Anthony I Reeder

A colorectal cancer screening programme, based on a Faecal Occult Blood Test (FOBT), is planned for New Zealand (NZ), but we currently lack insight into how such a screening programme is likely to be received among the NZ population. To a large extent, the success of such a programme will depend on achieving high levels of participation, which an informed, early official response to public perceptions could help optimise. The present study, based on interviews with European NZers, found generally positive perceptions of FOBT screening, including that it was painless, simple, relatively low-cost and that the test could be done at home and in private. However, it also identified concerns about FOBT accuracy and acceptability, particularly among men, and perceptions of a lack of health system capacity and resources to promote and deliver the programme. Participants considered that high-profile, mass-media education would be essential to promote the proposed programme.

The colorectal cancer patients’ journey: the Auckland region
Melissa Murray, Julie Brown, Victoria Hinder, Arend Merrie, Andrew Hill, Michael Hulme-Moir, Katrina Sharples, Michael Findlay

Of 1128 patients diagnosed and treated for colorectal cancer in Auckland whom we studied, 68% were referred through their general practitioner and 58% saw a surgeon at their first specialist appointment. The median time from initial referral to first treatment was 35 days, with only 68% of patients being treated within the recommended 62 days of initial referral. The colorectal patient journey is complicated by multiple pathways of presentation and treatment and by patient choice.

Chinese peoples’ perceptions of colorectal cancer screening: a New Zealand perspective
Genevieve Bong, Judith McCool

Chinese patients who are eligible for participating in the colorectal cancer screening would benefit from access to appropriately detailed and culturally relevant information on the risks, benefit and procedures associated with colorectal cancer screening.
Gastric cancer location and histological subtype in Pacific people and Māori defies international trends
Magdalena Biggar, Sanket Srinivasa, Binula Wickramarachchi, Richard Babor, Garth H Poole, Andrew G Hill

This review of data from Middlemore Hospital shows that Maori and Pacific patients have a higher incidence of Gastric cancer than NZ Europeans. These cancer are at a different location within the stomach and are different histologically (i.e. when looking at their structure under the microscope) implying subtly different risk factors and a greater possible role of unique genetic factors. Maori and PI patients are also younger at the time of diagnosis compared to European patients with gastric cancer.

Challenging differential diagnosis of a wild-type gastrointestinal stromal tumour (GIST) or rare reticular perineurioma of the stomach? The role for mutational analysis
Konrad K Richter, Alexander Dempster, Angelo P D Tos, Rakesh Premkumar, Christopher Jackson

Gastrointestinal stromal tumours (GISTs) are the most common mesenchymal lesions of the gastrointestinal tract; 1–3% of all gastrointestinal malignancies. They are defined as tumours with mutations in the KIT or PDGFRA gene and stain usually positively for KIT (CD117). In 95% of all GISTs mutational analysis for KIT and PDGFRA genes can confirm the diagnosis. We present the challenging diagnoses of a typical GIST and an extremely rare reticular perineurioma in the stomach, so far reported for the second time worldwide. The here presented cases emphasise the benefits of performing a mutational analysis in difficult GISTs, including wt-GISTs, and demonstrates the importance and challenges in differentiating GISTs from other mesenchymal tumours.

Alison Scott, Vipul Upadhyay

Carcinoid tumours of the appendix are rare tumours in children. There are only small numbers of studies describing what happens to children who get this disease. Our article reviews 44 years of these tumours in the Auckland region. Our study has the largest number of children ever published. Our study, combined with previous published studies, suggests that children do not need as extensive surgery as used in adults. The study hopes to contribute to the knowledge of this rare disease.
Frequent attenders at emergency departments: research regarding the utility of management plans fails to take into account the natural attrition of attendance
Suzanne Peddie, Sandra Richardson, Lisa Salt, Michael Ardagh

A previous 4 year study of frequent attenders presenting 10 or more times a year at Christchurch Hospital Emergency Department (ED) showed a decrease in the number of times this group of patients presented over the 4 years. A further similar group of frequent attenders all had management plans devised by their healthcare workers. These plans aimed to improve their care when they attended ED, and to encourage them to seek help from their GPs or other health professionals when appropriate. There was no difference in the pattern of attendance over the two 4 year periods of these studies. A natural fall-off in ED attendance by these patients must be taken into account when assessing the impact of any intervention.

Return visits to the emergency department and related hospital admissions by people aged 65 and over
Diana Minnee, Jill Wilkinson

This research identified a group of people aged 65 and older who either returned to the emergency department or were readmitted within 3 months of a hospital stay. Information relating to illness, functioning and follow-up was then gathered from patient notes in order to identify trends. The most notable trend was that acute illness rather than failure to cope at home appears to drive a return to hospital. This finding has resulted in the authors suggesting further research around early primary healthcare follow-up after discharge from hospital.
“It’s a small price to pay for life”: faecal occult blood test (FOBT) screening for colorectal cancer, perceived barriers and facilitators

Anthony I Reeder

Abstract

Aim Clarify perceptions influencing FOBT screening participation among the NZ European target population.

Method Participants (30 female, 20 male; 50-71 years) recruited through urban (Auckland, Wellington, Christchurch) GP surgeries for in-depth, face-to-face interviews (digitally recorded and professionally transcribed verbatim). A pragmatic approach focused on aggregating transcript content.

Results Participants believed early CRC lacked distinguishing signs and symptoms, but was treatable and suitable for screening, although slow development may undermine any sense of urgency. FOBT inaccuracies caused concern, particularly false negatives, but ongoing testing could reduce anxiety. Specimen collection was awkward, challenged social norms and individual squeamishness, but provided peace of mind, was painless, simple and private without high cost technological or professional involvement. Lacking preventive attitudes and experience of health responsibilities and screening, men were less likely to participate than women. CRC lacked public profile, highlighting government responsibility, before programme implementation, to resource high-profile education, largely through TV. General practitioner support and promotion was seen as critical. Inadequate health system capacity and resourcing was problematic.

Conclusions Despite challenging barriers, participants identified opportunities to increase FOBT screening participation, especially promotion to raise CRC profile, overcome perceived normative barriers and build self-efficacy. Adequate resourcing is essential to support appropriate promotion and timely programme delivery.

New Zealand (NZ) experiences higher colorectal cancer (CRC) (ICD codes C18-21) mortality rates than most OECD countries,¹ and higher than expected incidence and death rates than Australia, ‘a country with similar lifestyles and close affinities in medical practice.’² In 2007, CRC was the second most common cause of cancer registration and death.³ Opportunities for early detection and treatment make population screening a recommended intervention.⁴ No such programme exists in NZ, but a pilot is planned using 2-yearly immunological faecal occult blood tests (FOBT) followed by colonoscopy for positive results.

The authors of a recent NZ report concluded that if the mortality reductions found in the FOBT trials which they reviewed were to be replicated, ‘participation in a screening programme would need to be equivalent or higher’—the lowest FOBT
participation rate reported among those trials was 53%. The authors also concluded that ‘screening acceptability may represent one of the biggest challenges for FOBT screening’.5

Many factors may influence screening acceptability and success,6,7 but there has been little such NZ research. The study aim was to investigate, among the European target population, perceived barriers and facilitators that may influence FOBT screening participation. A parallel study of GPs and specialists is reported elsewhere (unpublished data 2010)8 and a study of Māori will be reported by Māori researchers. These reports complement a larger quantitative component of an HRC-funded project.

Methods

Sample—Participants covering the full CRC risk spectrum and eligible (50-71 years) for the proposed screening programme were recruited through flyers on GP notice boards. Participants either lived in, or had access to, urban healthcare facilities in three urban areas (Auckland, Wellington and Christchurch).

Procedures—A letter invited participation in a study of ‘attitudes about the screening, early detection and treatment of bowel cancer in New Zealand.’ The Information Sheet identified bowel cancer as a major cause of illness and death for which the Ministry of Health was considering screening. Written consent was sought for a 30-60 minute interview. Participants were invited to supply contact details and return a signed consent form in a prepaid, addressed envelope. A $30 supermarket voucher was offered in recognition of participants’ contributions.

In-depth, face-to-face interviews by experienced female interviewers facilitated discussion. The participant’s home was the usual setting. Interviews followed a topic guide to ensure coverage of key issues, but without detailed, pre-set questions or sequence, allowing conversation to pursue arising areas of interest. Nevertheless, interviewers tended to begin by asking whether participants knew anything about screening programmes, in general, and what they thought about such programmes. This was usually followed by asking what people knew about bowel cancer and thought about their own risk of getting this disease.

Brief summary information was provided about colorectal screening methods. Discussion about FOBT was generic rather than about, for example, guaiac or immunological testing. Interviews were digitally recorded and professionally transcribed verbatim. Ethical approval was obtained through the Multi-Region Ethics Committee (ref: MEC/07/07/096).

Analysis—The approach was pragmatic, guided by content analysis, focusing on aggregating transcript content about perceived barriers and facilitators of FOBT into four domains (Figure 1). Participant sex and age at interview are provided, in brackets, after illustrative quotations.

Figure 1. Perceived factors influencing faecal occult blood test (FOBT) screening participation

![Figure 1](image_url)  

Source: Adapted from Weller et al., 2009.7
Results

For the 30 female (♀) and 20 male (♂) participants, perceived barriers and facilitators are reported, respectively, for each Figure 1 category. The median age of participants was 59 years.

Target cancer characteristics

CRC was described as a “silent killer” [♀ 52] often lacking signs and symptoms distinguishing it from other conditions, such as colitis or bleeding from fissures. The slowness of CRC development may reduce any sense of urgency, strengthening tendencies towards denial and delay. Uncertainties around “what is normal?” [♂ 66] may influence readiness to accept screening and reinforce the response: “nothing wrong with me. Why should I do that?” [♀ 67]. However, these barriers were identified within a context of positive views towards asymptomatic population screening to reduce premature deaths from “a very treatable cancer if it’s caught early enough” [♀ 52].

Screening test characteristics (FOBT)

Some participants questioned FOBT validity because “if you wait for the blood to be there, it’s too late” [♀ 64]. Since screening depended on test accuracy, it was important to use the “most effective” [♀ 67] method. That FOBT may be only 50% accurate framed substantial discussion about test reliability. Some perceived this as “too hit & miss” [♂ 51], questioning “could I be bothered doing that?” [♂ 56]. Responses ranged from “why waste my time” [♂ 54], through “I wouldn’t like to rely on this” [♀ 60], to viewing it as “better than nothing” [♀ 68] or something to do “if I had no other choice” [♀ 53]. Since best to “do it right, do it once” [♂ 56], some asked “is there something better?” [♀ 62] even if “a bit more invasive” [♂ 52]. Others thought “you might as well just have a colonoscopy” [♀ 58]) which was “much more accurate” [♀ 53].

There were concerns about false positives and identifying CRC in the context of other, non life-threatening conditions involving bleeding, causing anxiety requiring timely reassurance or “unnecessary colonoscopies” [♀ 62] that may discourage ongoing participation. False negatives led people to question “am I doing this for nothing and will they find it?” [♀ 67]. There was “a question of understanding the uncertainty” [♂ 51] around FOBT and that this was potentially “stress inducing” [♂ 57].

The “processes of collection” [♂ 54] and people “having to do it themselves” [♀ 61] may be the main barrier, with “an awful lot of people that just wouldn’t, wouldn’t bother” [♀ 51]. Faecal specimen collection was “kind of an awkward thing to do” [♂ 59]. Some considered that it was not “practical” [♂ 68] and could encourage procrastination: “Oh, I can’t be bothered. I haven’t got time today” [♀ 52]. There were concerns that FOBT “relies on people knowing what they’re doing” [♂ 67], but they could “muck it up” [♀ 52], with potential for “contamination” [♂ 67].
Despite concerns, several participants conceded that no test was infallible. Meantime, identifying even half of cases was acceptable since “you might only catch 50%, but that’s 50% more than you’re catching now” [♂ 71] and “better than finding zero” [♀ 53].

One view was that “it’s just a first step” [♀ 60], perhaps alright “for the first test” [♂ 54]. Others regarded FOBT as “a perfectly adequate test” [♀ 51], given multiple tests and ongoing recall, as CRC was slow developing. It would be important to inform people that “not getting a positive doesn’t mean you’re free. It just means it’s not detected on this occasion” [♂ 51]. One participant found “very strange” the logic “that people shouldn’t be subjected to unnecessary worry.” The goal was “to save people’s lives” and any short-term worry about a false positive test was “a small price to pay for life” and “nothing in comparison to what you could be going through” if cancer was not identified [♀ 52].

Furthermore, FOBT was “totally painless” [♀ 58], “simple to do” [♀ 64] and do-it-yourself “at home” [♀ 55]. People could be informed “here’s your kit, send it in when you are ready” [♂ 57] and, perhaps, reminded by telephone. “A higher acceptance rate” could be achieved with “more attractive” [♂ 59] specimen collection procedures, including receptacles with suitably sized apertures, instructions and diagrams.

FOBT was “less time-consuming” [♀ 55] than other tests and “you don’t have to go anywhere” to do it [♀ 55] or visit a doctor. FOBT was “non-invasive” [♀ 50], or “less invasive” than many healthcare tests [44; 476 ♂], not “undignified” like cervical screening [♀ 55] and less “freaky” [♀ 51] than colonoscopy.

**Human factors**

Participants suggested a variety of factors that may influence responses to FOBT, including (a) normative expectations, (b) personal and (d) demographic factors.

**Normative expectations**—Despite increased openness, New Zealanders were reticent about the bowels “because we were brought up with, you know, you didn’t sort of talk about that part of your body” [♀ 64].

One participant’s elderly father referred to below the waist as the “nether region” [♀ 61]. So “you don’t talk about bowel cancer in public” [♂ 56] and “it’s not a popular cancer” [♀ 65], whereas magazines had made breast cancer “quite fashionable” [♀ 58]. More specifically, people were taught from childhood not to touch their faeces, and this “yuck factor” [♀ 60] could influence FOBT screening participation - one participant predicted 10% participation.

A practice nurse said “people don’t like taking pooh specimens” [♀ 50] and another participant said she couldn’t see people “every 2 years taking samples like that if you thought there was nothing wrong with you. I can’t see that being attractive to a lot of people.” [♀ 67].

Nevertheless, barriers could be surmounted and resistance reduced by ensuring FOBT was promoted as easy, clean and quick. One experienced participant said that despite a “bit of distaste”, it “wasn’t any problem” [♀ 65]. There was “nothing abnormal” [♂ 60] in providing specimens, it being “straightforward” “just like having any other lab
test” [♀ 65] and FOBT was no different from other faecal tests for which most people would have provided specimens: “I don’t think anybody should object to that” [♂ 67].

Individual factors—One participant thought “What that test is trying to do is introduce a new behaviour and I think that’s the most difficult thing to do with humans” [♀ 57]. Other participants noted that humans tend to be “a lazy bunch” [♂ 51], who “put things off” [♀ 55], sometimes taking a fatalistic perspective that “whatever happens is going to happen” [♀ 51].

Furthermore, some people “don’t want to be body conscious of how their body functions” [♀ 61]. There could be squeamishness about the “messy bit” [♀ 65] of taking specimens that is “not the most pleasant of jobs” [♂ 68] with responses including “shyness” and “embarrassment” [♂ 67]. One participant said that, although “I dread the thought” [♀ 67] of collecting specimens, she would probably take the test.

Several participants saw lack of acceptance of personal responsibility as the key barrier, since individuals have to take action for self-preservation. Those who “can’t be bothered” would likely “be the same ones that don’t like going to their doctors” [♀ 50]. One participant, who defined the issue as “it depends …, if you want to live or you want to die” [34; 175; ♀], found it “very hard to understand why people wouldn’t … want to be part of a screening programme” [♀ 57].

Positive responses included views that “Medical things are practical things that have to be gotten on with” [♀ 53], collecting a specimen was not a new behaviour and “you’d have to be really … overly fastidious to find it that much of a problem” [♀ 65]. FOBT encouraged people to act for their own health, helping to preserve life and avoid “majorly unpleasant outcomes” [♀ 65]. Taking the test would be “ideal” for people who “like to keep healthy” [♀ 68]. It could also provide “peace of mind” [♂ 60], since the unknown was “worse than knowing” [♀ 61].

Furthermore, FOBT preserved “privacy” and should involve minimal or “no embarrassment”, making it acceptable to the elderly because “they have their pride intact” [♀ 55]. Overall, “it’s a small price to pay for life” [♀ 52] and “life’s too precious” [♀ 53] for brief discomfort or embarrassment to determine preventive action.

Demographic factors—The elderly were more likely to be influenced by negative social norms, for example, cancer used to be “taboo” [♂ 66]. There were greater perceived barriers to male screening participation, in part, because CRC screening would be the first such programme to include men, whereas “women are used to screening” [♀ 60].

Furthermore, older men, in particular, often lacked experiences, such as “changing babies’ nappies” [♀ 64], which may help women cope with faecal specimens. There was perceived male disengagement from responsibilities related to bodily functions, such that “some men won’t even clean the toilet” [♀ 61].

Men “may become more anxious” [♀ 58] than women about FOBT, were often “paranoid” [♂ 61] about anal issues, hiding embarrassment behind “toilet humour” [♀ 64]. One woman thought her husband would find FOBT “repulsive” [♀ 53], and another feared there was “no way” [♀ 52] she could persuade her partner to do it.
Men were often “their own worst enemies” [♂ 61], less willing to be preventive and likely to delay remedial action: “if there’s any reason not to go to the doctor, you won’t go” [♂ 57]. One participant thought educational limitations among the “lower socio-economic group” may limit appreciation of the “benefits of testing” [♀ 51], which could have equity implications.

On the positive side, some thought CRC had a higher profile among the older cohorts most likely affected, and younger eligible cohorts were “more educated and know more about cancers” [♀ 53] and tended to be “more open about it” [♂ 66].

Several men said they would have few or no reservations about FOBT, including because it had none of the “sexual overtones” of DRE [♂ 59]. Further, since “women get men involved”, were leaders within the “domestic regime” [♂ 57], and “probably more proactive” [♀ 55] some thought women could “push the bloke into it” [♂ 61].

**Health system factors**

**Information**—When informed that CRC was the second most frequently registered cancer (both sexes), participants expressed surprise, believing in widespread lack of awareness. “Considering how lethal it is” [♂ 56], there should be more information, including about its prevalence compared with higher profile diseases like breast cancer. That CRC had low visibility and “there isn’t the information out there” [♂ 56], about either CRC or FOBT, was a potential barrier to FOBT screening participation.

Having authoritative information could promote effective preventive action, whereas inconsistent media messages were potentially problematic and the Internet, although a “really good tool” [♂ 61], was not a consistently reliable source and could raise unfounded fears.

Screening, although evidence-based, was as much a political as a health issue. Governments had a health stewardship role, “a duty to the people that they serve to protect them and help them” [♂ 66], including responsibility to raise awareness. However, although some participants considered such knowledge a prerequisite for appropriate action (“If you don’t know, you don’t do things” [♀ 65]), others considered informational strategies only “probably help” [♂ 68], were “only the first step” [♀ 57] and not necessarily universally effective since “you can lead a horse to water, but you can’t make it drink” [♀ 53].

As a means of increasing FOBT screening participation, there was support for disseminating messages about the positive outcomes associated with early detection. Participants suggested a mix of strategies and three routes: via (1) media advertising (“you can’t get anywhere without exposure” [♂ 71]), (2) social dissemination and (3) health professionals. The primary medium was television (TV), because it “can manipulate people to watch” [♀ 51]. Some favoured “scaring them a bit” [♂ 56] and others agreed “in your face advertising” [♀ 51] could raise awareness of consequences, but some favoured less graphic approaches, cautioning about overexposure.

Despite reservations about “the cult of celebrity” [♂ 57], impact could be improved through celebrity-led advertising, particularly providing behavioural models for men. It was best to use real people not actors, and a range of ethnicities.
Content should be “simple, direct” and “honest” [♂ 57], with roles for both “generic” and “focused” messages [♂ 50], including some resonating with cultural values, such as preserving families from the impact of premature deaths. Effective precedents existed in quit smoking advertising, which “got it out there to everyone” [♀ 65], and included group as well as individual appeal. Some participants were “really impressed” [♂ 50] with the breast and cervical cancer screening promotions.

Relatively little was said about other media. One participant mentioned text messaging. Another thought religious leaders could “open it up for people” [♂ 57], overcoming fear and shyness. Others mentioned social groups, women’s groups and rugby clubs. Pictures and diagrams could surmount language barriers and aid communication. Another facilitator, not specific to FOBT, would be promotion of “a number that people can ring” [♀ 62] to ask questions, like the existing Health Line, and an Internet site.

Some identified a need to target people sufficiently early, outside the screening age group. One suggested that 40+ years could be appropriate for a preparatory “second layer of advertising” [♀ 51] and another “the earlier the better” [♂ 67]. There was a suggestion to target secondary schools and that teenagers could “educate their parents” [♀ 58].

**Promotion**—Healthcare settings, such as waiting rooms, were considered more effective than “huge billboards” [♂ 56], although one participant thought TV screens there “don’t work” [♀ 51]. Brochures were not highly regarded, since “no-one reads them” [♀ 58]—especially if not wanting to be seen with anything related to the bowels. However, others believed some people used them.

Despite critical comments, most anticipated positive responses to GP’s, whose support and promotion of screening would increase screening participation, since “people believe what the doctor tells them” [♂ 60]. However, given concerns that CRC represented “a gap in some GP’s knowledge” [♂ 50] training may help. It was thought potentially useful to train practice nurses to “explain” screening since talking “one-on-one” could overcome literacy or language barriers [♀ 65]. Since health professionals were more accustomed to discussing sensitive issues than others, particularly the elderly, they needed to heed that.

**Capacity**—Participants questioned health system capacity to sustain CRC screening, particularly given FOBT false positives and insufficient trained staff: “Can our system cope with it?” [♂ 61], “the system’s choking as it is” [♀ 52], and “I would have doubts as to how well the health system could actually schedule people within any reasonable period of time” [♀ 51]. It was important to “do it properly” [♀ 50], since recruitment and on-going participation would be threatened if test results were not timely.

**Cost**—Although relatively cheap, one participant described FOBT as “a nice little earner for labs” [♂ 57] which, through false positives and unnecessary colonoscopies, may mean “wasting money that could be better spent elsewhere” [♀ 62].

In contrast, others described FOBT as an “inexpensive” [♀ 65] and “cost effective” [♂ 68] initial test. One described it as “brilliant” because it would minimise health professional costs [♀ 58], and others indicated that it didn’t require the use of high technology equipment or waste the resources required for follow-ups.
Since treatment costs are reduced by early detection and timely intervention, a cost benefit “business case” [♀ 50] should be convincing. One participant suggested “a carrot and stick approach”, with financial incentives for participation, e.g. a “tax rebate” [♀ 57], which another opposed because “it’s really just for their own benefit” [♂ 55]. Nevertheless, to optimise screening participation, FOBT needed to be “free” [♂ 50], which required political decision-making and “the money to pay for it” [♀ 58], including timely follow up of positive results.

If GP organised or promoted, practices would need to be eligible for subsidy, but the cost was considered not great and PHO assistance was thought to be available.

**Recruitment and follow-up**—There was a need for recruitment and referral protocols sensitive to those eligible but perhaps reticent. Awareness, alone, would be insufficient to ensure screening participation. People needed more than reminder letters, and “patronising letters” [♀ 51] wouldn’t help.

On the positive side, one participant said he would not be discouraged from FOBT because “whatever I’m referred to, I go with” [♂ 66]. Another suggested making screening “compulsory” to maximise screening participation [♀ 68]. Others saw “personal contact”, ideally face-to-face or by telephone, as critical—it involved “a lot of work” [♀ 50], but could save lives.

Procedures needed to be easy, for example, pick up and return of test kits to pharmacies, as in Australia. Rural access needed to be addressed. If kits were mailed, timely reminders were important. Participants suggested scheduling tests around memorable times like birthdays. One participant thought it useful to “amalgamate” CRC screening into a single wellness programme [38; 366] for target groups.

**Discussion**

**Principal findings**—Study data confirmed that multiple factors, readily fitting the broad Figure 1 categories, are likely to influence FOBT screening participation. So what do the findings reveal about proposed FOBT screening for the European eligible NZ population?

With respect to target cancer characteristics, the identified potential barriers included knowledge gaps and, because of perceived slow CRC development, possible lack of a sense of urgency. However, there was strong support for population screening, especially given a perceived lack of symptoms (confirming unpublished focus group findings), but potential for successful treatment of early stage CRC.

Although some participants were concerned about the process of specimen collection, others appreciated that FOBT was painless, non-invasive, quick and simple to do in privacy at home. More important potential barriers were perceived poor test reliability, anxiety about false positives and negatives, and concern about possible unnecessary colonoscopies. However, there was appreciation that no test was infallible and multiple and ongoing testing could overcome limitations.

As also concluded in Australia, it would be important to clarify to what extent FOBT can correctly identify those who do not have cancer—test specificity, and those with cancer—i.e. test sensitivity. Unexplained use of the word ‘occult’ may cause
misunderstanding about how FOBT identifies microscopic bleeding from pre-cancerous lesions, rather than visible blood in faeces.

Key potential human factor barriers to FOBT included perceived normative reticence concerning the bowels and faecal specimens, particularly among the elderly and men, reinforced by negative individual responses—as reported in a UK study. However, other respondents noted FOBT was no different from similar tests and “a small price to pay for life.” Overcoming inertia and fatalism by taking personal responsibility for health was discussed, the latter having some parallels with the ‘civic responsibility’ response noted elsewhere.

Men were perceived as less engaged in prevention than women, and lacked prior experience of population screening programmes. However, negative views about male responses were not universal. Issues around men and CRC screening are dealt with, in depth, elsewhere (unpublished data 2010).

A strong finding was the perceived low CRC profile, aside from personal experience, consistent with low awareness among NZ European focus groups. In addition, low awareness about high NZ CRC incidence and mortality confirmed earlier reported lower perceived ranking compared with breast and prostate cancers. Addressing this and promoting FOBT was part of a government’s health stewardship role, requiring high profile TV advertising and socially targeted message, as for other screening programmes and the Quitline, which were viewed positively. This perceived need for public education is ‘a common theme’ in other studies.

Healthcare settings, particularly general practices, were seen as effective routes to promote, if not deliver, FOBT - confirming findings from overseas and NZ focus group data. GP involvement can positively impact on FOBT screening participation, although subject to high variability. However, health system capacity to deliver CRC screening was questioned, highlighting funding and training needs, given that efficient recruitment procedures and timely follow-up influence screening participation and on-going acceptability. Any cost to participants would be a barrier, potentially exacerbating health inequalities, confirming NZ focus group findings that screening needs to be a free service.

Potential study limitations include that these findings are solely for the urban NZ European population, but given the broad range of views expressed and confirmation from earlier focus group findings, informational saturation for the NZ European population was likely achieved—including rural access issues. Nevertheless, it is possible that FOBT acceptability may differ among other and rural communities. Ethnic and cultural issues are not reported here, but will be in a planned report about Māori participants.

Implications—These results indicate that a well-trialled, high profile public education campaign prior to programme implementation is seen as critical for achieving acceptable screening participation, particularly among men. Different advertising styles and content using different strategies would be required to reach population sub-groups. Given the varied and fragmented nature of modern media, all opportunities and combined approaches should be explored. Building normative support and perceived self-efficacy to take the test are likely to be key human factors in promotion and screening participation.
FOBT screening will require adequate resourcing to support promotion and the building of robust recruitment and follow-up procedures, otherwise unacceptably low screening participation levels may result. General practice has an important role in supporting screening promotion. It should be noted that international evidence about client-oriented FOBT screening interventions is currently only sufficient to recommend small media promotion (such as videos and printed materials), personal screening reminders and reductions in health system structural barriers.  

Competing interests: None.

Author information: Anthony I Reeder, Director, Cancer Society of New Zealand Social & Behavioural Research Unit (SBRU), Department of Preventive & Social Medicine, Dunedin School of Medicine, University of Otago.

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Correspondence: Anthony I. Reeder, Cancer Society of New Zealand Social & Behavioural Research Unit, Department of Preventive & Social Medicine, Dunedin School of Medicine, University of Otago, PO Box 913, Dunedin, New Zealand. Fax: +64 (0)3 4797298; email: tony.reeder@otago.ac.nz

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The colorectal cancer patients’ journey: the Auckland region

Melissa Murray, Julie Brown, Victoria Hinder, Arend Merrie, Andrew Hill, Michael Hulme-Moir, Katrina Sharples, Michael Findlay

Abstract

Aim To identify the time taken from referral to first treatment of patients with colorectal cancer (CRC) in the Auckland region and benchmark these against available guidelines for timeliness.

Method Retrospective study of clinical records of all patients diagnosed with CRC identified from the national registry and Auckland regional databases in the years 2001 and 2005. Data extracted included demographics, dates and types of interventions and the patient journey from referral to initiation of first treatment.

Results Of the 1128 patients diagnosed and treated in these cohorts, 68% were referred through their general practitioner and 58% saw a surgeon at their first specialist appointment. Seventy-nine percent received initial treatment with curative intent. The median time from initial referral to first treatment was 35 days, with only 68% of patients being treated within 62 days of initial referral.

Conclusion The colorectal patient journey is complicated by multiple pathways of presentation and treatment and by patient choice. These factors need to be considered when assessing the acceptability of transit times based on summary data. That nearly one-third of patients did not complete the United Kingdom-based target of 62 days from referral to first treatment indicates there is a need for further improvement in service delivery for patients developing CRC in the Auckland region.

Colorectal cancer has the second highest cancer mortality in New Zealand with rates ranking among the highest in the OECD.\(^1\)

New Zealand non-Māori women have the highest age-standardised rate of colon and rectal cancer worldwide and non-Māori males have the fourth highest age/gender standardised incidence of colon cancer and second highest of rectal cancer.\(^2\)

The New Zealand Cancer Control Strategy Goal 3 is to ‘ensure effective diagnosis and treatment of cancer to reduce morbidity and mortality’.\(^3\) The primary objective of this goal is to ‘provide optimal treatment for those with cancer’ which includes ‘ensuring timely access to treatment currently recognised as providing optimal outcomes’.\(^3\) Previous audit-based studies of colorectal cancer patients in New Zealand have focused on incidence, pathology, management (including diagnostic testing, treatment and follow-up) and survival.\(^4-8\) Yet the timeliness of specialist assessment, diagnosis and initial treatment following referral has to our knowledge not been reported in New Zealand colorectal cancer patients.

The aim of this study is to provide a baseline report on the median duration of key phases of the patient journey from referral to first treatment, along with details of demographics, pathology, and management of colorectal patients receiving treatment.
in the Auckland region. It is anticipated that such information will enable future comparisons following implementation of new service delivery initiatives such as population screening or interventions aimed at reducing barriers to timeliness.

Currently there are no Australasian guidelines outlining optimum waiting times for the various components of the colorectal patient journey so we have compared the results of our study to the Cancer Waiting Time targets set out in the UK Guidelines.  

**Methods**

Patients treated for colorectal adenocarcinoma (ICD-10-AM codes C18-C21) in the calendar years 2001 and 2005 in the Auckland region were identified through the New Zealand Health Information Service (NZHIS), three District Health Board (DHB) databases and private clinician databases. Patients with: recurrent disease, age < 18 years; squamous cell carcinoma (SCC) of the anal canal; rare tumour histology (e.g. carcinoid, small cell cancer), and patients who received their first treatment out of the Auckland region were excluded.

Data extracted from patients’ medical records included: patient demographics including sex, age, and ethnicity (Māori patients were classified using the ‘Ever-Māori’ method); symptoms recorded in the initial referral and first specialist assessment; comorbidities present at the time of treatment; diagnostic and staging investigations carried out prior to diagnosis; tumour pathology (where available); and treatment type (both initial and any subsequent first line interventions).

The duration of each stage of the clinical journey was calculated using definitions based on the guidelines from the United Kingdom (UK).  

(a) **Referral to first specialist assessment:** The number of days between the date on the referral letter/fax/attendance at Accident and Emergency (A&E) or the Emergency Department (ED) and the date first seen by a clinical specialist.  

(b) **First specialist assessment to diagnosis:** The number of days between the date first seen by a clinical specialist and the date of pathological diagnosis or radiological diagnosis (where pathology was unavailable) as given on the pathology/radiology report.  

(c) **Referral to diagnosis:** The duration of the combined journey for stages a and b.  

(d) **Diagnosis to treatment:** The number of days between the date of the pathological/radiological report that diagnosed colorectal tumour and the date of either (i) the first treatment; (ii) the decision not to treat; or (iii) the date the patient refused treatment.  

(e) **Referral to treatment:** The duration of the combined journey for stages (c) and (d).

Statistical comparisons were made between number of days using a Wilcoxon rank sum test, and between proportions using a Chi-squared test.

**Results**

**Population**—There were 1321 diagnoses of colorectal cancer in the years 2005 (n=654) and 2001 (n=667) within Waitemata, Auckland and Counties-Manukau DHBs. Of these 1128, were included in this study. Reasons for study exclusions included treatment outside of study dates, recurrent disease, no medical file available at the hospital, no evidence of cancer in the medical file, treatment outside of the Auckland region, duplicate NHIs, invalid NHIs, non-adenocarcinoma e.g. squamous cell carcinoma (SCC), carcinoid, GIST, cholangiocarcinoma, gall bladder cancer and in one instance metastatic breast cancer.

The demographics of the study population are outlined in table 1. Patients had a median of 2 comorbidities (interquartile range (IQ) ((0, 4)) at the time of diagnosis. The most common comorbidities were hypertension (39%), gastrointestinal (37%), cardiac (36%), musculoskeletal (23%), respiratory (18%) and hyperlipidaemia (17%).
Table 1. Study population demographics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total (n=1128)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cases included in study</td>
<td>n (%)</td>
</tr>
<tr>
<td>Cases in 2001</td>
<td>542 (48)</td>
</tr>
<tr>
<td>Cases in 2005</td>
<td>586 (52)</td>
</tr>
<tr>
<td>Sex</td>
<td>n (%)</td>
</tr>
<tr>
<td>Female</td>
<td>555 (49)</td>
</tr>
<tr>
<td>Male</td>
<td>573 (51)</td>
</tr>
<tr>
<td>Average age at pathological diagnosis</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>All</td>
<td>70 (12.9)</td>
</tr>
<tr>
<td>Female</td>
<td>71 (13.7)</td>
</tr>
<tr>
<td>Male</td>
<td>70 (12.2)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>n (%)</td>
</tr>
<tr>
<td>NZ European</td>
<td>764 (68)</td>
</tr>
<tr>
<td>Māori</td>
<td>49 (4)</td>
</tr>
<tr>
<td>Other</td>
<td>224 (20)</td>
</tr>
<tr>
<td>Unknown</td>
<td>91 (8)</td>
</tr>
<tr>
<td>Number of comorbidities</td>
<td>Median (IQ (Q1, Q4))</td>
</tr>
<tr>
<td>Site of treatment</td>
<td>2001</td>
</tr>
<tr>
<td>Auckland City Hospital</td>
<td>n (%)</td>
</tr>
<tr>
<td>136</td>
<td>159 (25)</td>
</tr>
<tr>
<td>Middlemore Hospital</td>
<td>127 (23)</td>
</tr>
<tr>
<td>North Shore Hospital</td>
<td>187 (35)</td>
</tr>
<tr>
<td>Private practice</td>
<td>71 (13)</td>
</tr>
<tr>
<td>Missing</td>
<td>21 (4)</td>
</tr>
<tr>
<td>Total</td>
<td>542 (100)</td>
</tr>
<tr>
<td></td>
<td>586 (100)</td>
</tr>
</tbody>
</table>

**Specialist referral**—The most frequent mode of referral was by general practitioner (68%). Emergency presentation accounted for 9% of total referrals, and referrals by ‘other means’ (internal referrals, other hospitals, other specialty, self referrals, screening, rest home or endoscopy suite) accounted for 10%. Overall referral data were missing for 13% of cases, and it was noted that twice as many cases had missing referral data in 2001 (19%) as in 2005 (9%).

**Presenting features**—The most commonly documented symptoms were abdominal pain, experienced by 44% of cases, abnormal investigations (such as areas of thickening on CT scans, obstruction on abdominal X-rays, and mass on digital rectal examination) 42%, rectal bleeding 35%, altered bowel habit 33%, anaemia (or pallor) 32% and other gastrointestinal symptoms 30%.

**First specialist assessment**—For the total study population, 58% of first specialist assessments were with the surgical service, 19% with gastroenterology or endoscopy, 9% with general medicine and 1% with Oncology. The remainder (4%) were seen by other specialties leading to colorectal cancer diagnoses such as emergency medicine, gerontology, vascular surgery, respiratory medicine and haematology. Data were not available for 10% of patients.

**Diagnostic and staging investigations**—Patients had a median of 3 diagnostic investigative procedures (IQ ((2, 4)). The most common diagnostic investigative procedures in 2001 were colonoscopy (56%), chest or abdominal X-ray (54%), and
sigmoidoscopy (33%). In 2005 the most common were colonoscopy (74%), CT scan (64%) and chest or abdominal X-ray (35%). The percentage of patients receiving CT scans increased from 22% in 2001 to 64% in 2005.

The most common investigation for patients who presented non-acutely was colonoscopy (undertaken in 72% of cases as opposed to 45% of cases that presented acutely). The percentage of cases undergoing CT and MRI was similar in both the presentation groups (47% and 18% respectively in the non-acute and 45% and 13% in the acute).

**Pathology**—Pathological data were obtained from pathology reports, including both biopsy results from colonoscopy/sigmoidoscopy prior to treatment and pathology reports on the surgical specimen(s). Radiological diagnosis was used in the absence of surgical pathology. Table 2 illustrates the distribution of Dukes stage and pathological grade for this cohort.

### Table 2. Pathological demographics of the study population

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of patients</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caecum</td>
<td>130</td>
<td>(12)</td>
</tr>
<tr>
<td>Appendix</td>
<td>9</td>
<td>(1 )</td>
</tr>
<tr>
<td>Ascending colon</td>
<td>97</td>
<td>(9 )</td>
</tr>
<tr>
<td>Hepatic flexure</td>
<td>48</td>
<td>(5 )</td>
</tr>
<tr>
<td>Transverse colon</td>
<td>87</td>
<td>(8 )</td>
</tr>
<tr>
<td>Splenic flexure</td>
<td>35</td>
<td>(3 )</td>
</tr>
<tr>
<td>Descending colon</td>
<td>45</td>
<td>(4 )</td>
</tr>
<tr>
<td>Distal colon</td>
<td>4</td>
<td>(0 )</td>
</tr>
<tr>
<td>Sigmoid colon</td>
<td>220</td>
<td>(20)</td>
</tr>
<tr>
<td>Rectosigmoid</td>
<td>104</td>
<td>(9 )</td>
</tr>
<tr>
<td>Rectum</td>
<td>259</td>
<td>(23)</td>
</tr>
<tr>
<td>Anal canal</td>
<td>2</td>
<td>(0 )</td>
</tr>
<tr>
<td>Synchronous</td>
<td>35</td>
<td>(3 )</td>
</tr>
<tr>
<td>Missing data</td>
<td>53</td>
<td>(5 )</td>
</tr>
<tr>
<td><strong>Dukes’ stage</strong></td>
<td>(n=1065)</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>139</td>
<td>(13)</td>
</tr>
<tr>
<td>B</td>
<td>358</td>
<td>(34)</td>
</tr>
<tr>
<td>C</td>
<td>436</td>
<td>(41)</td>
</tr>
<tr>
<td>Not excised</td>
<td>132</td>
<td>(12)</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td>(n=994)</td>
<td></td>
</tr>
<tr>
<td>Well differentiated</td>
<td>165</td>
<td>(17)</td>
</tr>
<tr>
<td>Moderately differentiated</td>
<td>598</td>
<td>(60)</td>
</tr>
<tr>
<td>Poorly differentiated</td>
<td>120</td>
<td>(12)</td>
</tr>
<tr>
<td>Undifferentiated</td>
<td>1</td>
<td>(0 )</td>
</tr>
<tr>
<td>Not resected</td>
<td>110</td>
<td>(11)</td>
</tr>
<tr>
<td><strong>Metastasis</strong></td>
<td>(n=1030)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>237</td>
<td>(23)</td>
</tr>
<tr>
<td>No</td>
<td>775</td>
<td>(75)</td>
</tr>
<tr>
<td>Not investigated or not stated</td>
<td>18</td>
<td>(2 )</td>
</tr>
</tbody>
</table>

In 2001 the median number of nodes excised was 14 (IQ [9, 22]; n=394). This increased to 17 in 2005 (IQ [12, 26]; n=445). In 2001, 27% of patients had less than
10 nodes removed. In 2005, 16% had less than 10 nodes removed. Nodal harvest was also examined with respect to cancer site and treatment type, with colon cancers having a median number of 16 nodes excised over both years (all treated with surgery), rectal cancers treated with surgery only having a median number of 14 nodes excised, and rectal cancers treated with pre-operative combined chemo-radiation a median number of 12.5 nodes excised.

Treatment—895 patients (79%) received initial treatment with curative intent. The majority of these cases received surgery. The most common surgical treatment was right hemicolectomy (29%), followed by anterior resection (16%) and left hemicolectomy (7%) .

Table 3 outlines the first treatments received by the study population. In total 25 patients (2001=11, 2005=14) within the curative surgery group received an ileostomy, colostomy or temporary stoma prior to definitive surgery or chemoradiation as their first treatment.

Table 3. First treatment received by patients in 2001, 2005 and total

<table>
<thead>
<tr>
<th>First treatment</th>
<th>2001</th>
<th>(%)</th>
<th>2005</th>
<th>(%)</th>
<th>Total</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>493</td>
<td>(91)</td>
<td>508</td>
<td>(87)</td>
<td>1001</td>
<td>(89)</td>
</tr>
<tr>
<td>Curative</td>
<td>414</td>
<td></td>
<td>455</td>
<td></td>
<td>869</td>
<td></td>
</tr>
<tr>
<td>Palliative Intent unknown</td>
<td>41</td>
<td></td>
<td>46</td>
<td></td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Intent unknown</td>
<td>38</td>
<td></td>
<td>7</td>
<td></td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Pre-op chemo-radiation</td>
<td>6</td>
<td>(1)</td>
<td>15</td>
<td>(3)</td>
<td>21</td>
<td>(2)</td>
</tr>
<tr>
<td>Curative radiotherapy</td>
<td>1</td>
<td>(0)</td>
<td>4</td>
<td>(1)</td>
<td>5</td>
<td>(0)</td>
</tr>
<tr>
<td>Palliative—total (excluding surgical)</td>
<td>33</td>
<td>(6)</td>
<td>56</td>
<td>(10)</td>
<td>89</td>
<td>(8)</td>
</tr>
<tr>
<td>Supportive care</td>
<td>32</td>
<td></td>
<td>43</td>
<td></td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>1</td>
<td></td>
<td>6</td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Radiotherapy</td>
<td>1</td>
<td></td>
<td>7</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Deceased prior to treatment</td>
<td>2</td>
<td>(0)</td>
<td>0</td>
<td>(0)</td>
<td>2</td>
<td>(0)</td>
</tr>
<tr>
<td>n missing</td>
<td>7</td>
<td>(1)</td>
<td>3</td>
<td>(1)</td>
<td>10</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Journey—The median number of days from initial referral to first treatment was 35 (IQ [10, 75]) (Figure 1). There was no statistically significant difference in the median number of days from initial referral to first treatment between 2001 and 2005 (32 IQ [10, 72] and 36 IQ [10, 79] respectively; p-value=0.3), however there was substantially more missing data in 2001 (n (missing)=120 in 2001 versus 67 in 2005). Of the total study population (not including missing) 86% (89% in 2001; 84% 2005) of patients were treated within 31 days of diagnosis and 68% of patients were treated within 62 days of initial referral (Table 4).

Negative values were obtained for some patients at particular stages of the journey (Figure 1). This was most common in the diagnosis to first treatment section, and reflects patients for which the date on the pathological report that first diagnosed definitive malignancy was after the date of first treatment.
Figure 1. Time taken for each stage of the patient journey

A. Initial Referral to First Specialist Assessment

B. First Specialist Assessment to Diagnosis

C. Initial Referral to Diagnosis

D. Diagnosis to First Intervention

E. Referral to First Intervention
Table 4. Percentages of 2001, 2005 and total patients, Māori and Non-Māori and private and public patients treated within UK national guidelines

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total (%)</th>
<th>2001 (%)</th>
<th>2005 (%)</th>
<th>Māori (%)</th>
<th>Non-Māori (%)</th>
<th>Private (%)</th>
<th>Public (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral to First Specialist Assessment</td>
<td>n=935</td>
<td>n=417</td>
<td>n=518</td>
<td>(n=42)</td>
<td>(n=835)</td>
<td>(n=77)</td>
<td>(n=856)</td>
</tr>
<tr>
<td>&lt; 0 days</td>
<td>8 (1)</td>
<td>4 (1)</td>
<td>1 (2)</td>
<td>7 (1)</td>
<td>2 (3)</td>
<td>6 (1)</td>
<td></td>
</tr>
<tr>
<td>0 to 14 days</td>
<td>556 (60)</td>
<td>255 (61)</td>
<td>301 (58)</td>
<td>25 (60)</td>
<td>494 (59)</td>
<td>52 (68)</td>
<td>503 (59)</td>
</tr>
<tr>
<td>15 to 31 days</td>
<td>142 (15)</td>
<td>65 (16)</td>
<td>77 (15)</td>
<td>7 (17)</td>
<td>124 (15)</td>
<td>9 (12)</td>
<td>133 (16)</td>
</tr>
<tr>
<td>&gt; 31 days</td>
<td>229 (24)</td>
<td>93 (22)</td>
<td>136 (26)</td>
<td>9 (21)</td>
<td>210 (25)</td>
<td>14 (18)</td>
<td>214 (25)</td>
</tr>
<tr>
<td>Diagnosis to First Treatment</td>
<td>n=1027</td>
<td>n=466</td>
<td>n=561</td>
<td>n=48</td>
<td>n=902</td>
<td>n=114</td>
<td>n=902</td>
</tr>
<tr>
<td>&lt; -7 days</td>
<td>101 (10)</td>
<td>30 (6)</td>
<td>71 (13)</td>
<td>8 (17)</td>
<td>90 (10)</td>
<td>4 (4)</td>
<td>95 (11)</td>
</tr>
<tr>
<td>-7 to -1 days</td>
<td>316 (31)</td>
<td>189 (41)</td>
<td>127 (23)</td>
<td>10 (21)</td>
<td>284 (31)</td>
<td>35 (31)</td>
<td>276 (31)</td>
</tr>
<tr>
<td>0 to 31 days</td>
<td>471 (46)</td>
<td>197 (42)</td>
<td>274 (49)</td>
<td>21 (44)</td>
<td>404 (45)</td>
<td>69 (61)</td>
<td>398 (44)</td>
</tr>
<tr>
<td>&gt; 31 days</td>
<td>139 (14)</td>
<td>50 (11)</td>
<td>89 (16)</td>
<td>9 (19)</td>
<td>124 (14)</td>
<td>6 (5)</td>
<td>133 (15)</td>
</tr>
<tr>
<td>Initial Referral to First Treatment</td>
<td>n=941</td>
<td>n=422</td>
<td>n=519</td>
<td>n=42</td>
<td>n=840</td>
<td>n=75</td>
<td>n=864</td>
</tr>
<tr>
<td>&lt; 0 days</td>
<td>1 (0)</td>
<td>0 (0)</td>
<td>1 (0)</td>
<td>0 (0)</td>
<td>1 (0)</td>
<td>1 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>1 to 31 days</td>
<td>443 (47)</td>
<td>208 (49)</td>
<td>235 (44)</td>
<td>15 (36)</td>
<td>399 (46)</td>
<td>47 (63)</td>
<td>394 (46)</td>
</tr>
<tr>
<td>32 to 62 days</td>
<td>193 (21)</td>
<td>86 (20)</td>
<td>107 (21)</td>
<td>14 (33)</td>
<td>164 (20)</td>
<td>15 (20)</td>
<td>178 (21)</td>
</tr>
<tr>
<td>&gt; 62 days</td>
<td>304 (32)</td>
<td>128 (30)</td>
<td>176 (34)</td>
<td>13 (31)</td>
<td>276 (33)</td>
<td>12 (16)</td>
<td>292 (34)</td>
</tr>
</tbody>
</table>

p-value comparing % > 31 days 0.02 0.3 0.006
p-value comparing % >62 days 0.2 0.8 0.002
Patients presenting acutely—Patients were identified as having presented acutely if their mode of referral was presentation at the Emergency Department (9% of cases). These cases had a median number of days from initial referral to first specialist assessment of 0 (IQ [0, 0], n=104). Those referred via their GP or by other method of referral consequently had a larger median number of days from initial referral to first specialist assessment than the overall total. For those referred by their GP or other method of referral the median was 11 (IQ [0, 34]).

Māori patients—The median number of days from referral to first treatment was 47 (IQ [7, 75]) for Māori patients compared with 35 (IQ [9, 79]) for non-Māori. This difference was not statistically significant (p-value=0.9). For the Māori patients in this study, 62% were seen by a specialist within 14 days from referral; 81% received treatment within 31 days from diagnosis and 69% received treatment within 62 days from initial referral (Table 4). For non-Māori patients the percentages seen for the same time points were 60%, 86%, and 67% respectively (Table 4).

Private patients—A total of 174 patients received their initial treatment in the private sector (71 in 2001 and 103 in 2005). The median number of days from referral to first treatment was 23 (IQ [12, 50]) for patients treated in private compared with 37 (IQ [10, 80]) for patients treated in public (p-value=0.04). It should be noted that this data was difficult to obtain from private records, and 57% of cases in the private category had missing data for this variable. Seventy percent of patients treated within the private sector were seen by a specialist within 14 days from referral, compared to 60% treated within the public sector. Ninety five percent of private patients received treatment within 31 days from diagnosis and 84% within 62 days from initial referral, compared to 85% and 66% respectively in the public sector.

Discussion

This study describes the patient journey for 1128 Auckland patients diagnosed with colorectal cancer in 2001 and 2005. The population reviewed was similar to that reported in a National study of colorectal cancer patients, with an almost equal proportion of males and females, and a mean age at diagnosis of 70.8 The most common pathway for patients in this cohort was to be referred by a GP (68%) followed by a first specialist assessment with the surgical team (58%), with 89% of patients receiving a surgical intervention as first line of treatment.

Delays were seen in the greatest proportion of patients during the section of the journey from initial referral to first specialist assessment. This was commonly due to a wait for an outpatient colonoscopy, with reasons for long wait times including apparent loss of referrals, resulting in multiple referrals (in some cases up to 3 were noted) being made. This time point is complicated however by patients with low priority having routine colonoscopies for other comorbidities and incidental diagnoses of colorectal cancer being made, and patients choosing not to have the procedure at the initially scheduled time, perhaps due to patient fear of the procedure, and other unforeseeable reasons, such as a death in the patients’ family.

The least delays were seen in the diagnosis to first treatment section; however this section was lengthened for patients requiring pre-operative chemo-radiation, as this
requires two separate referrals and appointments with medical oncology and radiation oncology.

Some sections of the journey are reported as having negative values. This was most commonly seen from diagnosis to first treatment and represents pathological diagnosis (as per the date on pathology report diagnosing malignancy or date or radiology if no pathological diagnosis was obtained) occurring after the initiation of treatment. This includes patients undergoing surgery based on radiological or digital (in the case of rectal tumours) diagnoses, those who underwent emergency surgery or surgery for another indication (incidental findings of colorectal cancer), those who received an ileostomy or other non-diagnostic procedure as first intervention prior to later surgery, and those who had colonoscopy for which pathology was not diagnostic of malignancy.

Currently there are no national or Australasian guidelines in place for the timelessness of colorectal cancer treatment. The UK National Cancer Plan requires patients with an urgent GP referral for suspected cancer to be treated within 62 days from referral. Patients in the Auckland region were moving from referral to treatment in a median of 35 days, with 68% being treated within 62 days from initial referral.

The UK National Cancer Plan also has a two week standard for urgent referrals to be seen by a specialist. In our cohort, 60% of patients were seen by a specialist within 14 days of referral, compared to 99.9% in England. In comparing the 62 day and 14 day targets however, it should be noted that the UK has an urgent referral system from which these data are generated, whereas in New Zealand there is not a hierarchical referral system, so the data reported in this study reflect all referrals that led to a colorectal cancer diagnosis.

The New Zealand health sector should examine the merits of such a referral system for patients with potential cancers (who will soon be competing for a scarce colonoscopy resource with screen-positive patients). This would also have the benefit of increasing the ability to benchmark internationally. Logically these referral system targets should be developed to facilitate benchmarking with Australia and other countries with similar health sectors such as Canada and the Netherlands.

The UK however also has a target of a maximum one month wait (“31 day target”) from diagnosis to first definitive treatment. This variable should therefore be directly comparable to the Auckland data which showed that 86% of patients were treated within 31 days of diagnosis, compared to 99.5% of patients with all cancers in the UK. Of concern we did find that the proportion of patients meeting this target decreased from 2001 to 2005 (p=0.02).

This study aimed to capture all patients managed in the 3 District Health Board regions (Auckland, Counties-Manukau and Waitemata) as well as those in the private sector. Results are reported for all Māori patients included in the study (49; 4%) as compared to those with non-Māori ethnicity and for patients treated in the private system versus the public system. As would be expected, the median number of days for most stages of the journey was shorter for patients seen in the private sector, and a greater percentage of the private patients met the UK targets.

Although similar percentages of Māori and non-Māori patients are being seen within the UK-defined targets, the median duration from initial referral to first treatment...
appears longer for Māori patients, however the small patient numbers prevent statistically valid comparisons. Similarly there are insufficient data to explore reasons for any real differences in disease stage, patient comorbidities or broader access issues.

Population-based studies of screening initiatives have shown that screened populations have a decreased incidence of advanced stage colorectal cancer, and a disease specific survival advantage,\textsuperscript{11,12} which suggests that improvement in the timeliness of diagnosis improves patient outcome, through detection of earlier stage disease. Although this seems intuitive, it is important to note that there are studies that have suggested that there is no association between delays in diagnosis and treatment, and colorectal cancer stage.\textsuperscript{13}

In particular, a meta-analysis of 17 studies that dealt with colorectal cancer stage and delay including 5209 patients concluded that there is no association between diagnostic delay and disease stage.\textsuperscript{13} The study authors, however, acknowledge limitations in their study, in particular their definitions of delay and their grouping of disease stages for comparison.

This study has identified that the majority of patients with colorectal cancer in the Auckland region are moving through the patient pathway in a timely fashion but that nearly one-third are not and take longer than 2 months to get treatment once referred. Although the treatment pathway for colorectal patients is complicated by multiple factors, by developing strategies to increase the percentage of people completing timely passage through each part of their journey, outcomes should improve and yield benefits to the patient and health sector as a whole.

**Competing interests:** None.

**Author information:** Melissa Murray, Clinical Research Officer, Cancer Trials New Zealand, University of Auckland, Auckland; Julie Brown, Senior Research Fellow, Discipline of Oncology, School of Medical Sciences, University of Auckland, Auckland; Victoria Hinder, Research Fellow/Biostatistician, Cancer Trials New Zealand, University of Auckland, Auckland; Arend Merrie, Consultant Colorectal Surgeon, Auckland District Health Board, Auckland; Andrew Hill, Consultant Colorectal Surgeon, Middlemore District Health Board, Auckland; Michael Hulme-Moir, Consultant Colorectal Surgeon, Waitemata District Health Board, Auckland; Katrina Sharples, Biostatistician, Cancer Trials New Zealand, University of Otago, Dunedin; Michael Findlay, Consultant Medical Oncologist, Auckland District Health Board, Auckland; Director, Cancer Trials New Zealand, University of Auckland, Auckland

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**Correspondence:** Melissa Murray, Cancer Trials New Zealand, Discipline of Oncology, Faculty Medical and Health Sciences, University of Auckland, Private Bag 92019, Auckland, New Zealand. Fax: +64 (0)9 3737927; email: m.murray@auckland.ac.nz

**References:**

Chinese peoples’ perceptions of colorectal cancer screening: a New Zealand perspective

Genevieve Bong, Judith McCool

Abstract

Aims A national cancer screening programme requires a level of perceived acceptability of the procedure among the target population groups to be successful (that is, achieve a high uptake rate). In this study we explored Chinese immigrants' attitudes and perceptions towards colorectal cancer screening.

Method A grounded theory methodology was used explore the determinants of colorectal cancer screening. In depth one-on-one interviews were conducted and subsequently analysed to develop an appreciation of the perspectives on colorectal cancer screening among Chinese people living in New Zealand.

Results Findings indicated a high degree of perceived acceptability for the concept of a national colorectal cancer screening programme. Chinese participants valued health care and preventive health measures were highly prioritised. However, colorectal cancer suffered from the ‘poor cousin’ syndrome whereby other more highly publicized cancers, such breast cancer, or skin cancer, were perceived to be more relevant and seriousness, thus marginalising the perceived priority of colorectal cancer screening. Overall, participants paid close attention to their bodies' balance and were proactive in seeking medical advice. Patient practitioner interaction was also found to be influential in the patient’s decision to seek screening.

Conclusion The results of the study suggest that the introduction of a colorectal cancer screening programme in New Zealand would benefit from close attention to cultural determinants of screening uptake to provide an equitable service and outcome. Chinese patients who are eligible for participating in the colorectal cancer screening would benefit from access to appropriately detailed and culturally relevant information on the risks, benefit and procedures associated with colorectal cancer screening.

Colorectal cancer is the most common form of cancer in New Zealand—the death rate from colorectal cancer is also among the highest among the OECD countries. Although colorectal cancer has one of the highest mortality rates among all cancers, it is also one of the most preventable cancers, if detected early.\textsuperscript{2-5} In 2001, 2624 new cases of colorectal cancer were registered (an increase from 2554 in 1999), with an age-standardised rate of 43.7 per 100,000.\textsuperscript{6}

Colorectal cancer is increasing in New Zealand, partly as a result of our aging population. Although colorectal cancer can occur at any age, the majority of colorectal cancer cases are among people aged over 50 years.\textsuperscript{6}
Changes to the incidence and ethnic distribution of colorectal cancer in New Zealand can be attributed to several factors; an aging population, genetic predisposition to colorectal cancer and dietary factors.

Chinese populations in New Zealand have adapted to changes in access to, and preferences for, traditional foods, a factor which is likely to impact on health-related outcomes, included risk of chronic disease, including some cancers.\(^7\) Consistent with international trends, it is likely that Chinese who have migrated to New Zealand will adopt the eating habits and disease profile similar to the mainstream population.\(^8\)–\(^10\)

Asian people living in New Zealand account for approximately 9% of the total population, of which 3.7% identify as Chinese.\(^10\) As the Asian population is expected to grow at a rate of approximately 3% per year. Addressing Asian people’s perceptions about preventive health practices and health care provision in New Zealand is now highly relevant when establishing patient-centered health services.

In 2010, the Minister of Health announced a commitment to provide $24 million to develop a national colorectal cancer screening project, with the pilot expected to be underway by late 2011.\(^11\) No plans to formally introduce the screening programme are expected until the pilot is completed in 2015.\(^12\) However, concerns were raised about the potential adverse consequences of a screening programme, including lack of diagnosis and treatment services to meet potential demand, lack of sensitivity of the guaiac faecal occult blood test (FOBTg), poor information on the cost-effectiveness of the programme and of the potential for the programme to enhance health inequities.\(^1\)

Among other recommendations, the National Screening Advisory Council recommended a period of “forward planning” to remove barriers to access (enhancing equity) for all elements of the screening pathway. Newly established colorectal cancer screening guidelines that were developed to guide the pilot phase would recommend men and women between the ages of 50 and 74 years to be invited for screening.\(^1\)

Reflecting on international screening evaluations, the FOBTg has received some useful attention. Specifically, the Minnesota Colon Cancer Control study found that after 13 years, the group receiving annual FOBTg testing showed a 33% reduction in colorectal cancer mortality.\(^12\) The Nottingham randomised controlled trial reported a 15% reduction in mortality after 10 years and a continued 13% reduction after 11 years.\(^4\)

Similarly, the Funen randomised controlled trial for colorectal screening identified a 18% reduction in mortality after 10 years and this level of reduction was found to have persisted after 13 years of follow up.\(^5\) There is strong evidence that early screening is effective in detecting precancerous polyps and identifies early stage cancers.\(^15\) The proposed bowel screening pilot study involves immunochemical faecal occult bloods tests every two years and no other modalities.

The implementation of a national pilot screening programme for colorectal cancer in New Zealand has been long debated and now looks imminent.\(^1\) Equity of access and outcome remains a critical issue for the success of a national screening programme. This study explores the perceived acceptability of colon screening within a sample of Chinese living in New Zealand.
Method

A qualitative study using grounded theory was used to conduct a study Chinese people’s view of colorectal cancer screening. Qualitative methods are an ideal method to explore new concepts or research questions, as it enables the generation of rich, in-depth information by identifying culturally specific factors which may not have been picked up in a study using quantitative methodology. Ethics approval for this study was received from the University of Auckland Human Participants Ethics Committee (re: 2008/806) prior to conducting a series of in-depth face to face interviews. The participants were recruited through informal Chinese community organisations, churches via public information notices. Interested persons contacted the researcher directly expressing an interest for more information, or to participate in the study. Each participant was required to provide written informed consent prior to being interviewed.

Interviews were conducted by a Chinese interviewer in a private and convenient room for purposes of promoting trust and rapport with each participant. Interviews were conducted in a mixture of English and Chinese (Mandarin) languages. Interviews were audiorecorded and later transcribed verbatim. The interview data was subsequently entered in to Nvivo 8 to assist with data management and analysis. A semi-structured interview format was used to guide interviews and to ensure all topics (subject areas to discuss) were covered by the end of each interview. The interviews addressed key themes, or issues, previously identified as being relevant to understanding perceptions of colorectal cancer screening. However, as standard in qualitative interviews, the format was flexible to enable participants to elaborate or introduce new topics of relevance to their perceptions and prior experience. The primary themes discussed in the interviews included the following: colorectal cancer signs and symptoms, previous colorectal cancer screening experience, perceived seriousness of colorectal cancer, GP influences on colorectal cancer screening and family influences on colorectal cancer screening.

Results

In total, 25 Chinese people participated in the in-depth interviews. The mean age of participants was 56 years. With the exception of six participants, the majority of the participants (n = 19) had not previously undergone a colorectal cancer screening test; however, the majority of female participants had previously been through breast and/or cervical cancer screening procedures. Participants were all immigrants who were born in Asian countries, including China, Hong Kong, Taiwan, Malaysia and Singapore (see Table 1).

Table 1. Sample characteristics for gender, age, length of time in NZ, education and previous colorectal cancer (CRC) screening

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Age (mean)</th>
<th>Length of time in NZ (male+female)</th>
<th>Education level (male+female)</th>
<th>Previous CRC screening (male+female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>10</td>
<td>55 years</td>
<td>13 = &lt;5 years</td>
<td>24 = Tertiary</td>
<td>19 = no previous CRC screen</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>56 years</td>
<td>10 = 10–15 years</td>
<td>1 = High School</td>
<td>6 = previous CRC screen</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>Range = 44–74 years</td>
<td>2 = &lt;30 years</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Colorectal cancer was variously referred to as either “bowel cancer” or “large bowel cancer. To prevent any confusion and for consistency with previous studies, we will refer to colorectal cancer throughout the results. Results of the analysis of the interviews will be presented according to dominant themes that have emerged from the analysis. Results, unless stated otherwise, reflect the dominant or “popular” perceptions arising from the interviews. Quotations are included to illustrate an
individual’s response to the issues that arose during the discussions; participants are identified by gender only.

**Colorectal cancer signs and symptoms**—Participants interviewed in this study were all healthy adults (i.e. not undergoing any medical treatment) who expressed a high general regard for their current health. Physical health was not taken for granted, rather it was prioritised as an important behaviour, which participants, particularly females were highly conscious about. For example, regular health checks were considered a standard facet of good self-care. Participants reported that they closely monitored changes in “normal” bodily functions which, if observed, prompted a visit to a health professional. Medical professional opinion was highly regarded, to provide confirmation or peace of mind for the individual, particularly in respect to any symptoms perceived to be associated with cancer. Cancer, as expected, was widely feared as a devastating fatal disease and accordingly, proactive detection or treatment was volunteered to be the best course of action.

…I think I believe in being responsible for my own health, so I believe in taking personal responsibility for my own health and so when there’s a reminder, I will go for the test. *(Female Participant)*

…It’s how you perceive your own health. It’s whether you want to know the status of your own health or not… I prefer to know and then take the precaution you see, or take the treatment or whatever it is. *(Male Participant)*

Participants offered a range of perspectives on what would prompt them to go for colorectal cancer screening. These centered on an awareness of change, family history, perception of acceptability and patient–practitioner communication.

**Awareness of bodily changes**—Changes in bowel or other body function, beyond what was perceived “normal” was a primary motivator to seek advice about screening. In particular, the experience of physical discomfort, or observing worrying change in bowel function significant enough to raise suspicions of cancer (rather than other minor health ailments) was perceived as highly agitating and would motivate interest in undertaking screening.

**Family history**—Family history of colorectal cancer also figured prominently as a key motivator for screening, this was most notably among participants with family members who have had undergone treatment for colorectal cancer. Furthermore, perceived similarity in terms of personality or other risk characteristics (e.g. age) to a relative, friend or acquaintance that had been diagnosed with colorectal cancer determined the extent to which participants felt they were similarly susceptible to the disease.

**Perception of susceptibility**—Participants perception of vulnerability to colorectal cancer was a significant factor in considering whether or not they would undergo screening. Participants who perceived their diet and general lifestyle to be sufficiently healthy were less likely to believe that they were susceptible to colorectal cancer. A diet of less meat and high intake of fruit and vegetables were widely accepted to be “protective” for colorectal cancer, and therefore precluded the applicability of colorectal cancer screening.

…Personally, my diet is very healthy and I don’t eat a lot of fried food, I eat a lot of vegetables and fruits. So I’m perfectly fine with my intestine I feel. I’m perfectly happy with my condition. So I won’t go for unnecessary screening. *(Female)*
Previous colorectal cancer screening experience—Although the majority of participants were aged over 50 years, few participants had previously voluntarily sought a colorectal cancer screening test, based on an absence of perceived “warning signs”. Among the participants who had consulted their doctors regarding accessing a colon screening examination, their request was not positively received or it was not recommended - colorectal cancer screening was not seen as necessary.

…The thing that is stuck in my mind is regular bowel movement. I’m quite regular. Every morning I do it so...maybe that gives me a bit of confidence that I’m not that easily affected to colorectal cancer I suppose. That’s only my defence. Then my doctor didn’t tell me you got to do it. That’s the other thing.” (Male)

Among the participants who had previously undergone colorectal cancer screening, it was a change in their bowel movements that has prompted their doctor to recommend screening on a regular basis (once in 5 years).

…Change of bowel habit and I was looking back… I find that my lifestyle hasn’t changed, my diet hasn’t changed but there’s a certain change of bowel habit? So that makes me feel uneasy… (Female)

Perceived “seriousness” of colorectal cancer—Despite pervasive acknowledgment of the importance of proactive engagement with health services, for several participants, screening for colorectal cancer was perceived as not necessary or viable, as “there are so many things to worry about, that there is no need to worry until something happens”. Participants stressed the importance of a “healthy life” rather than a reliance on “undertaking tests”. Screening was perceived to be distinct from preventive health measures undertaken as part of their “healthy life” such as good nutrition, exercise and not smoking. Although female participants were more likely to have undergone a screening procedure in the past, (e.g. breast and/or cervical cancer screening), few male participants had previously experienced any form of screening (e.g. for prostate cancer).

Breast and cervical cancer screening procedures were widely discussed and were perceived an important proactive health measure. When female participants were asked what had prompted them to attend screening for breast or cervical cancer, the main reason given was the greater attention afforded to these cancers (via media campaigns) created the impression that these cancers were more dangerous as compared to other cancers. In contrast, comparatively little public attention was perceived to be afforded to colorectal cancer, diminishing its status as a “serious” cancer. Indeed, colorectal cancer was widely considered among participants, to be one of the low-risk cancers.

…I think most people don’t care too much, don’t know too much about colorectal cancer [sic]... not very like concerned, maybe like for females, they are more concerned about breast cancer, the men… prostate… but colorectal cancer [sic] is seldom mentioned… they’re not put on the same level of awareness and concern. (Male)

GP influences in colorectal cancer screening—Participants perceptions of their relationship with their GP was also highly relevant to participant’s receptivity to whether or not they would consider undergoing a colorectal cancer screening. Medical professionals are highly regarded by most participants in this study and accordingly, recommendation to attend a screening would be instrumental in influencing patients screening behaviour. Based on these interviews, it was evident that participants would be unlikely to contravene their GP's advice in this regard.
Gender of GP was not considered a significant issue in respect to communication. In addition participants noted that the GP’s recommendation should be reasonable and thoroughly supported by convincing medical evidence otherwise the GP would be perceived as having an ulterior motive (e.g. financial). A trusting and respectful relationship between the GP and patient (based on patience, care and concern) was a key determinant in whether or not participants followed recommendation to undertake an invasive screening procedure.

…I get very angry when doctors don’t explain to me. I hate doctors who see you and then tell you oh you’re fine. (Female)

…A sense of comfort knowing what is going to happen to me and what the doctor know and do not know … whatever they do, it may not be hundred percent, so there’s a risk of not working, so we need to know the risk… so communication between the patient and the doctor is important, to tell me what’s the procedures and what’s going to affect me… (Male)

**Family influences on participation in colorectal cancer screening**—Although female participants were more likely to talk to family members about having a colorectal cancer screening, many were also wary about sharing such personal information with friends as they were afraid that friends might gossip.

Similarly, male participants also tended to keep health concerns to themselves although many expressed they would share health concerns and fears about colorectal cancer screening (in particular a colonoscopy) with their spouse. However, the discussion could extend to friends of the same gender and similar age if they felt that their friends could offer useful advice or insight on the issue. Furthermore, despite expressing reticence about exposing health concern, or colorectal cancer screening procedure, a measure of camaraderie was expressed by some male participants.

In some cases, friends would have even encouraged them to go for various health screenings and were considered instrumental in persuading them to attend colorectal cancer screening, if it were to become a standard preventive health intervention like a skin cancer check.

…I think for me here, friends are very important…I have very close friends so I think it’s good to tell them my concern about something that is not right…. maybe they also have friends or they have gone through experiences like what you have, so it’s good to compare notes! …instead of keeping to yourself and you worry… (Female)

…Of course you would discuss with the wife… or your friends who have gone through it… you get the feedback. (Male)

**Discussion**

New Zealand is preparing to establish a colorectal cancer screening pilot programme, responding to the increasing rates of colorectal cancer. In this study we describe the key barriers and enabling factors that may determine CRC screening uptake among Chinese people in New Zealand.

Participants in this sample expressed variable expectations, motivations and barriers to colorectal cancer screening, with several critical perspectives expressed. Perceived personal risk of developing colorectal cancer is noted to be an important determinant of engaging in protective behaviour. In particular, having a perceived similarity of lifestyle to that of known colorectal cancer patients, a family history of colorectal cancer, a meat-rich diet or a notable changes (in bowel function were key drivers to warrant suspicion of cancer rather than other minor health ailments.
A previous study by Noreen et al., found several factors contributed to delay in breast cancer screening among Chinese American were due to perceptions of invulnerability and avoidance of facing the “tragic luck” of cancer. Not all cancers were perceived to have the same level of “seriousness” and the extent to which colorectal cancer was perceived to be a “serious” cancer was largely determined by either personal / familial experience, or via pervasive mass media campaigns, such as those used to raise awareness about breast cancer and cervical cancer.

Accordingly, breast, cervical and prostate cancers were perceived to significantly more prevalent and life threatening than colorectal cancer based exclusively on the extent of exposure to the issue (greater air-time meaning greater personal risk). Media campaigns and the greater likelihood of knowing someone with breast cancer, for example, raised the awareness of these cancers inadvertently sidelined other cancers.

Participants in our study reported a high regard for medical authority, which was noted as a key factor influential in encouraging attendance at a colorectal cancer screening service. In particular, rich respect was bestowed on those GPs who took the time to explain the medical procedures/illnesses to participants and who showed care and concern during consultation. This was contrary to previous research that suggested that elevated respect for medical authority may actually hinder Chinese people from asking questions or expressing their concerns.

Very few studies have been conducted on the Chinese population’s attitudes towards patient-doctor communication and how it influences cancer screening behaviour. The gender of the specialist was considered important by our participants. Interestingly, although female participants were ambivalent about the gender of the doctor/technician undertaking the colorectal cancer screening procedure, female participants felt strongly that breast cervical cancer screening procedures should be attended to by female doctors/technicians.

Previous research also identified a preference for female health professionals, with the general perception being that female health professionals are more considerate and understanding of the patient’s feelings when performing relatively embarrassing screening procedures such as cervical cancer screening.

Participants were predominantly open and candid in their discussion about their understanding of colorectal cancer symptoms or the screening procedures. This finding is contrary to previous research on the Chinese population which found that the Chinese perceive cancer differently compared to other ethnicities. For example, Mo (1992) found that some Chinese considered cancer a dormant disease that could be triggered by breathing polluted air or eating frozen, preserved or raw food. Cancer has also been seen to be a topic that is studiously avoided in discussions with the Chinese as it is seen to bring bad luck and it was preferred to discuss on options to improve one’s health instead. Other studies have found that some Chinese view having cancer as being part of their destiny or fate. This sense of fatalism, the feeling of having no control over the onset of illness, was suggested to explain why Chinese who have these beliefs were not interested in getting regular preventive care.

Traditional Chinese beliefs about health and illness played a role in how the participants interpreted their expectations about colorectal cancer screening. Many of
the participants in our study emphasised good self care and proper food intake (high fruits / vegetable and low meat consumption) and a ‘balanced’ lifestyle.

The findings of our study are consistent with previous research that shows that the Chinese tend to view health holistically and not just as a physical entity. For example, according to Kwok and Sullivan (2006), Chinese women held views that an imbalanced diet or poor nutrition weakened the body’s resistance to cancer and psychological factors such as stress and grief were important factors in cancer causation.

Participants in this study indicated they would try and remedy the bodies “hot and cold” imbalance with traditional herbal soups or increasing their intake of fruits and vegetables, rather than attend screening. Furthermore, they acknowledged pervasive stereotypes about traditional Chinese approaches to health and health intervention, in particular noting the “older generation” who were more reliant on traditional and holistic medicines.

Previous research studies on Chinese cancer patients in China found the family to be a crucial source of support and people outside the family (e.g. friends) to provide the least amount of support for cancer patients. Among our sample friends were perceived to be an equally important source of support, particularly during times of stress.

The traditional view that Chinese rely predominantly on family for support arises from the high value placed on self-sufficiency; seeking help outside of the family indicates weakness in character which would bring shame and disgrace to the family. Migration is likely to affect expectations of, and access to support. In particular, practical advice on the health care system would most likely be gleaned from friends rather than family. This finding is consistent with research by whereby family as well as friends were found to link elder American Chinese immigrants to the health care network by assisting with encouragement to visit a physician, navigating the US health care system and assistance with understanding and processing paperwork.

Several limitations with the study design and execution are noteworthy. In particular, we underestimated the sensitive nature of discussions around the symptoms associated with colorectal cancer and the colorectal cancer screening procedures. The principal interviewer was a young Chinese female; therefore the depth and detail extracted from interviews with male participants may have been compromised. In future we would have gender-matched interviewers. As we were unable to offer compensation to the interviewees we may have inadvertently impacted participant’s decision to participate in the interview. In addition, although it was not intended, all GPs interviewed were of Asian descent. This sample therefore precludes a broader analysis of GPs’ views on Chinese patient’s attitudes toward colorectal cancer screening.

A national screening programme must seek to provide an effective, acceptable and equitable service for eligible consumers. Ensuring equity of access colorectal screening in New Zealand, patients will be in part reliant on GPs, who will also benefit from well tailored information on screening procedures and to provide useful and clear lay man explanations. Future health promotion campaigns would have to be specific on their targeted population and also to be aware of which stereotypes are
myths in the population. Only then, can such primary care prevention can be effective for all.

**Competing interests:** None.

**Author information:** Genevieve Bong, Department of Psychological Medicine, Department of Psychology, Faculty of Science, University of Auckland; Judith McCool, Lecturer – Global Health, Department of Social and Community Health, School of Population Health, Faculty of Medical and Health Science, University of Auckland, Auckland

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**Correspondence:** Dr Judith McCool, Department of Social and Community Health, School of Population Health, Faculty of Medical and Health Science, University of Auckland, Private Bag 92019, Auckland 1142, New Zealand.

**References:**
Gastric cancer location and histological subtype in Pacific people and Māori defies international trends

Magdalena Biggar, Sanket Srinivasa, Binula Wickramarachchi, Richard Babor, Garth H Poole, Andrew G Hill

Abstract

Aims Gastric cancer location and histopathology in Pacific people (mostly of Samoan, Tongan, Niuean, and Cook Islands origin) and Māori in New Zealand has not been specifically examined.

Methods A retrospective review of all histologically-proven new cases of gastric adenocarcinoma and gastro-oesophageal adenocarcinoma at Middlemore Hospital (Auckland, New Zealand) from June 2003–June 2009 was conducted. Demographic data, clinical presentation, diagnostic/staging investigations and surgical outcomes were recorded.

Results There were 133 patients of whom 79 (59%) were male. Forty-nine (37%) patients were of Pacific ethnicity and 34 (26%) were Māori. Māori (59.3 years; p=0.01) and Pacific (64.5 years; p=0.01) patients were significantly younger at diagnosis compared to European patients (77.2 years). European patients had more proximal tumours (n=18; 47%) compared to Pacific (n=5; 10%) and Māori (n=4; 12%) patients (p= 0.01). Pacific (n=25; 51%) and Māori (n=21; 62%) patients had a significantly higher percentage of diffuse-type gastric cancer compared to European (n=7; 18%) patients. There was no difference in stage of presentation between ethnic groups.

Conclusions Māori and Pacific patients present with gastric cancer at higher rates and at a younger age. They have a predominance of diffuse-type antral and gastric body cancers which stand in contrast to global trends in gastric cancer.

Gastric cancer is the second most common cause of cancer death worldwide, affecting an estimated one million people per year. The two classical types are intestinal-type and the less common diffuse-type gastric cancer. The incidence of gastric cancer is decreasing worldwide largely due to the decreasing incidence of intestinal-type gastric cancer.

Intestinal-type gastric cancer has been shown to be related to intestinal metaplasia caused by chronic gastritis and risk factors for this include Helicobacter pylori (H. pylori) infection, smoking and salt-preserved foods. Proton pump inhibitors (PPI) have also been implicated in causing chronic gastritis. Diffuse-type gastric cancer has been linked to a genetic aetiology with mutations identified for subsets such as Hereditary Diffuse Gastric Cancer (HDGC).

Global trends show a ‘proximal migration’ of the site of gastric cancer with an increasing incidence of cancers of the gastric cardia and the gastro-oesophageal
This has been attributed to an increasing incidence of obesity and associated gastro-oesophageal reflux disease (GORD).  

The New Zealand (NZ) population has mirrored international trends when considered in its entirety.  

This includes an increasing incidence of proximal gastric cancers and predominance of intestinal-type gastric cancer. A significant body of work has also outlined the high prevalence of H pylori in NZ, especially in indigenous Māori and Pacific people.  

Other studies have shown an increased incidence and mortality of gastric cancer in Māori and Pacific people. There are few recent studies regarding the characteristics of gastric cancer in Māori and Pacific people including the anatomic distribution and histopathological type. 

Our institution services an area with a high population of Māori and Pacific people and hence we conducted this study to examine the characteristics of gastric cancer in this population.

**Methods**

A retrospective review of all histologically-proven new cases of gastric cancer from June 2003 to June 2009 was conducted. Patients with primary gastric adenocarcinoma and gastro-oesophageal adenocarcinoma were included. Patients with metastatic cancer from a non-gastric primary were excluded. Demographic data, cancer site according to operative or endoscopic findings, histology according to the Lauren Classification, clinical and radiological stage of presentation, laboratory and radiological investigations and surgical outcomes were recorded. Incidence was calculated using population statistics of the catchment area of our institution. 

Statistical analysis was conducted using SPSS v13.0 software (SPSS Inc, Chicago, IL). The two-tailed Fisher’s exact test was used to analyse categorical data and the Mann Whitney U test was used for non-parametric continuous data. A p-value of 0.05 was considered as statistically significant.

**Results**

There were 133 patients with a new diagnosis of gastric cancer during the period of June 2003–June 2009 with 79 (59%) males and 54 (41%) females. The mean age at diagnosis was 59.3 years in Māori patients, 64.5 years in Pacific patients and 77.2 years in NZ European patients. Māori and Pacific patients were significantly younger at the time of diagnosis (p=0.01). 

The ethnicity of patients is as per Table 1. The overall incidence of gastric cancer was 4.6/100,000/year (Table 1) with a disproportionately higher incidence in both Pacific (8.1/100,000/year) and Māori (7.2/100,000/year) individuals.

**Table 1. Incidence of gastric cancer within catchment area**

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Cases of gastric cancer</th>
<th>Population number</th>
<th>Incidence (cases/100,000/year)#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Māori</td>
<td>34</td>
<td>79,000</td>
<td>7.2</td>
</tr>
<tr>
<td>Pacific*</td>
<td>49</td>
<td>100,900</td>
<td>8.1</td>
</tr>
<tr>
<td>NZ European</td>
<td>38</td>
<td>213,000</td>
<td>3.0</td>
</tr>
<tr>
<td>Asian</td>
<td>12</td>
<td>80,100</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>133</strong></td>
<td><strong>486,000</strong></td>
<td><strong>4.6</strong></td>
</tr>
</tbody>
</table>

*Mostly of Samoan, Tongan, Niuean, or Cook Islands origin; #Uncorrected for age.
Data for cancer location by ethnicity are summarised in Table 2. Pacific and Māori patients had a higher proportion of gastric body and distal gastric cancers. By contrast, NZ European patients had mostly proximal tumours with only six patients having distal tumours. NZ European patients tended to have more proximal tumours compared to Pacific (p=0.01) and Māori (p=0.01) patients.

### Table 2. Location of gastric cancer by ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Proximal (%)</th>
<th>Body (%)</th>
<th>Distal (%)</th>
<th>Extensive (%)</th>
<th>NOS (%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ European</td>
<td>18 (47%)</td>
<td>13 (34%)</td>
<td>6 (16%)</td>
<td>1 (3%)</td>
<td>–</td>
<td>38</td>
</tr>
<tr>
<td>Māori</td>
<td>4 (12%)</td>
<td>12 (35%)</td>
<td>15 (44%)</td>
<td>2 (6%)</td>
<td>1 (3%)</td>
<td>34</td>
</tr>
<tr>
<td>Pacific</td>
<td>5 (10%)</td>
<td>17 (35%)</td>
<td>18 (37%)</td>
<td>8 (16%)</td>
<td>1 (2%)</td>
<td>49</td>
</tr>
<tr>
<td>Asian</td>
<td>1 (8%)</td>
<td>4 (33%)</td>
<td>7 (58%)</td>
<td>–</td>
<td>–</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12 (18%)</strong></td>
<td><strong>23 (35%)</strong></td>
<td><strong>23 (35%)</strong></td>
<td><strong>6 (9%)</strong></td>
<td><strong>2 (3%)</strong></td>
<td><strong>133</strong></td>
</tr>
</tbody>
</table>

NOS: Not otherwise specified.

Histological results and clinical stage of presentation have been summarised in Table 3. Pacific and Māori patients had a higher percentage of diffuse gastric tumours compared to NZ European patients (p<0.01). There was no difference in clinical stage of presentation between ethnic groups.

### Table 3. Histological type and clinical stage of presentation by ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Intestinal (%)</th>
<th>Diffuse (%)</th>
<th>Mixed (%)</th>
<th>Local (%)</th>
<th>Metastatic (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ European</td>
<td>30 (79%)</td>
<td>7 (18%)</td>
<td>1 (3%)</td>
<td>24 (63%)</td>
<td>14 (37%)</td>
</tr>
<tr>
<td>Māori</td>
<td>10 (29%)</td>
<td>21 (62%)</td>
<td>3 (9%)</td>
<td>19 (56%)</td>
<td>15 (44%)</td>
</tr>
<tr>
<td>Pacific</td>
<td>19 (39%)</td>
<td>25 (51%)</td>
<td>5 (10%)</td>
<td>23 (47%)</td>
<td>26 (53%)</td>
</tr>
<tr>
<td>Asian</td>
<td>6 (50%)</td>
<td>5 (42%)</td>
<td>1 (8%)</td>
<td>7 (58%)</td>
<td>5 (42%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65 (49%)</strong></td>
<td><strong>58 (44%)</strong></td>
<td><strong>10 (8%)</strong></td>
<td><strong>73 (55%)</strong></td>
<td><strong>60 (45%)</strong></td>
</tr>
</tbody>
</table>

130 (98%) patients underwent endoscopy, 114 (86%) patients had computerised tomography (CT) scans, two (2%) patients had positron emitting tomography (PET) scans and 24 (18%) patients underwent laparoscopic exploration. *H. pylori* was detected histologically in 20 (15%) patients. Forty-eight (36%) patients underwent surgical resection. Of these, 12 (25%) patients had a grade 2 complication and six (13%) patients had a grade 4 complication as per the Clavien-Dindo classification of surgical complications.21, 22

**Discussion**

This retrospective review of our institution’s experience shows that Māori and Pacific patients have a higher incidence of gastric cancer than NZ Europeans with a predominance of distal and gastric body cancers of the diffuse histological type. Māori and Pacific patients are also younger at the time of diagnosis compared to NZ European patients with gastric cancer.
Global trends in gastric cancer epidemiology suggest decreasing incidence, a ‘proximal migration’ in the site of gastric cancers and rising incidence of diffuse gastric cancer even though the intestinal variant remains the most common type of gastric malignancy overall.\textsuperscript{8,23}

The sample of NZ European patients in this study had cancer distribution and histology closely aligned with international data.\textsuperscript{7} However, Pacific and Māori patients in this study had a higher incidence of gastric antral and body cancer and more diffuse gastric cancer, which does not conform to international trends. These observations raise interesting questions regarding the aetiology of gastric cancer in NZ and have important implications for diagnosis and management.

Distal gastric cancers and the intestinal type have been traditionally linked to \textit{H. pylori} infection, smoking, salt-preserved foods as well as other risk factors.\textsuperscript{3,23} Proximal gastric cancers have been typically linked to obesity and associated GORD.\textsuperscript{8,23} However, both \textit{H. pylori} infection and smoking have also been implicated as risk factors for proximal gastric cancer.\textsuperscript{23}

Previous studies have shown that both Māori and Pacific people have a high prevalence of \textit{H pylori} and have higher rates of smoking\textsuperscript{12,24} and that the prevalence of obesity, and associated GORD, is also disproportionately high in Māori and Pacific.\textsuperscript{25} Thus, the high incidence of distal gastric cancers and the diffuse subtype in the Māori and Pacific population found in this study cannot be explained by consideration of traditional risk factors.

Diffuse gastric tumours, which predominated in the Māori and Pacific patient group, have a recognised genetic aetiological component.\textsuperscript{2,8,26} Novel germline E-cadherin mutations have already been demonstrated in Māori families with Hereditary Diffuse Gastric Cancer but to our knowledge no such mutations have been identified in families or individuals of Pacific ethnicity.\textsuperscript{14,27}

Although Māori and Pacific people share common ancestry, the DNA profiles of Pacific people are recognised as homogenous and distinct from other groups due to separate migration.\textsuperscript{28} This raises the possibility of low-penetrance mutations as a contributing factor towards the development of gastric cancer and merits further study and identification of an as yet unknown environmental factor that down-regulates the expression of E-cadherin or other similar oncoprotective genes.

This study is limited by its retrospective nature and the singular origin of the data. Our institution was previously a referral site for patients with hereditary gastric cancer and this may have skewed the incidence and histological subtype data. The New Zealand Cancer registry does not currently record the site of cancer preventing the verification of these findings at a population level with more statistically and clinically compelling results.

Serological data regarding \textit{H. pylori} status were also not available and histology was relied upon, which is not as sensitive a method.\textsuperscript{29} Moreover, the study sample consists of urban Māori and Pacific people, who may have a different demographic profile and lifestyle to rural Māori and Pacific people not resident in NZ. This may have important implications on the risk factors for gastric cancer though studies have confirmed the high prevalence of \textit{H. pylori} in parts of Polynesia.\textsuperscript{30, 31}
This small study highlights important differences in the location and histopathology of gastric cancer within Māori and Pacific residents in New Zealand. Identification of these differences and further study into their aetiology is required to optimise our understanding of and perhaps improve outcomes for patients with gastric cancer.

**Competing interests:** None.

**Author information:** Magdalena Biggar, Surgical Registrar, Department of Surgery, Middlemore Hospital, Auckland; Sanket Srinivasa, Research Fellow, Department of Surgery, South Auckland Clinical School, Middlemore Hospital, University of Auckland, Auckland; Binula Wickramarachchi, Medical Student, University of Auckland; Richard Babor, Consultant Surgeon, Department of Surgery, Middlemore Hospital, Auckland; Garth H Poole, Consultant Surgeon, Department of Surgery, Middlemore Hospital, Auckland; Andrew G Hill, Associate Professor in Surgery, Department of Surgery, South Auckland Clinical School, Middlemore Hospital, University of Auckland, Auckland

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**Correspondence:** Andrew G Hill, Associate Professor in Surgery, Colorectal Surgeon, Head of South Auckland Clinical School, Middlemore Hospital, University of Auckland, PO Box 93311 Otahuhu, Auckland, New Zealand. Fax: +64 (0)9 2679482; email: a.hill@auckland.ac.nz

**References:**

Challenging differential diagnosis of a wild-type gastrointestinal stromal tumour (GIST) or rare reticular perineurioma of the stomach? The role for mutational analysis

Konrad K Richter, Alexander Dempster, Angelo P D Tos, Rakesh Premkumar, Christopher Jackson

Abstract

The differential diagnosis of submucosal stomach lesions includes gastrointestinal stromal tumour (GIST), leiomyoma, synovial sarcomas, perineurioma, myxoid chondrosarcoma, myoepithelial tumour and other rare mesenchymal tumours. GISTs are well-defined lesions with distinctive morphologic and histogenetic characteristics that show 95% positive staining for CD117. Differential diagnosis of wild-type GISTs can be challenging. Here, we present two stomach tumours that were operated in our surgical department. Both presented with positive immunoreactivity for CD117. In one tumour, c-Kit mutation analysis demonstrated positivity of exon 11_c.1674_1676delGGT, thus confirming the diagnosis of a GIST. Mutational analysis of the second stomach lesion demonstrated negativity for all known c-KIT and PDGFRA exons. In situ hybridisation ruled out a synovial sarcoma. An additional immunohistochemical staining for epithelial membrane antigen eventually confirmed the diagnosis of an extremely rare reticular perineurioma in the stomach, so far reported for the second time worldwide. Both patients have not shown any signs of recurrence 2 years after surgery. The presented cases emphasise the benefits of performing a mutational analysis in difficult GISTs, including wt-GISTs, and demonstrates the importance and challenges in differentiating GISTs from other mesenchymal tumours.

Gastrointestinal stromal tumours (GISTs) are the most common mesenchymal lesions of the gastrointestinal tract. However, the term “GIST” should apply only to those lesions that are KIT immune-positive using the antibody CD117. It has been agreed that KIT immunoreactivity in mesenchymal lesions of the gastrointestinal tract defines a group of tumours that show a differentiation toward interstitial cells of Cajal.1,2

A proportion of 5% true GIST is CD117 negative; in these KIT-negative tumours mutational analysis for KIT and PDGFRA genes can confirm the diagnosis of GIST. In addition, KIT mutational analysis is readily available nowadays and has a predictive value for a tumour’s sensitivity to imatinib, a tyrosine kinase inhibitor (STI 571, Gleevec/Glivec; Novartis Pharmaceuticals, Basel Switzerland).

In addition, mutational analysis has prognostic value. CD117-positive GISTs have activating mutations in either KIT (75-80%) or PDGFRA (5–10%), two closely related receptor tyrosine kinases, leading to ligand-independant activation and signal transduction mediated by constitutively activated KIT or PDGFRA.
In suspected GISTs with weak or absent CD117 staining, a new antibody DOG-1 (Discovered On Gist-1) may assist in the diagnosis of GIST and thereby facilitate medical treatment. It is estimated that 5–15% of GISTs express such a difficult staining pattern. The more challenging diagnosis refers to wild-type GISTs.

Most of these lesions are immunohistochemically CD117-positive, but they are negative for the known mutations—i.e. they carry wild type sequences in all known hot spots of KIT and PDGFRA (wt-GIST). The pathogenesis of these wt-GISTs is poorly understood. In addition, they have to be differentiated from other spindle cell neoplasms of the gastrointestinal tract and can pose a significant diagnostic challenge to both the pathologist and the treating physician.

Tumours that resemble GISTs but are mimics include fibromatosis, leiomyoma, schwannoma, perineurioma, spindle cell sarcoma, leimyosarcoma, angiosarcoma, glomus tumour, paraganglioma, clear cell sarcoma and synovial sarcoma. The correct diagnosis has significant implications for patients, in that imatinib is a potent drug in GISTs, depending on the mutational analysis, but it may not work in non-GISTs.

In this paper, we report two stomach tumours that were resected with stomach wall resection and partial gastrectomy and serve as representative examples of a routine case load of a general surgeon at a teaching hospital. The diagnosis of one strongly CD117 positive tumour was straightforward, mutational analysis confirmed a GIST. However, the diagnosis of the second tumour involved immunohistochemistry, in situ hybridisation and intensive mutational analysis. It eventually lead to the rare diagnosis of a stomach perineurioma, the second case reported so far in the literature.

Patients and Methods

Two patients with submucosal stomach tumours presented to our surgical department. Both patients were asymptomatic; their lesions were diagnosed during a routine upper endoscopy. They were found to have a 3-cm and a 5-cm submucosal lesion in the antrum of their stomach. No preoperative biopsy was performed.

The first patient, a 63-year-old male, had an open partial stomach wall resection with 2 cm resection margins. Specimens used in the study were frozen and formalin-fixed and paraffin-embedded tissues for immunohistochemistry and mutational analysis. The testing was performed at the Peter MacCallum Cancer Center in Melbourne, Australia. DNA was extracted from the paraffin-embedded tumour specimens and individual gene exons were amplified by PCR. The patient went home on postoperative day two without complications. He did not show any signs of recurrence or metastasis 2 years later on follow-up endoscopy and CT imaging.

The second patient, a 57-year-old female, was diagnosed with symptomatic obstructing Crohn’s disease of the terminal ileum. In addition, routine work-up demonstrated a submucosal lesion in the antrum of her stomach that had been observed previously during upper endoscopies but was not thought to be suspicious. During laparotomy an ileocaecal resection was performed. In addition, the 5-cm stomach lesion was resected first with stomach wall excision and assessed on frozen section. The preliminary diagnosis was carcinoïd. Therefore, a partial gastrectomy was then performed with a Roux-en-Y reconstruction. Formalin-fixed and paraffin-embedded specimens were stained immunohistochemically for CD117, S-100, CD34, broad-anti cytokeratin, and EMA. In addition, c-KIT/PDGFRA mutational analysis and in situ hybridisation for SS18 rearrangement were performed (IGENZ Innovative genetic diagnosis, Auckland, New Zealand) (Table 1). The patient recovered well and went home on day 5.
Results

The formalin-fixed specimen of the first patient demonstrated spindle cells with no mitoses or necroses. Immunohistochemically, it was strongly positive for CD117 and CD34, and negative for cytokeratin and desmin. C-Kit mutation analysis demonstrated C-Kit positivity of Exon 11_c.1674_1676delGGT (p.Lys558Asndel) and negativity of exons 9 (codons 449-514), 13 (codons 627-663), 17 (codons 788-827) as well as PDGFRA exon 18 (codons 814-854), confirming the diagnosis of GIST. See Table 1.

Table 1. Comparison of immunohistochemistry and DNA sequencing of c-Kit and PDGFRA

<table>
<thead>
<tr>
<th>Variables</th>
<th>Case 1: GIST</th>
<th>Case 2: Perineurioma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunohistochemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD117</td>
<td>positive</td>
<td>weakly positive</td>
</tr>
<tr>
<td>EMA</td>
<td>–</td>
<td>positive</td>
</tr>
<tr>
<td>S100</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>CD34</td>
<td>positive</td>
<td>–</td>
</tr>
<tr>
<td>Actin</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Cytokeratin</td>
<td>–</td>
<td>positive</td>
</tr>
<tr>
<td>Desmin</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>DNA Sequencing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c-KIT exon 9</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>c-KIT exon 11</td>
<td>positive</td>
<td>negative</td>
</tr>
<tr>
<td>c-KIT exon 13</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>c-KIT exon 17</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>PDGFRA exon 12</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>PDGFRA exon 14</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>PDGFRA exon 18</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>SS18 gene rearrangement</td>
<td>negative</td>
<td>negative</td>
</tr>
</tbody>
</table>

Histology from the second patient demonstrated a spindle cell neoplasm featuring a myxoid stroma and a reticular pattern. Immunohistochemistry showed weakly positive CD117 cells, negativity for CD34, S100, CK7, CD20, SMA, Chromogranin, CK5/6 and actin, and a strong positivity for broad-anti-CK., CAM 5.2 and Vimentin (see Figures 1–4).
Figure 1. Endoscopic picture of the stomach GIST that was resected with partial stomach wall resection

![Endoscopic picture of the stomach GIST](image)

Figure 2. Strong CD117 staining of the GIST

![CD117 staining of the GIST](image)

Figure 3. Strong anti-CK immunohistochemistry of the reticular perineurioma

![Anti-CK immunohistochemistry of the reticular perineurioma](image)
A reference pathology report was requested and the tumour was diagnosed as a GIST. In order to confirm the diagnosis c-KIT/PDGFRA mutational analysis was performed. The proportion of tumour cells marked per area was 80%. All examined hot spots were negative—i.e. exons 9 (codons 449-514), 11 (codons 550-580), 13 (codons 627-663) and 17 (codons 788-827) for c-KIT and exon 18 (codons 814-854) for PDGFRA. In addition to this, exons 12 and 14 of PDGFRA gene were also assessed and found to be negative. The GenBank accession number for the reference sequence was c-KIT cDNA –NM_000222. The nucleotide numbering in this study used the A of ATG translation initiation start codon as nucleotide (+22) and PDGFRA mRNA NM_006206.3 as well as the A of ATG translation initiation start codon as nucleotide +149. Since the second tumour was CD117 immunopositive, albeit weakly, the differential diagnosis of a wild-type GIST was considered to be a synovial sarcoma.

Formalin-fixed and paraffin-embedded sections were tested for SS18 rearrangement with in situ hybridisation (IGENZ Innovative Genetic Diagnosis, Auckland). The technique used an 18q11.2 SS18 break-apart probe resulting in a yellow x2 signal pattern in 91% of 127 nuclei examined. However, the absence of the SS18 gene rearrangement did not support the diagnosis of a synovial sarcoma (Figure 6). Finally, a fourth reference opinion was requested and additional immunohistochemistry confirmed a strong-positive epithelial membrane antigen (EMA) staining (Figure 5).
Both morphologic and immunophenotypic features were consistent with the diagnosis of a reticular perineurioma.\textsuperscript{7} The patient has been followed up regularly and has been noted to be recurrence- and symptom-free 2 years after surgery.

**Figure 6:** Interphase nuclear *in situ* hybridisation studies using an 18q11.2 SS18 break apart probe demonstrating a yellow x2 signal pattern in 91\% of 127 nuclei examined. The results are interpreted as negative for a SS18 gene rearrangement

**Discussion**

The two cases demonstrate the difficulty and complexity encountered in diagnosing those lesions and emphasise the importance of a multi-disciplinary approach for diagnosis and treatment.
Tumours consisting of perineurial cells such as extraneural perineurioma are rare and comprehensive data regarding their prognosis are not available. The lack of mitoses and a significant cellular atypia suggest a benign course in our patient. The previous diagnosis of a GIST was based on KIT-positive tumour cells; however, mast cells within the lesions may also stain positive for CD117. A strong EMA-positive and S-100-protein-negative immunostaining are characteristics for a perineurioma.

On the contrary, the GISTs were 95% positive for CD117, 70% positive for CD34-protein, 40% positive for smooth muscle actin, and rarely positive for S-100 (5%) or desmin (2%). Moreover, GISTs do not express the epithelial marker EMA. Hornick et al described 10 rare intestinal perineuriomas located in the colorectum and jejunum.

All tumours except one were positive for EMA, four of them expressed claudin-1 and two expressed CD34. All were negative for S-100, glial fibrillary acidic protein, neurofilament protein, smooth muscle actin, desmin, caldesmon, KIT and pan-keratin. The authors followed up four patients; no tumour recurred. They concluded that perineurioma can be distinguished from other spindle cell neoplasm of the gastrointestinal tract by immunostaining for EMA and claudin-1.

Our report describing reticular perineurioma located in the stomach is the second one in the literature so far; 5 cm in diameter larger than the previously reported 1.5 cm one. However, because of difficulties in diagnosing them, and since four of the published cases were detected over a 2-year period in a busy routine gastrointestinal biopsy service, submucosal perineuriomas are likely to be under recognised. They have to be distinguished from GISTs and schwannomas by immunohistochemistry—i.e. they are EMA+ (Fig. 5), CD117−, and S-100−. The differential diagnosis of intramucosal perineuriomas includes benign fibroblastic polyp, leiomyoma, neurofibroma and ganglioneuroma.

The treatment of primary localised GIST remains surgical; however, recent clinical and molecular studies have demonstrated a correlation between GIST mutational status and response to and outcome following imatinib therapy. Although a subset of GISTs have been defined that are clearly KIT-negative, 75-85% GISTs are c-KIT-positive and 5-10% are PDGFRA-positive. Tumour cells from our first patient demonstrated a strong CD117 immunoreactivity and an exon 11_c.1674_1676delGGT mutation in 60–70% of cells, the most common mutation in GIST. These GISTs have shown a good response to imatinib. The risk of recurrence and metastasis in GISTs has been defined by the number of mitoses per 50 high power field (HPF) and tumour size. For example, the risk of recurrence or metastasis in the presented 3 cm completely excised stomach GIST is intermediate, i.e. 15%.

Until recently, adjuvant imatinib therapy was only indicated in studies with high-risk GISTs, which is defined as more than 10 mitoses per 50 HPF and stomach tumour...
size larger than 5 cm, or more than 5 mitoses in 50 HPF and intestinal tumour size larger than 5 cm. DeMatteo et al. published a randomised, double-blind, placebo-controlled trial with completely resected primary GISTs 3 cm and larger. 359 patients received postoperative adjuvant imatinib 400 mg, and 354 received a placebo.

At a median follow-up of 19.7 months the patients in the imatinib group had a significantly better recurrence-free survival with 95% than the placebo group that showed 83% (p<0.0001), indicating that first patient may have benefited from adjuvant imatinib therapy. These are encouraging results, however, data regarding overall survival have to be awaited prior to recommending imatinib in the adjuvant setting. Previous data from patients with advanced ( unresectable and/or metastatic) GIST suggest that the expression of c-KIT exon 11 mutation results in an objective response rate of 72–86%, whereas, the response rates for GISTs with exon 9 mutation and wt-GISTs would be 38–48% and up to 28%, respectively.

Primary c-KIT mutations of exons 13 and 17 are sensitive to imatinib. The type of KIT exon 11 mutations or the involvement of specific codons may influence the outcome; i.e. deletions in codons 557-558 and duplications in the distal part are associated with a high metastatic risk and poor prognosis, whereas, missense mutations may lead to longer progression-free and better overall survival.

The situation is different for PDGFRA gene mutations, in which exons 12, 14 and 18 mutated GISTs are all sensitive to imatinib, except for mutation D842V in exon 18. However, mutations of exon 12 and 14 are very rare and occur only in 1%. On the other hand, we know from mutational analysis that GISTs expressing exon 11 mutations develop a primary resistance to Imatinib in 5%, and 16% and 23% in KIT exon 9 mutant and wild-type GISTs, respectively. In fact, the best response to imatinib and the longest survival time has been observed in GISTs harbouring KIT exon 11 mutations; these patients have a 1 year longer median time to progression than GIST patients with other KIT or PDGFRA mutations.

Recent data suggest that tumour location also influences survival—i.e. GISTs found in the stomach have a lower rate of aggressive behaviour than small intestinal GISTs of similar size and mitotic activity. Therefore, anatomic location is now included in the new NCCN consensus guidelines as an additional parameter risk assessment for GISTs, along with mitotic index and size. One differential diagnosis of our second patient was a wild-type GIST. Would this patient have benefited from adjuvant imatinib therapy if it were a GIST?

Few data are available in the literature. Debiec-Rychter et al. reported 15.4% “wild-type” cases out of 377 patients enrolled in a randomised EORTC phase III trial. A dose increase of imatinib for these types did not significantly change the progression-free survival in this study, and the results did not differ in the rate of progression or overall survival when compared with the subgroup with KIT exon 9 mutations.

The tumours defined as “wild-type” could actually be other entities, as in our second case, a reticular perineurioma, smooth muscle tumours, desmoids fibromatosis, schwannoma, inflammatory myofibroblastic tumour, inflammatory fibroid polyp and solitary fibrous tumour. They could still harbour KIT or PDGFRA mutations within exons not analysed yet. It has been suggested that wt-GISTs may represent a heterogeneous group of not too well-defined tumours, including paediatric GISTs in
children and patients with CARNEY’s triad. These paediatric wt-GISTs can metastasise into lymph nodes; they lack cytogenetic deletions unlike those observed in adult KIT-mutant GISTs.27

Finally, a synovial sarcoma was ruled out using in situ hybridisation techniques to assess SS18 rearrangements. This method was first described by Amary et al in 2007.6 He studied 134 cases that were highly suspicious for synovial sarcoma. Using fluorescence in situ hybridisation and conventional reverse transcriptase-polymerase chain reaction (RT-PCR), he could demonstrate SS18-SSX fusion products in 126 (96%) cases (74 SS18-SSX1, 52 SS18-SSX2) by FISH and 120 by RT-PCR.

The authors concluded that the employment of a combination of molecular approaches aids in diagnosing synovial sarcoma providing at least 96% sensitivity and 100% specificity. However, they cautioned that the results should be interpreted in the light of other modalities such as clinical findings and immunohistochemical data.

In conclusion, the diagnosis and treatment of a gastrointestinal mesenchymal tumour can be challenging. Molecular testing is encouraged in high-risk GISTs and those with difficult diagnosis. The cancer surgeon should be knowledgeable about differential diagnoses and basic molecular classification of GISTs to24 in order to play an active part within the multidisciplinary tumour board and to provide the optimal multimodal treatment to the patient.

The utilisation of histopathology, immunohistochemistry and molecular analysis is required for full characterisation and accurate diagnosis of these tumours in the age of molecularly targeted and personalised therapy.

Competing interests: None.

Author information: Konrad Klaus Richter, Consultant General Surgeon1; Alexander Dempster2; Angelo P D Tos3; Rakesh Premkumar1; Christopher Jackson4

1. Department of Surgery, Southland Hospital, Invercargill, New Zealand
2. Southern Community Laboratories, University of Otago, New Zealand
3. Department of Oncology, General Hospital of Treviso, Italy
4. Department of Medical Oncology, University of Otago, Dunedin, New Zealand

Acknowledgement: We kindly appreciate the contribution of Dr Stephen Fox, Melbourne Laboratory, Australia.

Correspondence: Konrad Klaus Richter MD PhD, Consultant General Surgeon, Senior Clinical Lecturer University of Otago, Department of Surgery, Southland Hospital, Kew Road, Invercargill, New Zealand. Email: konradklaus.richter@googlemail.com

References:


Alison Scott, Vipul Upadhyay

Abstract

Aims Carcinoid tumours (CT) of the appendix are rare in children. The study aims to review paediatric CT of the appendix in Auckland and conduct a literature review.

Method Retrospective review of all CT of the appendix at the Auckland paediatric hospital from 1965 until 2008. Patients were identified from the Auckland Laboratory Pathology Department database. Patient charts and histopathological slides were reviewed when available.

Results 47 children had a histologically confirmed CT of the appendix (34 females, 12 males). Mean age 12.3 years (7–15 years). Mean tumour diameter 0.83 cm (range 0.1 cm–2.3 cm). 55% tumour diameter <1 cm. Two patients had tumour diameters >2 cm. Extent of invasion known in 38 patients. Four within appendiceal submucosa, 11 into muscularis, 15 into serosa and 8 cases tumour extended to mesoappendix. Suspected appendicitis was the indication for surgery in each case. 44 patients had appendicectomy only, 3 patients had right hemicolectomy with residual tumour in one specimen. Literature search revealed 88 studies of which 11 case series of CT of the appendix in children were compared to our own study.

Conclusion CT of the appendix in children are uncommon. Most will be cured by appendicectomy only. Recurrence and metastatic disease are rare. Mesoappendiceal invasion is not an absolute indication for further surgery.

Carcinoid tumours (CT) of the appendix are rare although they are the most common gastrointestinal tract neoplasm (excluding lymphoma) of childhood and adolescence.\(^1\) The natural history of CT of the appendix in adults has been well described.\(^2\) There are limited number of paediatric series that describe the course of paediatric patients with these tumours.\(^3\)–\(^13\) Appendicectomy in majority of cases is curative due to the low metastatic potential of the tumour. Debate continues with regards to prognostic factors for recurrence and survival and which patients require further surgery and the extent of this surgery.\(^8,9\)

At Starship Children's Hospital (SSH) we conducted a retrospective review of our pathology database and reviewed literature pertaining to CT of the appendix in the paediatric population.

Methods

A retrospective review of all CT of the appendix at the Auckland regional paediatric hospital from 1965 until 2008 was undertaken. Patients were identified from the Auckland Laboratory Pathology Department database. Patient charts and histopathological slides were reviewed when available. Data was collected on the patient demographics at time of initial operation, clinical follow up including additional imaging, biochemical testing and surgery.
A literature search was conducted to identify paediatric studies of CT of the appendix. Ovid Medline, EMBASE, Cochrane Central Register of Controlled Trials (CCRT) and Cochrane Database of Systemic Reviews (CDSR) databases were searched using the search terms carcinoid and appendical within three words. Our search was restricted to studies on humans and those in the English language.

We excluded studies that included patients aged over 16 years, published prior to 1965 or included less than 5 patients. The abstracts for all studies were reviewed and if insufficient information available with regards to the study’s participants, the paper was reviewed.

**Results**

During the 44-year study period, 47 children had a histologically confirmed diagnosis of a CT of the appendix. The patients included 34 females and 12 males (sex ratio=2.8:1). The mean age at presentation was 12.3 years (range 7 to 15 years).

All patients were operated on for suspected appendicitis. No patients presented with symptoms of carcinoid syndrome.

The location of the CT within the appendix was known in 36 cases; 16 lesions (45%) at the tip, 11 lesions (31%) at the mid portion, 8 (22%) at the base, and 1 the entire length of the appendix. The maximum tumour diameter was known in 38 cases. Mean tumour diameter was 0.83 cm (range 0.1 cm to 2.3 cm). Fifty-five percent of cases had a tumour diameter less than 1 cm. Only 2 patients had tumour diameters 2 cm or greater. The extent of invasion was known in 38 patients. Four tumours were confined to the appendiceal submucosa, 11 extended to the muscularis, 15 extended to the serosa and in 8 cases the tumour extended to the mesoappendix or appendiceal fat.

Sixty-seven percent of cases demonstrated acute inflammation on histology. Thirteen cases demonstrated no inflammation; in 10 of these cases the tumour was located at the tip.

Forty-four patients underwent appendicectomy alone. Three patients had appendicectomy and then subsequently had right hemicolecotomy. There was residual tumour present in one case where the indication for right hemicolecotomy was incomplete resection at the time of original surgery. The lymph nodes were negative in all three cases. One patient in our series had a maximum tumour diameter 2.3 cm and he has not undergone further surgery due to failure to attend hospital appointments. According to hospital records this patient remains well, without event, 4 years from original presentation.

Sixty percent of patients had formal follow up with a paediatric surgeon. Most of these follow-up appointments were to explain the histology to the patients and their family. Less than 5% of patients had follow-up beyond 1 year.

Our literature search yielded 88 studies. No randomised control trials were identified. Eleven case series were identified as appropriate for comparison to our study. The studies and their histopathological data are shown in Table 1.

Reasons for exclusion were: patient ages >16 years (40); the paper was not a study on CT of the appendix (17); less than 5 patients (13); not available in English (1); the paper focus was the immunohistological markers of carcinoid of the appendix (6).
Table 1: Summary of published histopathology

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Total</th>
<th>&lt;1 cm</th>
<th>1-2 cm</th>
<th>&gt;2 cm</th>
<th>Sub-mucosa</th>
<th>Muscularis</th>
<th>Serosa</th>
<th>Meso-appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryden et al.</td>
<td>1975</td>
<td>30</td>
<td>15</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Jonsson et al.</td>
<td>1989</td>
<td>18</td>
<td>17</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Moertel et al.</td>
<td>1990</td>
<td>23</td>
<td>15</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>0</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Parkes et al.</td>
<td>1993</td>
<td>40</td>
<td>12</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>27</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Corpron et al.</td>
<td>1995</td>
<td>22</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Spunt et al.</td>
<td>2000</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Pelizzo et al.</td>
<td>2001</td>
<td>10</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Doede et al.</td>
<td>2002</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Prommeggar et al.</td>
<td>2002</td>
<td>36</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Dall’Igna et al.</td>
<td>2005</td>
<td>15</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Neves et al.</td>
<td>2006</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Our Study</td>
<td>44yrs</td>
<td>47</td>
<td>21</td>
<td>14</td>
<td>2</td>
<td>4</td>
<td>11</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>262</td>
<td>111</td>
<td>43</td>
<td>9</td>
<td>43</td>
<td>51</td>
<td>62</td>
<td>41</td>
</tr>
</tbody>
</table>

Discussion

With 47 cases of CT of the appendix we present the largest published paediatric series to our knowledge. Additionally we are able to report the histopathological details of at least 80% of our study patients.

As has been noted in previous studies of CT of the appendix there is a female predominance with the disease. In adult studies this had been attributed to incidental appendicectomy at the time of gynaecological procedures. This is not true of the paediatric population, particularly in our study where all patients underwent their appendicectomy in the setting of suspected acute appendicitis. Other paediatric series have demonstrated similar sex ratios to our own. 3,4,7-9 Parkes et al study additionally demonstrated that the female preponderance was not due to an increased rate of appendicectomy in females. 4

It is recommended that patients with a tumour diameter greater than 2 cm undergo a right hemicolectomy as this has been identified to be an adverse prognostic factor in adults. 2 From our literature review of case series reports we identified only seven cases of CT of the appendix 2 cm or greater in diameter.

More extensive surgery is documented in 16 cases in published case series; 11 cases of right hemicolectomy, four ileocaecal resection and one caecotomy. 3-11 The indication for more extensive surgery in cases where the maximum tumour diameter is less than 2 cm was spread of tumour into mesoappendix (7 cases), 5,7,12,13 incomplete resection of tumour (3 cases) 4,9,10 and “aggressive” histopathology (1 case). 4
In all cases, as in our series, there was no evidence of lymph node or other metastatic spread. It is likely that due to these findings that in recent times some have advocated more limited surgery in the event tumour greater than 2 cm diameter.\textsuperscript{10} Thirlby et al reported five cases of metastatic CT of the appendix in tumours less than 2 cm. None of these cases are in the paediatric age group.\textsuperscript{14} There is one documented case of metastatic CT of the appendix in the paediatric age group that we are aware of. This patient presented with CT of 5 cm maximum diameter. The right hemicolectomy specimen contained one lymph node with a metastatic deposit. At 3-year follow-up this patient remained clinically and radiologically recurrence-free.\textsuperscript{15}

Other prognostic factors that are forwarded as indications for more extensive surgery are invasion of the mesoappendix, tumour location at the base of the appendix and the presence of mucus-producing cells.\textsuperscript{9,11} Invasion of the mesoappendix in particular has been a source of debate as an indication for ileoceleal resection or right hemicolectomy.\textsuperscript{11} From our literature search and our study there are 41 cases with tumour extending to mesoappendix or periappendiceal fat.\textsuperscript{3–13} Of these cases 25 did not have a second operation and from reported case series have not subsequently developed recurrence or metastases.\textsuperscript{3–13} These finding supports Moertel et al statement that patients with tumours less than 2 cm diameter but invasion into the mesoappendix can be treated with simple appendectomy alone.\textsuperscript{3} Additionally in analysis of 900 appendiceal CTs from the Surveillance Epidemiology and End Results (SEER) database it was found that no correlation between depth of invasion of tumour and overall survival.\textsuperscript{16} Another point of debate in the management of CT of the appendix in young people is the length of follow-up that they should undergo and what additional investigations should be conducted.\textsuperscript{3,10} The length of follow up in published literature ranges from 2 months to 51 years, providing excellent information on the prognosis of this tumour.\textsuperscript{3–13}

Whilst most authors believe that CT of the appendix is unlikely to metastasize or recur it is common paradoxically for the same authors to advocate for lengthy follow-up.\textsuperscript{3} Adding weight to the argument for long-term follow-up is that appendiceal carcinoids were associated with noncarcinoid malignant tumours in 14.6% of patients in SEER registry, albeit the details of these tumours nor the patient’s age is not delineated in the study.\textsuperscript{17} Which patients should undergo to lengthy follow-up remains unclear. Additionally it is unclear as to what investigations should be done to follow these patients.

Publications in the last decade have advocated using a combination of annual urinary serotonin metabolites and abdominal ultrasonography as first-line screening tools.\textsuperscript{8–10} In literature reviewed there were no documented cases of abnormalities in these investigations in the patients followed up. Additionally there have been no documented cases of carcinoid syndrome in association with CT of the appendix in paediatric age group.\textsuperscript{3–13} We present the largest published paediatric series of carcinoid tumour of the appendix. In combination with a literature review we demonstrate that mesoappendiceal invasion has not been associated with recurrence when treated with simple appendicectomy. With the accumulated evidence of this study and adult
studies better guidelines for the long-term follow-up for these uncommon tumours should be developed. We acknowledge that all studies, including our own, are retrospective in nature and loss to follow up is common and therefore any statement is made with caution.

**Competing interests:** None.

**Author information:** Alison Scott, Surgical Registrar, Paediatric Surgery, Starship Children's Hospital, Auckland; Vipul Upadhyay, Consultant Paediatric Surgeon and Urologist, Head of Paediatric Surgery, Starship Children's Hospital, Auckland

**Acknowledgement:** We thank Dr Jeanette McFarlane (Starship Children's Hospital Pathologist) for her assistance in obtaining pathology records.

**Correspondence:** Dr Alison Scott, General Surgical Department, Christchurch Hospital, PO Box 4345, Christchurch, New Zealand. Email: nzalison@hotmail.com

**References:**

Frequent attenders at emergency departments: research regarding the utility of management plans fails to take into account the natural attrition of attendance

Suzanne Peddie, Sandra Richardson, Lisa Salt, Michael Ardagh

Abstract

Aim To compare, over a 4-year period, a cohort of adult frequent attenders at Christchurch Hospital Emergency Department (Christchurch, New Zealand) who received case management against a cohort who did not.

Method A descriptive prospective cohort study of patients who attended ED 10 or more times during the index period of 1 Nov 2000–31 Oct 2001 was carried out. Each patient had an individual management plan. Attendance patterns were compared with a previous 4-year study of patients without management plans which was performed in the same ED. This study acted as an historical control.

Results 87 patients who met the criteria for frequent attendance were compared with 77 patients in the control group. 10 patients remained frequent users for all 4 years of the study, compared with 9 in the control group. Most patients attended less frequently in the second year, with attendance rates continuing to fall, while a small group continued to make frequent presentations. The percentage of the cohort still attending ED at least once a year in the 4th year was nearly identical in each study (65% in the control and 64% in the intervention group); the percentage of each cohort who remained as frequent attenders, still attending 10 or more times in the 4th year, was identical.

Conclusions This study showed similar rates of attrition in ED attendance between the cohorts with and without management plans. If there were not a ‘control’ group, the decline in attendance in the study group might have been attributed to the management plans. When attributing changes in attendance patterns to any intervention, it is important to be aware of natural attrition over time.

Frequent attenders at emergency departments (EDs) are of international interest. Although there are variations in the definition of frequent attendance, and the characteristics of the patients identified as such, there are many constant features.

To improve the well-being of frequent attenders and to reduce their impact on EDs, several EDs have looked at ways of reducing the need for frequent attenders to visit. One approach is Case Management, usually manifesting as the formulation of an individualised management plan. Research into the utility of management plans tends to suggest they are useful at reducing subsequent attendance.

In Christchurch, New Zealand, Helliwell and Kennedy studied frequent attenders at Christchurch Hospital ED. In 1998, Helliwell et al described, in detail, the characteristics of patients attending 10 or more times.
Subsequently, Kennedy et al conducted a retrospective cohort study, by identifying a cohort of frequent attenders (10 or more attendances in 1997) and following their attendance over the next 4 years. They noted a natural attrition of attendance among the original cohort over subsequent years.

However, studies purporting to demonstrate the utility of management plans for frequent attenders tend to be ‘before and after’ studies, without a control group. Consequently, they take no account of the natural attrition of attendance shown in Kennedy’s study and assume the reduced attendance to be due to the introduction of management plans, when it may have been no more than the natural attrition observed by Kennedy.

This study looks at attendances of a similar cohort of patients who made 10 or more visits to the ED in the index year of 2000, and follows their interaction with the ED over the following 4 years. The difference with the present study group in comparison to Kennedy’s was the construction of a management plan for each patient. The aim of this study was to determine if a management plan (the intervention) made a difference to attendances in the new group of patients (the intervention group), over and above the natural attrition rate, using Kennedy’s cohort as a control group.

**Method**

Christchurch has only one ED to serve a population of 460,000 in the city and surrounding districts. All patient visits are captured on a computerised database. Frequent attenders trigger a computer alert on their 6th visit in a 12-month period. During the time of the intervention group, this trigger initiated the formulation of an individualised management plan. At the time of the control group, there was no automatic formulation of management plans, although some patients had plans constructed by clinical staff at their discretion.

Management plans for the intervention group were initiated by a dedicated nurse, supervised by an ED consultant, who made contact with the appropriate health workers to produce an individualised plan. Contributors could include the patient’s General Practitioner (GP), ED staff, medical specialists, psychiatric services, social workers and the patient. The management plan included medical history, social background and advice for staff and others involved in the patient’s care.

To enhance GP involvement, a GP visit was funded to allow the patient to discuss the plan with the GP. Vouchers were also provided to some of the most frequent attenders, for a number of free GP visits. Additionally, complex case-management meetings with representatives from multidisciplinary areas were arranged for some of the patients with the most challenging medical conditions or behaviour. The patients themselves would be present at some of these meetings.

The management plans were entered on a dedicated database on a standard template, to be called up by the ED receptionist when the patient arrived in ED.

In this study, as in the control group study, all adult patients (over 15 years) who attended the ED 10 or more times in a year (the index year), were identified. The interactions of these patients with the ED over the next 4 years were examined in the same way as the control group studied by Kennedy et al. Records were reviewed and data were recorded for patient demographics, the number of attendances for each patient, their principal diagnosis and any secondary (co-existing) diagnoses.

Diagnoses were determined following a review of the Diagnostic Related Group (DRG) codes entered into the patient records.

**Results**

Ninety-four patients who met the frequent user criteria attended ED in the index year for the study group, from 1 Nov 2000–31 Oct 2001; they made 1490 of the 64,427 ED visits in that year. Seven were excluded because they were under 15 years of age, in line with the control cohort, which only included patients over 15 years. Of the 87
remaining adult patients, 35 (40%) were male and 52 (60%) were female. The median age of attendees in the study group was 35, with a range from 17 to 93 years.

Seventy-seven patients who met the frequent user criteria attended ED in the index year for the Kennedy study (historical control group), of whom 57% were male and 43% female. The median age in the control group was 41 years, with a range from 17 to 95 years.

The diagnoses assigned in both studies were grouped as: medical (including all medical and surgical sub specialties), psychiatric, or alcohol / substance abuse. Medical primary diagnoses were high in both cohorts (45% in the control group and 49% in the intervention group).

Allocation of psychiatric and alcohol / substance abuse categories when combined were similar across the two studies. However, there was a greater tendency for a psychiatric diagnosis to be entered in the current study. While alcohol / substance abuse as a primary diagnosis dropped from 26% to 2% between the two studies, it increased as a secondary diagnosis (rising from 4% to 10%) (Table 1).

### Table 1. Comparison of diagnostic groups

<table>
<thead>
<tr>
<th>Diagnoses</th>
<th>Primary Control cohort (%)</th>
<th>Study cohort (%)</th>
<th>Secondary Control cohort (%)</th>
<th>Study cohort (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical</td>
<td>35 (45%)</td>
<td>45 (49%)</td>
<td>15 (17%)</td>
<td>17 (19%)</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>22 (29%)</td>
<td>43 (49%)</td>
<td>10 (13%)</td>
<td>8 (9%)</td>
</tr>
<tr>
<td>Substance/ alcohol abuse</td>
<td>20 (26%)</td>
<td>25 (26%)</td>
<td>4 (5%)</td>
<td>10 (11%)</td>
</tr>
<tr>
<td>Total</td>
<td>77 (100%)</td>
<td>88 (100%)</td>
<td>27 (35%)</td>
<td>35 (39%)</td>
</tr>
</tbody>
</table>

The pattern of presentations over the 4 years in the intervention group was similar to that identified in the control group, with a comparable reduction in presentations over time (Table 2).

### Table 2. Comparison of findings (historical and current cohort)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Year 1 (%)</th>
<th>Year 2 (%)</th>
<th>Year 3 (%)</th>
<th>Year 4 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cohort who attended ED (%)</td>
<td>Control cohort</td>
<td>Study cohort</td>
<td>Control cohort</td>
<td>Study cohort</td>
</tr>
<tr>
<td>Total number of visits by cohort (%)</td>
<td>77</td>
<td>87</td>
<td>70</td>
<td>67</td>
</tr>
<tr>
<td>Median number of visits by cohort members (range)</td>
<td>125 (10-46)</td>
<td>135 (10-75)</td>
<td>85 (1-69)</td>
<td>76 (1-82)</td>
</tr>
<tr>
<td>Number of cohort making zero visits (%)</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Number of cohort making less than 10 visits (%)</td>
<td>0</td>
<td>0</td>
<td>43 (36%)</td>
<td>63</td>
</tr>
<tr>
<td>Number of cohort presenting as frequent attenders (10 or more visits) (%)</td>
<td>77 (100)</td>
<td>87 (100)</td>
<td>28 (36%)</td>
<td>24 (28%)</td>
</tr>
<tr>
<td>Total number of frequent attenders (10 or more visits) each year (%)</td>
<td>80</td>
<td>94</td>
<td>72</td>
<td>85 (54%)</td>
</tr>
</tbody>
</table>

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Twelve patients died in the intervention group (14%), but none were otherwise lost to follow-up. Ten patients died in the control group (13%).

There was no evidence of a significant decrease in the rate of presentations as a result of case management intervention (Figure 1).

**Figure 1 Comparison of attendance rates**

![Comparison of attendance rates](image)

Median number of visits reduced from 12 to 4 in the control group, and from 13 to 4 in the intervention group. The number of patients presenting as frequent attenders declined each year in both groups, from an initial 77 in the index year to 13 in the fourth year (control) and 87 in the index year to 15 (intervention group). In both cases this represented 17% of the original number. The greatest decrease occurred in the second year in both groups.

Although not a prime objective of the study, this study reiterated the findings of the control group study—that the number of frequent attenders remains similar over time, although with new frequent attenders taking the place of the original cohort. In year 4 of the study, there were still 116 identifiable frequent attenders, but only 15 of these were from the initial cohort. The overall percentage of frequent attenders was 0.19% of the total ED population in 2000; by 2004 this remained similar at 0.23%. (Figure 2)

**Figure 2. Number of frequent attenders over time**

![Number of frequent attenders over time](image)
Discussion

ED frequent attenders tend to fall into similar diagnostic categories worldwide, including chronic medical conditions, psychiatric illness and substance abuse (although there may be some regional differences, such as patients presenting with the complications of sickle-cell disease in some US EDs\(^8\text{-}^{10}\)). Efforts have been made to case-manage these patients and various conclusions have been drawn from studies of the utility of case management. Shumway et al\(^11\) carried out a 24-month randomised trial with frequent ED users at San Francisco General Hospital and found there was a statistically significant reduction in ED use and cost for the case-managed patients, as well as a reduction in their psychosocial problems.

The study recognises the fact that only a small proportion of frequent users remain so for more than a year but does not look at their behaviour in the longer term, and limited its study population to patients presenting between the hours of 8 am and 5 pm Monday to Friday. Skinner et al\(^4\) case-managed frequent attenders at the Edinburgh Royal Infirmary and compared attendances for 6 months pre- and post-intervention. They found a reduced rate of attendance after case-management, but noted a “natural ebb and flow in the presentations of these patients”.

Phillips et al\(^5\) selected patients attending St Vincent’s Hospital, Melbourne, 6 or more times per year, excluding those that already had case-management provided by another agency. The study group were subject to ED-initiated multidisciplinary case-management and the 12 months before and after this intervention were compared. While there was a positive effect on some psycho-social factors, ED attendance increased.

Kne\(^8\) as early as 1997 recognised that the pattern of ED use by frequent attenders is not constant, and this is affirmed by Bernstein\(^12\).

There remains the problem of assessing the efficacy of any programmes that are instituted to manage frequent attenders. Kennedy’s study\(^7\) showed a natural rate of attrition in the number of ED attendances by a group of frequent users over a 4-year period. It appears research and audit in relation to the utility of management plans has not taken sufficient notice of the natural attrition of ED attendances in this patient group. An uncontrolled ‘before and after’ study will identify a fall-off in ED attendances and might erroneously attribute this to case management. This study shows a similar decay curve in the number of attendances compared to Kennedy’s control cohort, despite the introduction of management plans.

The authors can identify a number of limitations in this study, particularly that there was not a consistent standard of management plan in the intervention group, and a small number of Kennedy’s (control) group had informal management plans instituted. In addition, the control was an historical one. Hence, both the intervention and the control in this study are insufficient to prove the utility or otherwise of case management. Consequently, the authors do not believe that this study proves that management plans for frequent attenders have no benefit. Instead, it demonstrates that any attempts to quantify the effect of interventions in frequent attenders at EDs must
take the underlying attrition into account before the utility of management plans can be concluded.

**Conclusion**

Attendance at ED by patients who present frequently shows a natural decay over time. If a quantitative measurement is used to show the efficacy of an intervention in this group of patients, it is essential to be aware of the underlying attrition in attendance before attributing change to the intervention.

**Competing interests:** None.

**Author information:** Suzanne Peddie, Senior Medical Officer; Sandra Richardson, Nurse Researcher; Lisa Salt, Registered Nurse; Michael Ardagh, Professor of Emergency Medicine; Emergency Department, Christchurch Hospital, Christchurch

**Correspondence:** Suzanne Peddie, Senior Medical Officer, Emergency Department, Christchurch Hospital, Christchurch, New Zealand. Fax: +64 (0)3 3640286; email: Suzanne.Peddie@cdhb.govt.nz

**References:**

Return visits to the emergency department and related hospital admissions by people aged 65 and over

Diana Minnee, Jill Wilkinson

Abstract

Aim To describe the factors most commonly associated with re-presentation to the emergency department (ED) and related hospital admissions by those aged 65 years and over in one New Zealand district health board (DHB) region.

Methods Computerised and paper-based records of 59 patients were examined. The sample was selected using proportionate stratified random sampling to ensure equivalent proportions of patients re-presenting to the tertiary hospital’s ED and the secondary hospital’s accident and medical department.

Results Those who re-presented to the ED within 3 months had an average of 3.4 comorbidities. Hypertension and ischaemic heart disease were the most common comorbidities. Abdominal pain, chest pain and shortness of breath were the most frequently presenting complaints. Patients were less likely (p=0.05) to re-present within 7 days if their capacity to mobilise prior to presentation, and on discharge, was documented. Few patients were instructed to see their primary care provider within any given timeframe.

Conclusion Better documentation about changes in levels of function, both prior to presentation and on discharge, is needed to ensure that patients are physically able to manage at home. Specific interventions could be targeted to improve function if needs have been identified. The frequency of cardiovascular comorbidities and cardiac discharge diagnoses suggest that those aged 65 years and over re-present with an acute illness and not because of failure to cope at home. Findings support early primary healthcare follow-up since the majority of re-presentations occur within 2 weeks.

Re-presentation to the emergency department (ED) is a relatively frequent occurrence. Historically, within the district health board (DHB) region, 17.2% of people aged 65 years and over who present to the ED have returned at least once within 3 months (R Jones, 2007, personal communication). Re-presentation rates for this age group of between 16.2% and 19% within 3 months are reported in other studies.\(^1\)\(^-\)\(^3\)

Most people readmitted to hospital within a month re-present with the same problem or diagnosis.\(^4\)\(^,\)\(^5\) Re-presentation with the same diagnosis suggests that the medical condition may not have been fully treated or adequately monitored after discharge.\(^4\)

A review of the literature suggests that re-presentation rates, length of stay, and postoperative complications increase with age.\(^6\) Factors associated with increased re-presentation rates are poor physical function, poor mental health, dependency for activities of daily living, dysphagia, smoking, and use of tranquilizers.\(^7\)
Individual characteristics such as living alone, economic hardship, a previous hospitalisation and having comorbidities are also associated with re-presentation.\textsuperscript{3,8–11} The effect of interdisciplinary planning and collaboration within the multidisciplinary team appears to have a less significant impact on re-presentation than the number of patient comorbidities.\textsuperscript{12}

Diagnoses and troubling symptoms are associated with re-presentation and include chronic obstructive pulmonary disease (COPD), angina, acute myocardial infarction, congestive heart failure (CHF), cerebrovascular disorders, alcohol-related problems, malignancy, pain, anaemia, diabetes, falls, confusion, impaired renal function, decreased mobility and incontinence.\textsuperscript{11,13–16} Finally, increased numbers of comorbidities are associated with an increase in re-presentation rate.\textsuperscript{11,12,17}

Exploring re-presentation to the ED is important in the context of subsequent admissions that put pressure on hospital beds and contribute to cancellation of elective surgery.\textsuperscript{18} The international literature that explores the problem is extensive, but there has not been a recent New Zealand study that looks at factors associated with re-presentation to the ED of older people. This retrospective descriptive study describes why people aged 65 years and over re-presented to the ED within a 3-month period in one district health board region in New Zealand.

**Method**

Following approval via the expedited review process of the Central Regional Ethics Committee, data was obtained from hospital systems of reporting re-attendances to the ED. The study drew on a sample of people aged 65 years and over who re-presented to the emergency departments of the DHB within the three months beginning 1 September 2007 and ending 30 November 2007, inclusive of those admitted to an inpatient ward.

The total re-presenting population was 355 people. A proportionate stratified random sampling method using a random number generator was used to select 49 patient records from the tertiary hospital ED and 10 patient records from the secondary hospital 24 hour accident and medical department (n=59). A 1-in-6 sample of both area populations was achieved using this strategy. Planned re-presentations and those who self-discharged against medical advice were excluded.

A 13-section data collection tool was developed based on factors described in the literature as being associated with re-presentation. Data collection focused on the initial presentation with the tool used to collect data on presenting complaint, diagnosis at discharge, comorbidities, length of stay (LOS), number of medications on admission and on discharge, previous level of function and support, functional assessment prior to discharge, referral for follow-up, age, ethnicity, living alone or with others, specific blood test results.

Data collected on re-presentation was limited to the number of days to re-presentation, and whether cause of re-presentation was the same or a different complaint. A category of ‘other factors’ allowed other significant observations to be noted.

Data were analysed using descriptive statistics, namely frequencies (for nominal measurements) and measures of central tendency (for the interval and ratio measurements).

**Results**

The sample was sorted into age groups (Figure 1). The range was 65–99 years. Those aged 85 years and over were more likely to have an initial presentation to the emergency department but came back less often than those aged 65–84 years.
Men (n=33) re-present more often than women (n=26). The ethnicity of those who re-presented was similar in proportion to the whole DHB population.

The sample group included more people who live with others than live alone. People who lived with others were more likely to re-present within 7 days than those who live alone (Table 1).

**Table 1. Re-presentation within 7 days of those living alone or with others**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Living with others</th>
<th>Living alone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-presented within 7 days or less</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Did not re-present within 7 days</td>
<td>24</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>35</strong></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

Patients in the sample had an average of 3.4 comorbidities. The most common comorbidities were hypertension (n=31), myocardial infarction or ischaemic heart disease (n=29), diabetes (n=17), and congestive heart failure (n=15) (Figure 2).

Abdominal pain, chest pain and shortness of breath were the most frequently presenting complaints (Figure 3).

Median length of hospital stay was 2 days. Twenty-six patients were discharged within 24 hours of presentation to the ED. The interquartile range for the length of stay was 3 days. Those aged 85 years or older were less likely to be discharged within 24 hours, with six being discharged within 24 hours, compared to 20 of those aged between 65–84 years of age.

The results of blood tests taken within 48 hours of discharge were collected to see if clinical instability as indicated by these tests contributed to re-presentation to the ED; however, no conclusions were able to be drawn from these data.
Those who were hospitalised tended to have medications increased rather than decreased. People had an average of 6 medications on admission and 6.7 medications on discharge. Seven patients had a change of medication (excluding antibiotics) during the 24-hour period prior to discharge allowing little inpatient time to monitor the impact of medication change.

Eleven patients had cardiac diagnoses that include both ischaemic and arrhythmia conditions. Cardiac diagnoses were most frequently associated with re-presentation, followed by patients who were discharged without a diagnosis at their first visit. Thus
the diagnosis most frequently associated with re-presentation was a cardiac event, followed by no diagnosis.

Most requests for increased supports were responded to by referring patients for assessment for extra support services. However, referral for community follow-up by district nurses or chronic care programmes rarely occurred. The majority of patients were not instructed to see their primary care provider after discharge within any timeframe.

‘Previous level of function’ and access to home and support needs were poorly documented. ‘Previous level of mobility’ was not documented in 24 patients. Eighteen patients mobilised independently without walking aids, 12 mobilised independently using walking aids, four were dependent on another person to assist with mobility and one person was immobile. The level of function required prior to discharge is influenced by the difficulty of access to a person’s home and was also poorly documented.

Overall functional status prior to discharge included documented evidence of independent mobility, showering, toileting, adequate nutrition and continence. Continence was indicated in 31 patients; independent mobility in 33 patients; independent toileting in 28 patients; adequate nutritional intake in 20 patients and independent showering in 14 patients. An alteration in cognition was documented in only two patients. Two of the seven patients documented as needing assistance to mobilise lived alone.

The sample is too small to claim statistical significance; however, there is a noteworthy difference (p=0.05) between having or not having both prior mobility and discharge mobility documented and re-presentation within 7 days to the ED. If prior ability to mobilise is documented along with discharge ability to mobilise, people over 65 years of age are less likely to re-present within 7 days.

Table 2. Re-presentation within 7 days when both usual and discharge level of function is documented

<table>
<thead>
<tr>
<th>Variable</th>
<th>Previous and discharge mobility assessed</th>
<th>Previous and discharge mobility not assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-presented within 7 days</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Did not re-present within 7 days</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>29</td>
</tr>
</tbody>
</table>

Thirty-five patients re-presented with the same complaint and 24 with another complaint. The median number of days to re-present was 14 days. The average number of days to re-presentation was 21 days. The interquartile range was 26 days. Six patients re-presented within 1 day of discharge. The re-presentation time frames were then compared with ‘recommended primary care provider follow-up’ times. If recommendations had been followed, 10 patients would have seen their primary care provider at some stage between discharge and re-presentation.

Consistent with increased use of healthcare and hospitals in the last year of life, 19-21 11 patients died within 12 months of re-presentation to the ED. In the ‘other’ category
patients who did not speak English did not have documented access to interpreters, even though notes might state: ‘difficult to assess due to language barrier’.

Discussion

The study’s focus was to identify areas for possible intervention that could have improved health outcomes for this group of re-presenting patients. The findings suggest that the ‘older old and most frail’ population (those over 85 years) are least likely to return to the ED and least likely to return quickly.

It is possible that health professionals may be aware of the risk of adverse outcomes in this population group and have become more vigilant about checking that they are medically stable and that supports are in place when they are discharged. Such a possibility is supported by the finding in this study that patients aged 85 years and older are less likely to be discharged within 24 hours. Assessments used during the ED presentation and admission processes seem to be less effective, however, at identifying instability in the 65–84 year age group.

Function at discharge has been shown to be an important predictive indicator for remaining at home in other groups of older people, but its relevance for this population is as yet undetermined mainly because of inadequate documentation in ED. Changes in function rather than actual level of function has been associated with higher readmission rates and suggests that documentation of these changes is paramount.

Careful assessments of functional status, and especially mobility, should be completed on presentation and prior to discharge to ensure that the patient is able to manage at home. As Heppenstall et al point out, ‘it may be possible to target specific interventions to either improve function or provide compensatory strategies’ if needs have been identified.

A key finding of the study is that acute illness, rather than failure to cope and frailty, seems to drive re-presentation. Patients with cardiac, respiratory and abdominal complaints and those with multiple comorbidities returned most often. Similar to Caplan et al’s finding, in this study most re-presentations were due to the original problem. These authors suggest targeted follow-up for those over 75 years, but a later randomised controlled trial makes the recommendation that all patients aged 75 and older should be referred for comprehensive geriatric assessment after an ED visit.

Findings from the current study support, at least, early primary healthcare follow-up since the majority of re-presentations occurred within two weeks. Inadequate treatment on presentation or admission, or changes in medication regimes are other possible explanations for the re-presentations reported in this study.

Although a local study with a small sample and retrospective, descriptive design, the findings suggest that careful assessment, documentation and communication are likely to reduce the incidence of unplanned re-presentations to the ED. Follow-up was not explored in this study. Further research is recommended, such as a case-controlled study, to evaluate the effectiveness of changes in practice and should include if and when primary healthcare follow-up occurred.
Competing interests: None.

Author information: Diana Minnee, Clinical Nurse Specialist – Older Adult, Capital & Coast District Health Board, Wellington; Jill Wilkinson, Senior Lecturer, School of Health and Social Services, Massey University, Wellington

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Correspondence: Diana Minnee, CNS Older Adult, Capital Coast District Health Board, Private Bag 7902, Wellington South, New Zealand. Fax +64 (0)4 3855827; email: Diana.Minnee@ccdhb.org.nz

References:


Pinnacle of life—Māori living to advanced age
Lorna Dyall, Ngaire Kerse, Karen Hayman, Sally Keeling

Abstract

Aim The purpose of this feasibility study was to investigate whether Māori of advanced age would be interested in and able to take part in a quantitative study involving a comprehensive questionnaire, physical health assessment and blood analyses (a range of biological markers). The study also aimed to involve older Māori in all stages: development of research questions, review of assessment techniques and interpretation of results.

Method Māori aged 75–79 years living in the Bay of Plenty and Lakes DHB areas were invited to participate in a feasibility study covering a wide range of quantitative health related questions. After informed consent interviews and physical assessments were conducted in participants’ homes or at a local clinic by Māori health providers contracted as a research partner. For those who gave informed consent specifically for blood analyses, bloods were taken and analysed for defined biological markers of inflammation and ageing. All physical assessments and blood analyses were forwarded to each participant’s own general practitioner and relevant guidance was given by the research team.

Results Collective results from 33 Māori participants are presented and cover: Te Reo Maori me ona tikanga (Māori language and cultural knowledge), tribal and whānau (extended family) links, cultural values and religion, whānau engagement and recreational activities, health status, healthy eating and discrimination. The Te Whare Tapa Wha model of health and the Poutama model of human development are utilised to provide an overall framework and context to present the results in respect of our participants and to celebrate their 'advanced' old age.

Conclusion The feasibility study has been successful in engagement with older Māori. It has paved the way to implement a subsequent longitudinal study which aims to enrol 600 Māori aged 80 to 90 years and 600 non-Maori aged 85 years in the Bay of Plenty and Lakes District Health Board areas (Tauranga, Rotorua, Whakatane, Opotiki and Te Kaha). The longitudinal study, “Life and Living in Advanced Age, the cohort study in New Zealand LILACS NZ – Te Puawaitanga o Nga Tapuwae Kia Ora Tonu”, will record and observe participants’ journeys to the end of their life. The LILACS Study NZ is at the stage of recruitment of participants and funding has been allocated for waves two and three and the next stage of the study will have an increased focus on dementia.

Whaia te iti Kahurangi-ki te tuohu koe, me he maunga teitei
(Seek the treasure you value most dearly: if you bow your head, let it be to a lofty mountain)

New Zealand is like many other Western countries and is considering the implications of an ageing population. From 2001 Census data, the Department of Statistics predicted that by 2021 New Zealand’s population will have increased by 16% while
the number aged over 65 years of age will have increased by 72%. By 2021, there will be approximately 750,000 people aged over 65 years of age. All of these people, if no policy change occurs will be eligible for national government superannuation, irrespective of their financial need.

The changing dependency ratio, of earners and tax payers to recipients of tax-funded benefits, has led to a growing awareness of the need for social, economic and cultural changes to occur at all levels in New Zealand as it is anticipated there will be a greater need for health and social support services as different ethnic populations age.

By 2021 it is anticipated that there will be 57,000 Māori aged 65 years or more and this group will account for 7.6% of the total Māori population. Similarly it is expected that in 2021, there will be 655,000 Europeans aged 65 years or more and one in four of the European/Pakeha population will be in this age group.

Significant structural changes are needed to emphasise consumers’ health and disability needs. It is hoped these changes will also facilitate a compression of morbidity, where older people live well longer, rather than just longer. Any policy changes relating to the growing number of older people in New Zealand, must positively respond to the growing needs of older Māori who in the past have been differentially affected by the process of colonisation and the ongoing effects of globalisation.

Māori now have tangata whenua (people of the land) rights defined in New Zealand’s founding constitutional document and the United Nations Declaration on the Rights of Indigenous Peoples. Along with all New Zealanders, Māori are protected by the Code of Consumer Rights for Health and Disability Services when using health and disability services. Any policies relating to changes in the way health, accident and disability services are configured or reviewed as to their effectiveness, quality and safety must involve Māori and consider developments related to Whānau Ora.

While there is considerable information available about the predictors of healthy survival in old age there are very few studies that have included significant numbers of indigenous people. Age discrimination along with other forms of discrimination such as gender, disability and ethnic bias must be addressed in all areas of research so that people individually and collectively can develop to their full potential.

Health inequalities do not disappear with age but become more magnified through the life course. New insights as to how we age well could lead to improvements in health and independence in advanced old age.

A focus on how Māori view ageing and how they live their life is important to ensure conceptual frameworks developed in New Zealand are culturally, human and Treaty rights appropriate. Chronic health conditions occur earlier for Māori, and lead to many other health issues, such as stroke, dementia and cardiovascular disease.

This paper reports the results of a feasibility study which investigated whether Māori aged 75 to 79 years, would be interested and able to participate in a quantitative study leading to a subsequent longitudinal cohort study. The study included both Māori and non-Māori. Results for Māori are presented here.
Background of the Study

This study commenced in 2006, with funding provided by HRC as part of a programme grant with other studies that interlink and focus on positive ageing. Māori elder engagement has involved participation in a series of focus groups to identify important questions which they considered should be asked to capture and record areas of wellbeing which are important to Kāumātua (elders/leaders) and Kūia. Advice from Kāumātua and Kūia was also sought in the development of a community-based infrastructure to help deliver the research and to assess the appropriateness of the next stage of the research.

Methodology

With the assistance of Nga Pae o Te Maramatanga, a Kaitiaki Group of Māori elders was formed to support the study. The Kaitiaki Group along with Kaainga Skipper (University of Auckland cultural mentor) have provided tikanga Māori assistance to help protect and support the development of the research team in being able to work with elders. The Kaitiaki Group helped open and establish ongoing links with different hapu and iwi in the Rotorua, Whakatane and Opotiki areas and to seek their engagement in the research. In addition the group has also helped establish relationships with different Kāumātua and Kūia in each tribal area to seek their involvement in determining what important Māori questions should be included in the research for the age group of this study, and how questions should be framed to obtain appropriate information which would be reflective of their situation.

The researchers also drew on the wisdom of Kāumātua associated with Te Puea Marae o Mangere Bridge, Auckland for their advice on areas of importance for their wellbeing.

Participants—When the feasibility study was planned in 2006, a total of 105 participants were sought, including one-third of participants who self-identified as Māori, aged between 75 to 79 years of age. Information from the 2006 Census was used to identify the potential number of participants in the areas of study both Māori and non-Māori who could be invited to participate in the study. With the advice of local Māori research partners involved in local health service delivery, it was decided that a representative sample was not required for the feasibility study. Whānau and local networks were used to invite Māori who fitted the age criteria of the study. All people within the age range were eligible including those in residential care and community living. Support of local general practitioners was sought and they were given the opportunity to identify any potential participants whom they considered were too ill to be invited to participate in the study.

Each of our local research partners selected and employed their own interviewers whom they considered would be appropriate to engage and communicate with our living taonga, our elders. Local interviewers explained the study to Kāumātua and Kūia and potential participants provided informed consent to participate in one or more parts of the study.
Assessment techniques and questionnaire development—A comprehensive quantitative questionnaire was developed and translated into Te Reo (Māori language) appropriate to the areas of study and was piloted.

Questions to reflect specific issues for Māori were developed. The Kaitiaki group formed a focus group to explore the question “how do older Māori live long and well in today’s society?” Discussion groups were then held in Te Puea Marae o Mangere Bridge, Auckland, Korowai Aroha, Rotorua, Māori Health Services, Whakatane and Whakatorea Iwi Social and Health Services, Opotiki addressing the same question.

Specific questions reflecting the areas of importance (ascertained from the discussion groups) for older Māori were developed. These questions, along with a summary of the discussions were taken back to all areas involved in question development for further discussion and refinement of questions. The most significant areas of inquiry were selected and wording for questions refined during this process of iterative discussion.

Māori questions developed in the feasibility study are unique and they link with previous research with Māori of advanced age. The questionnaire developed for this study used the Te Whāre Tapa Whā model of health and included recognition of Kāumatua engagement in Te Ao Māori involvement in land and marae matters, participation in whānau, involvement in the community, iwi (tribal) and hapu (extended family) activities, use and importance of Te Reo, access to and importance of culturally relevant kai (food), contribution to economic development and access and use of health and disability services were included.

The questionnaire also included many health and social measures developed from a literature review and review of other cohort studies. These included standardised measures: of physical and mental health status, the SF36, Geriatric Depression Scale, GDS Mini Mental Status Examination MMSE, mobility, the Short Physical Performance Battery SPPB, the Nottingham Extended Activity of Daily Living Scale NEADL, Timed Up and Go TUG.

Smoking status was defined as current smoker, previous smoker or never smoked based on self report. Medication use was established by direct observation of pills in the home (or brought with the participant), recreational interests and activity, income and quality of their social environment by standardised interviewer administered questions based on self report. Diagnoses were recorded by self report as were cardiovascular symptoms.

The kaitiaki group and Kāumatua and Kūia from all regions also reviewed and commented on all questions in the questionnaire and provided culturally appropriate comment and questions were reworded where possible. Discussion about wording of questions which were part of standardised and validated questionnaires emphasised the need for interviewers to understand the reason behind the questions, to enable them to communicate this with the older Māori participant.

Interviewers, nine in total, were trained by the research team over 2 days and were fluent in Te Reo. The questionnaire was planned to be completed with participants either in their own home or a place of their choice, i.e. a local clinic, over at least 2 visits.
Physical assessments—Physical assessments were completed by trained clinical research staff either in a participant’s own home or at the premises of a local health provider. These included: height and weight, waist and hip circumference, sight and hearing screening, grip strength, ECG and spirometry. Hand-held echocardiography was completed by a sonographer.

Little biological information is known in New Zealand about the age group of our study and in particular about Māori of an advanced age. A blood sample was taken for from those who agreed for analysis to examine: FBC, Ion studies, B12 and folate, creatinine and electrolytes, thyroid function tests, inflammatory markers; TNFα, IL6, sensitive CRP, cholesterol, blood sugar, HBA1C, Vitamin D, plasma fibrinogen, BNP, SHBG, liver function, globulin, albumin, protein, PTH, B6, zinc and copper.

Consent for the blood analyses was in parts: the blood to be analysed, the blood to be stored for up to 15 years for future analyses, and for any remaining blood to be returned. Physical assessment sessions were conducted with a te reo support person present and whānau were encouraged to attend with the participant.

All information obtained from participants’ physical tests, ECG and spirometry, were sent to their general practitioner. For those who consented to have their blood analysed, the results were forwarded to their general practitioner for inclusion on their file and appropriate intervention if required.

In summary, the overall purpose of the feasibility study was to determine whether Māori aged 75 to 79 years would be willing to complete a comprehensive quantitative interview and various physical assessments. Māori were involved at all stages of the questionnaire development and contact with local organisations.

The study was designed to work alongside local organisations and all contact with older Māori participants was to be with local Māori who knew the potential participants. Local Māori health providers were subcontracted to employ interviewers and through this arrangement a community-based infrastructure was developed to carry out the study.

Translation of the questionnaire was undertaken by a registered translator and then the translation was taken to each of the areas of participation and the translation adapted and refined according to local comment.

Te Whāre Tapa Whā and Pōutama model of human development—With the engagement of Kāumatua in the design and implementation of the feasibility study, it was reframed and named Te Puawaitanga o Nga Tapuwae Kia ora Tonu, meaning the blossoming of the path to maintain good health. These two models of health provided a background framework for the development of the study and the context for understanding of the results of the feasibility study for Māori. For an individual, group or population to be balanced, Māori see health and wellbeing related to the Te Whāre Tapa Whā Model of health.

For Māori, good health requires balance and harmony in relation to the four domains of wellbeing. They are te taha wairua (spiritual), te taha hinengaro (mental), te taha whānau (family) and te taha tinana (physical). This model of health is conceptualised as being equivalent to the four walls of a meeting house with each wall being of equal strength so that the house is strong and connected to the place and space and whenua.
it rests upon. Each individual needs their own place to stand which Māori describe as turangawaewae, and through this place connections with others are developed and maintained, including ongoing links with ancestors.

Māori conceptualise human development through the concept “Pōutama”, in which life moves through a series of stages of growth, with each stage linking to the next step creating a stairway which goes upwards with no ending, for there is no limit to growth and development of people within a lifetime or across generations. The Pōutama model of human development is visible in many meeting houses, with generally one wall depicting in some way the Pōutama pattern, showing the complexity of human life through the different weaving that is required to take place before individuals and groups learn and develop and can move to the next step of their development.

Māori consider that the growth and development of a person continues irrespective of their health or disability until death. For Māori the first and last breath of life is important, as growth and development occurs within that space of life. Both models have been used as an overarching framework to consider the results of the feasibility study so that the growth and development of elders and their health status can be recorded and valued.

Results

Forty-five participants who self identified as Māori were approached and invited to participate in the study. Of those invited, 12 declined and 33 agreed. Of this population 20 were from Rotorua, 8 from Whākatea and 5 from Opotiki. An overall response rate of 73% was obtained. Of those who participated just over half were female (56%), and one-third were married (34%).

The average age of participants was 77 years and 44% had reached tertiary level of education. Participants chose where they wanted to be interviewed and just over a third (35%) had their interview at a health facility operated by a local Māori health provider and the others were interviewed in their home. Participants were able to give consent for the parts of the study that they wished to undertake. The majority undertook all parts, while those who did not wish to have blood taken were able to decline that part of the study.

Te Reo Māori—One in three of the Māori participants’ interviews were conducted wholly or partially in Te Reo Māori. Almost all (92%) of participants could converse in Māori. Just over 50% of participants identified that they were native speakers and all participants were keen to speak Māori at home, in the community, on marae, at meetings, at work and in other places. Speaking Te Reo Māori was important for participants and they actively sought out opportunities to speak or to listen to Te Reo Māori either by watching television or listening to the radio.

Participants commented that at times it was difficult for them to understand new Māori words they heard on the radio or television, indicating that Te Reo Māori is evolving as a language.

Tribal and whānau links—Almost all participants could identify their tribal group, with two thirds defining themselves as mana whenua or belonging to local hapu or tribes. The remaining third defined themselves as living outside of their own tribal
area. Two-thirds of participants considered that their hapu was very or extremely important.

All participants knew the names of their parents, grandparents and great-grandparents, indicating the importance of knowing whākapapa for this age group. Similarly, all participants understood the concept of tikanga Māori and considered that it was important to them. Four participants reported that they were raised as whāngai and not by their biological parents.

Cultural values and religion—Participants reported that cultural values influenced how they lived their lives. The majority of participants identified that cultural identity was important for them and this had been developed alongside their personal values, spirituality, religion, education and the upbringing provided by their parents, whānau and marae.

Religion was important for all. Two thirds of participants identified as belonging to either the Anglican (41%) or Ringatu (31%) faiths, recognising the historical role of the Anglican Church and the importance of the leader Te Kooti and his spiritual beliefs in the area of study.

Two-thirds of participants had identified plans of what they would like to see happen at the end of their life and of that group, three-quarters had shared their proposals with members of their family.

Whānau engagement and recreational activities—The majority of participants had children and 97% had grandchildren and 71% had great-grandchildren. Just over 50% of participants were actively involved in contributing to their mokopuna, both grandchildren and great-grandchildren. In addition, the majority were actively involved in tribal and marae activities, their local community, church and wider society. Roles they played within their whānau and wider community were diverse and they included being mentors, guardian and elders.

Help provided by participants to others was reciprocated. Three quarters of participants received some support from others on a daily basis and emotional support was generally provided from family members.

Two-thirds of our participants were active and were able to do recreational activities they enjoyed. In relation to these activities 50% considered that they were involved as much as they wished. Over two-thirds of participants were involved in voluntary work and just under a third (28%) were still in paid employment. The concept of retirement as ‘disengagement’ for our participants did not generally exist for almost all were still active, involved in supporting their families, their community or in paid employment.

Home environment—Almost all participants were independent with 96% living in a private dwelling and one participant lived on a marae. Just over a third of participants were living alone in their home.

Health status—Just over half of participants were non-smokers and 16% were still currently smoking. Only 1 participant was sufficiently cognitively impaired such that they were unable to complete the questionnaire on their own. By self-report, 8 out of 10 participants rated their health as ’good’, ’very good’ or ’excellent’.
Ninety-four percent of participants took prescribed medication and 6% took no medication. The health of participants varied, with just under one in four (22%) having fallen in the past 12 months and within that group 56% of falls had resulted in injury. Two-thirds of the participants had cardiovascular disease and one in four had mild or moderate depressive symptoms.

The physical performance of participants, was “high”, with an average Nottingham Extended Activities of Daily Living score of 19 out of 22. Echocardiography using the hand held echocardiograph yielded acceptable images in the majority of participants. Spirometry was completed by the majority (results not presented here).

One in four participants reported that vision interfered with their day to day activities, hearing was identified as slightly less functionally disruptive (16%). Objective respiratory assessment showed that almost half of all participants (42%) had limited respiratory function.

One in four participants had high blood pressure and just over one in three, had a cholesterol rating over five. The body mass index was 33.2 on average for participants. When asked whether finance affected participants’ access to and use of health services, most participants reported that money was not a barrier in purchasing items they needed for their health care; one third reported that they shared transport to health services with others to help keep the costs down.

Healthy eating—Food and access to healthy traditional Māori food was identified as important for just over 80% of participants. They reported that they enjoyed eating this food on a regular basis; however, their ability to do so was influenced by the availability of traditional Māori food and seasonal changes. Participants reported that they enjoyed eating kaimoana (seafood), Puha (sow thistle), watercress, kamokamo (marrow), and fermented corn, which traditionally has been available in the areas of study. Access to this food was often provided by family members when attending different cultural functions.

Pollution of traditional food sources and care of the environment was identified by almost all participants (97%) as extremely important and pollution affected their ability to eat traditional Māori foods.

Discrimination—Just under half of all participants considered that colonisation had influenced and affected the way they lived their life. Almost one in five participants (16%) reported that they had been spoken down to as Māori and one person reported that they had experienced age discrimination. The majority of participants reported that despite their health status and general experiences that they believed they could do a lot to keep healthy and that they enjoyed life.

Dissemination—As part of feasibility testing the study, these results were reported back to participants. Several hui (meetings) were held at each of the Māori health research partner’s facilities where participants and interviewers together were given the opportunity to hear first hand the quantitative results. Individual participants could therefore hear and discuss the overall results and consider whether they reflected their experience and general world view of being aged between 75 to 79 years.

Each hui was quite different and participants along with their supporters as well as the local research partners were very interested in the results and they requested further
research. All wanted to know more about the process of ageing and the journey of
life. For those in the feedback hui who were in the 60-70 year age group, participants
of the feasibility study were seen as “an elite group”, and to be role models.

Feedback on the aggregated data was positive although a number of participants
reported that some of the questions were sensitive. As an example, some participants
did not want to express fully how they found it difficult at times to warm their homes
to their satisfaction, or that they cared for their mokopuna (grandchildren) in their
homes, as they feared that they might lose their “living alone” allowance which is part
of their national superannuation support from the Government.

Discussion

This feasibility study has provided results on a small number of older Māori
participants about their current quality of life and health status as measured through a
quantitative health social and cultural questionnaire and physical assessment. This
information cannot be generalised to the greater population of older Māori as this was
not a representative sample.

A total of 33 Kāumatua participated in the study. We achieved our objective of
adequate Māori participation in all stages of the feasibility study.

Involvement of Kāumatua and Kūia at all stages of the development and
implementation of the feasibility study was considered fundamental to its success and
ongoing developments. The research process of engagement with Kāumatua
throughout the feasibility study has facilitated the development of a new methodology
with elders and local health providers.

The methodology of involving elders in their own research draws upon the experience
and lessons learnt through the feminist and Māori sovereignty movements which have
argued that what is personal has political implications; personal lives are a microcosm
of the wider world, and older people’s lives are driven and directed by the
assumptions of others.

The methodology of using a social engagement approach to invite elders to participate
in the study has been successful. It has enabled the researchers to establish
relationships with elders and Māori providers and to work together as a united team to
enhance the study in its design and implementation. The advice, wisdom and support
of local people in the areas of the study has been invaluable alongside the
involvement of the Roopu Kaitiaki.

Results from the study, however, are not representative of the lives of all 75–79 year
old Māori living in New Zealand, but they do support and endorse previous research
which has looked at the health and wellbeing of Māori aged 60 years or more.21

Durie (1997) interviewed 397 Kāumatua aged 60 years and over, and used a
networking sample methodology. The majority of participants interviewed lived in
rural and provincial areas and the following themes emerged.21,22

Similar to the findings of the current feasibility study, older Māori generally lived full
lives, were engaged in cultural activities, were involved in their whānau, enjoyed
speaking or listening to Te Reo Māori, had limited financial means and saw ageing as
a positive experience despite poor health.
As researchers, we are interested in celebrating the lives of participants and valuing the descriptive information our participants have shared. Participants in this feasibility study are unique; they are all survivors and are in the minority of those surviving from their birth cohort.

The feasibility study overall has been successful. The primary research question asked with our research partners was the following, “is it possible to conduct a cohort study with Māori of advanced age”? The overall response from Māori participants and their supporters has been positive. Following the dissemination of the results they have affirmed that such a cohort study should be undertaken for the benefit of others, especially for those who follow behind in their shoes.

The participants in this study have looked ahead and behind and see that being old is a positive experience and they wish to continue to contribute further to the development of New Zealand society and possibly internationally by sharing their knowledge, experience and information about health status.

Since the completion of the feasibility study research funding by the HRC and Ngā Pae O Māramatanga has been awarded for a cohort study with older Māori and non-Māori. The subsequent larger cohort study Life and Living to Advanced Age, a Cohort Study in New Zealand; Te Puawaitanga o Nga Tapuwae Kia Ora Tonu (LiLACS NZ) aims to recruit from the population in one region equal numbers of Māori and non-Māori, to complete comprehensive health and social assessments and follow up those enrolled yearly to the end of life (funding permitting).

LiLACS NZ is in the process of recruitment of 600 Māori aged 80 to 90 years and 600 non-Māori aged 85 years in the Lakes and Bay of Plenty area. Funding for Waves 2 and 3 (12 and 24 month follow up) has recently been allocated by the Health Research Council.

E kore e hekeheke he kakano rangatira
(Our ancestors will never die for they live on in each of us)

Competing interests: None.

Author information: Lorna Dyall, Senior Lecturer in Māori Health, Te Kupenga Hauora Māori, School of Population Health, University of Auckland; Ngaire Kerse, Professor, General Practice and Primary Health Care, Faculty of Medical and Health Sciences, University of Auckland; Karen Hayman, General Practice and Primary Health Care, Faculty of Medical and Health Sciences, University of Auckland; Sally Keeling, University of Otago, Christchurch

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We acknowledge the participants for their patience and enthusiasm, the interviewers for their persistence and kindly manner, Elizabeth Robinson and Simon Moyes for assistance with statistical analysis, Korowai Aroha, Rotorua, Māori Health Services, Whakatane and Whakatohea Iwi Social and Health Service, Opotiki for facilitating...
the study processes. We acknowledge Mere Kepa for her role in formation of the Kaitiaki group and guidance through the initial focus group discussions.

Correspondence: Dr Lorna Dyall, Te Kupenga Hauora Māori, School of Population Health, University of Auckland, Private Bag 92019, Auckland, New Zealand. Email: l.dyall@auckland.ac.nz

References:

An unusual cause of abdominal pain
Imran Badshah, Abdullah Alhaidri, Itty Mathews, Mohammad I Khan

Abstract
We report a case of subcutaneous panniculitis-like T-cell lymphoma (SPTCL) (they are always alpha/beta) in a 36-year-old male who presented with a 6-week history of abdominal pain, fever and significant weight loss. Definitive diagnosis required a full thickness skin biopsy with PCR analysis for clonal T-cell gene arrangement. A literature search showed that SPTCL is a very rare cutaneous lymphoma limited to case reports.

Case report
A 36-year-old Māori male was referred from a peripheral hospital with 6 weeks history of abdominal pain, high fevers and significant weight loss. Recently he has also been feeling lethargic. Clinically examination showed generalised non-specific abdominal tenderness and leg swelling. He also had localised areas of induration on the abdomen and shins.

His blood profile showed raised LFTs, inflammatory markers, LDH, ACE and haptoglobin levels. His Coombs test was positive and he had a positive ANA tests in titres of 1/1280. His chest X-ray was normal.

Differential diagnosis, after the preliminary investigations, included sarcoidosis, tuberculosis, autoimmune conditions, lymphoma and occult malignancy.

Figure 1. CT scan showing extensive panniculitis

CT of the abdomen showed a diffuse infiltrative process of the subcutaneous and mesenteric fat consistent with diffuse panniculitis (Figure 1). Further tests included a
skin biopsy of the shin, which showed changes of a lymphocytic lobular panniculitis (Figure 2).

The bone marrow biopsy was reported as normal. Full thickness skin biopsy of the abdominal wall showed a sparse lymphocytic lobular panniculitis with rimming of adipocytes and evidence of cellular necrosis (Figures 3, 4, 5). On immunostaining, the lymphocytes were predominantly CD8 positive while negative for CD56. Clonal T-cell gene rearrangements analysed by PCR showed the presence of a clonal cell proliferation. The T-cell receptor studies showed an alpha/beta subtype.

The combination of clinical and histological findings allowed a diagnosis of SPTCL to be made. Given the extent of involvement of the panniculus the patient was referred to the haematologists for consideration of chemotherapy.

Figures 2–5. Lymphocytic lobular panniculitis with rimming of adipocytes and evidence of cellular necrosis

Fig. 2  Fig. 3

Fig. 4  Fig. 5
Discussion

Subcutaneous panniculitis-like T-cell lymphoma is a rare extra nodal lymphoma limited to case reports.\(^1,2\) It was first described by Gonzales et al in 1991 when they described a series of eight cases of T-cell lymphoma that involved mainly the subcutaneous tissue.\(^3\) This tumour was provisionally named subcutaneous panniculitic T-cell lymphoma in the Revised European-American Lymphoma classification of 1994.\(^4\) Subsequently it was included in the World Health Organization classification as SPTCL.

SPTCL presents complex clinical, pathologic, and immunohistochemical features, which warrant awareness by dermatologists, dermato-pathologists, hemato-pathologists, hematologists, oncologists, and internists. The broad differential diagnoses include other conditions which can cause panniculitis including infections, drug reactions, pancreatitis and malignancies but the main differential diagnosis is from systemic lupus which may have a similar clinical and histological presentation and PCR gene studies may be required for differentiation.\(^5\)

Although a range of different T-cell lymphomas can present in subcutaneous tissue, the characteristic features of SPTCL is the infiltration of tumour cells between adipocytes resembling lobular panniculitis and the propensity to remain localized to the subcutaneous tissue, although in later stages systemic spread to lymph nodes and bone marrow can occur.\(^6\)

Recently the European Organization for Research and Treatment of Cancer Cutaneous Lymphoma Group has established SPTCL as only including those with alpha/beta T cell phenotype.\(^6,7\) Those demonstrating a gamma/delta phenotype are separated into the poor prognostic category of cutaneous gamma/delta T-cell lymphomas.\(^7\) The clinical features, treatment and prognosis are significantly different in the subtypes. SPTCL-AB is more commonly described and presents at an earlier age group. It is also associated with less systemic symptoms and has a better overall prognosis with a median survival of 33 months compared to 11 months in the gamma/delta group.

Author information: Imran Badshah, RMO; Abdullah Alhaidri, RMO; Itty Mathews, RMO; Mohammad I Khan, SMO; Department of Medicine, Tauranga Hospital, Tauranga

Correspondence: Dr Imran Badshah, RMO, Department of Medicine, Waikato Public Hospital, Hamilton, New Zealand. Email: badshah3136@gmail.com

References:

Rupture of a benign mediastinal teratoma into left pleural space

Sibes K Das, Tapan D Bairagya, Somnath Bhattacharya, Bidyut K Goswami

A 50-year-old female presented to the chest department with a 2-day history of dry cough and left-sided chest pain. Chest examination revealed dullness in the infraclavicular and infrascapular areas of the left side. Chest radiograph revealed a rounded shaped well-circumscribed mass with rim like calcification in left upper zone and left-sided pleural effusion. Contrast-enhanced CT scan thorax revealed an anterior mediastinal mass with soft tissue and fat densities with dense ring of calcification in the periphery of the mass along with left pleural effusion (Figure 1).

Figure 1. A homogenous mass in anterior mediastinum with soft tissue and fat density, rim-like calcification and left pleural effusion

Figure 2. FNAC of the mass showing foam cell, squamous cell, keratinous material, giant cell in sequential slides
Fine needle aspiration cytology (FNAC) from the mass revealed a benign mature teratoma containing ectodermal elements without any malignant cell (Figure 2). Pleural fluid study revealed cheesy material with predominant lymphocytes but without any malignant cell.

A diagnosis of mature mediastinal teratoma rupturing into the pleura was confirmed.

**Discussion**

A combination of soft tissue density, fat and calcification in the CT scan of an anterior mediastinal mass is very characteristic of teratoma, thus it is one of the few mediastinal tumours that can be confidently diagnosed preoperatively.\(^1\)

The calcification in teratoma is often focal within the mass or may represent teeth or bone, but calcification in the entire wall of the mass, like our case, is relatively rare. Microscopically, mature tissue from all three germ layers is represented. However often the ectodermal elements predominate.

Teratoma is often asymptomatic. Rupture of a mediastinal teratoma is a rare event. It may rupture into pleura, lung, bronchus or pericardium. Rupture into pleural sac leads to pleural effusion.\(^2\)

**Author information:** Sibes K Das, Associate Professor, Department of Respiratory Medicine; Tapan D Bairagya, RMO – Clinical Tutor, Department of Respiratory Medicine; Somnath Bhattacharya, Assistant Professor, Department of Respiratory Medicine; Bidyut Krishna Goswami, Associate Professor, Department of Pathology; North Bengal Medical College, Darjeeling, West Bengal, India

**Correspondence:** Sibes Kumar Das, Souhardya Apartment, West Bankimpally, Madhyamgram, Kolkata-129, West Bengal, India. Email: sibesdas67@gmail.com

**References:**


What influences recurrent presentations of older people to the emergency department?

We know that the proportion of New Zealand citizens aged over 65 years is likely to double over the next 50 years.¹ The inevitable consequence of this ‘ageing society’ will be an increased demand on healthcare services.² Consequently any areas within the healthcare system that have the potential to be tailored to meet the increasing demands of this ageing population should be explored. Previous research has concluded that many acute admissions to hospital in the over 75s can be avoided, through identifying risk factors and targeting resources to the older population.²–⁵

We conducted a small study in the emergency department (ED) of Thames Hospital, to explore those risk factors anticipated to influence the frequency of presentation in the elderly.

All the patients over the age of 75 who presented acutely to the ED during January and February 2008 were eligible, i.e. excluding planned and follow-up appointments. A sample of 32 patients was selected and clinical notes were obtained. Re-presentations were calculated as the number of presentations over the 12 months subsequent to the patient’s first presentation to the ED. A researcher examined patient’s notes to identify potential risk factors:6–⁹ age, numbers of comorbidities, poly-pharmacy and living arrangements.

Data was analysed in SPSS v15 software, using Spearman’s test, to identify relationships between the numbers of re-presentations and other variables. Additionally, the Mann-Whitney U test was used to determine associations between re-presentations and gender and living arrangements.

Results—There were 93 presentations to the ED by the group of 32 patients, during the 12 month follow-up period. Of these, the major causes for re-admission were: cardiac causes (28%) and fractures (14%). 25 patients had multiple presentations, with 64% of these having at least 1 re-presentation within 2 weeks. The main cause of these multiple presentations was cardiac in origin (44%). A positive correlation was identified (coefficient=0.403, p=0.022) between the number of re-presentations and the number of comorbidities, see Figure 1.
The median number of medications being taken was 7 (range 0–15) and there was a positive correlation (coefficient=0.382, p=0.031) between the number of medications and the number of re-presentations, see Figure 2. Poly-pharmacy and comorbidities were found to have a significant positive correlation, see Figure 3 (coefficient=0.457, p=0.009).
Figure 2. Number of medications against the number of re-admissions (representations)

Figure 3. Relationship between numbers of comorbidities and numbers of medications
There was no significant difference overall between the number of re-presentations and living arrangements (i.e. living alone or with a spouse). However, there was a significant difference when men were examined as a subset (sig = 0.049) with men who lived with a spouse having on average a lower number of re-presentations compared to those men who lived alone, see Figure 4 (men living with spouse mean rank= 4.79, N=7; men living alone, mean rank=8.90, N=5).

Figure 4. A graph illustrating the number of re-presentations (re-admissions) amongst men, comparing the group that lived alone to the group who lived with a spouse

Discussion

Despite this study having a small sample size it has identified some significant relationships which may assist in predicting likelihood of re-admissions within the elderly population: Increasing numbers of comorbidities and medications, being male and living alone are all positive predictors for older patients re-presenting to the ED, this is in keeping with previous metropolitan studies.8–11

Those responsible for the organisation of acute healthcare delivery in Thames region and other comparable areas of New Zealand may wish to consider these findings and look for solutions already being trialled in other areas of the World.

The UK government, recognising the booming elderly population has already begun to tailor health care needs for the elderly in order to cope with the increasing demand and consequent strain on the health care system. Their approach was to introduce a...
National Service Framework for Older people,\(^2\) introducing eight ‘standards’ and implementing ‘Intermediate Care’ pathways to bridge the gap between primary and specialist services.

We would suggest that Thames region may also benefit from considering if an intermediate care team could reduce re-presentations to the ED. An intermediate care team can follow-up patients in the community after their initial presentation to re-assess their medications for appropriateness and compliance and address any further issues with their health and social well-being which may only be evident once a patient is home.

Thus, we would suggest that our study has important implications: by identifying predictors of re-presentations to the ED, patients with these factors could be targeted for follow-up and an assessment of needs including social care with the aim of reducing morbidity and re-presentations to hospital.

Rebecca E McMillan
FY1, Haematology
Sandwell General Hospital
Birmingham, West Midlands, England
Rncmillan@doctors.org.uk

Helen Stokes-Lampard
Clinical Research Fellow
School of Health and Population Sciences, The Primary Care Learning Centre, University of Birmingham, Edgbaston, Birmingham, UK

Ruth Large
Consultant
Emergency Department, Thames Hospital
Thames, New Zealand

Acknowledgements: We thank the staff at Thames Hospital for assisting RM in carrying out this study.

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NZ Nurses Organisation comments on NZMA Health Equity Position Statement

The New Zealand Nurses Organisation (NZNO) would like to congratulate the NZMA on the publication of the NZMA Health Equity Position Statement found in the 4 March 2011 edition of the New Zealand Medical Journal.\(^1\)

The Position Statement clearly identifies the impact of health inequities on all people and offers a range of interventions that government, the medical profession and the individual practitioner can implement to address these.

NZNO fully supports the NZMA and its members in identifying and addressing the social determinants of health as one of the most effective means of addressing health equity issues.

The World Health Organization’s Commission on Social Determinants of Health (2008) has identified three key interventions for addressing health equity issues. These include:

- Improving the conditions of daily life—the circumstances in which people are born, grow, live, work and age.
- Tackling the inequitable distribution of power, money and resources.
- Measuring the problem, evaluating action, expanding the knowledge base, developing a workforce that is trained in the social determinants of health, and raising public awareness of the social determinants of health.

These three interventions should provide the basis for New Zealand health and social policy now and into the future. NZNO strongly advocate for all nurses, doctors, their respective professional bodies and the New Zealand government to take action to implement these.

NZNO looks forward to working closely with the NZMA to develop interventions that nurses and doctors can implement collaboratively to address inequities in health.

Dr Jill Clendon
NZNO Nursing Policy Advisor/Researcher

Leanne Manson
NZNO Policy Analyst Māori

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Wood burning and air pollution

The editorial by Kingham in the 4 March 2011 issue of the NZMJ implicitly supported the current orthodoxy in regard to air pollution and employed arguments which were found to be dubious in the papers of Hoare, Moller and Palmer. There are several issues:

- Wood smoke, unlike nitrate and sulphate inhalation in animal experiments, has been found not to cause bronchospasm.
- Increased mortality associated with PM$_{10}$ is relatively low. If there is a provocative role, it is likely to be from the sulphate, nitrate and other chemical pollutants which are present.
- It is important that we maintain energy security—both as a nation and locally. If the Christchurch earthquake had occurred in the winter there would have been a serious increase in chest infections in the young and elderly, along with myocardial infarctions etc due to cold exposure. This would have resulted from our high dependency on electricity which has been forced on us by the Ministry for the Environment and Environment Canterbury.
- Mortality from cold exposure is a much more important issue than the possible contribution of air pollution to a terminal event.
- It is important that we maintain diversity in heating methods, and in particular, continue to be able to burn wood, an affordable, renewable, carbon-neutral resource in appliances that are not dependent on electricity to drive fans.
- Because of a winter inversion layer in Christchurch it is at greater risk of pollution than many places. Planning for the rebuilding of Christchurch should make this an important consideration. Coal burning, including industrial use, should not be allowed in the City. Plans should be developed for inner city transport to be largely by electric vehicles. The diesel we use should not have such a high sulphur content.
- Recent amending legislation, driven by a need to appease industry, was inadequate. It demonstrated the weak logic behind the current regulations.
- It is urgent that the Ministry for the Environment re-appraise its position and its regulations so that the contradictions that exist between its views and the overall welfare of people are resolved. This would allow Christchurch to plan its redevelopment in a more rational way.

Peter W Moller
Rheumatologist
Christchurch, New Zealand
peter.moller@xtra.co.nz
Toxicity of Christchurch wood smoke

In his editorial *How important is urban air pollution as a health hazard?*, Simon Kingham belittles the article *How toxic are fine particles from home fires in Christchurch, New Zealand* by Jay Mann and myself because we did not use original data.

Instead we used the copious data collected by Kingham and the HAPiNZ team, and we thought critically and logically about them. As we point out, the arithmetic shows clearly that the large number of deaths attributed to PM$_{10}$ pollution in Christchurch may all be accounted for by that emitted from traffic.

The data which Kingham and colleagues have collected suggests strongly that all PM$_{10}$ in Christchurch is not equally toxic. Kingham does not question our logic, but persists with the implausible dogma from the shrines of the World Health Organization (WHO), the European Union, the US Environmental Protection Agency, and the New Zealand Government, that PM$_{10}$ from all sources is equally toxic. Mann and I point out that the HAPiNZ data show that in Christchurch this need not be so.

When I asked Kingham about the HAPiNZ estimates of 184 deaths each year attributed to PM$_{10}$ pollution in Christchurch, 89 of them from home fires, he referred me to a more appropriately qualified member of the HAPiNZ team who replied to my query “Anyway, it is pretty clear that people have died due to air pollution in New Zealand, and our estimates are of course only estimates. No one could calculate the exact mortality impact of air pollution, but the science tells us that taking actions and developing policies to reduce air pollution in the worst polluted areas is good for public health.”

So much for the precision of Kingham's estimate that smoke from home fires is more lethal than earthquakes in Christchurch.

Pat Palmer
Retired Agronomist
Christchurch, New Zealand
pat.palmer@clear.net.nz

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4. Kjellstrom T. Personal communication; 2009.
Response to Kingham's editorial on air pollution

Notwithstanding the dubious practical and scientific significance of such calculations as discussed in the same issue of NZMJ, Simon Kingham continues to maintain that "air pollution in New Zealand is estimated to result in about 1100 deaths per year and cost over $1 billion in health-related costs". Such claims made in the context of genuine causality bearing upon public health give epidemiologists a bad name.

In support of his stance, Kingham quotes the WHO in relation to PM$_{2.5}$ namely similar effect estimates are found for a wide range of cities in both developed and developing countries. It is, therefore, reasonable to assume that the health effects of PM$_{2.5}$ are broadly the same." Here he is clearly referring to very small (typically, less than +1%) daily all-cause and similar acute mortality associations possessing large margins of error the implications of which are frequently ignored. Also, from such results, air pollution-related deaths are often quoted following an additional step—i.e. numbers of potentially avoidable deaths/yr, which transmogrification of the original data is unjustified.

If science is to make a worthwhile contribution to modern civilisation it needs to be good science and therefore completely open to challenge/review preferably before becoming an irremediable part of the social fabric. If, perhaps because of undue haste or influence, mistakes are made, the sooner these are admitted and rectified the better.

John L Hoare
Retired Chemistry Graduate [Auckland University]/Wool Scientist-Technologist, Christchurch

References:
Relative risk according to the proportion of a population deemed to be at high risk after risk factor analysis

In various fields of medical practice, treatment is allocated to sub-populations of patients assigned dichotomously to high- or low-risk sub-populations on the basis of risk factor analysis. For example, according to current Australasian guidelines, eligibility for thromboprophylaxis in medical inpatients is awarded to patients deemed to be at high risk because any one of several risk factors are present: age over the age of 60, presence of stroke etc.

Using these guidelines, one finds that 84% of medical patients are in the so-called high-risk group. Since it is obvious that the relative risk in a high-risk group must approach unity as the population deemed to be at high risk approaches 100%, the interpretation of “high-risk” when it applies to 84% of a population, and the general relationship between relative risk and the proportion of the population deemed to be at “high” risk, are of some interest.

Modelling the relationship—Consider a population in which a proportion $P$ is deemed to be at high risk by virtue of the presence of one or more risk factors. These will have been identified during epidemiological studies, or in the placebo group of randomized clinical trials. Assume that the average population risk is 1, and that each individual carries the average relative risk $R_H$ or $R_L$ in the high- and low-risk sub-populations respectively. Clearly, $R_H > 1$ and $0 < R_L < 1$.

There is an essential relationship between $R_H$ and $R_L$ such that the high relative risk in the high-risk group has to be balanced by a corresponding reduction in relative risk in the low-risk group to maintain the overall population risk. Since $R_L > 0$, the upper limiting value of $R_H$ ($R_H^{Max}$) occurs at the point when $R_L$ just reaches zero.

The overall population risk is the weighted average of the contributions of the high and low risk groups, viz

$$1 = P.R_H + (1-P).R_L \ldots \ldots (1),$$

which can be re-written as

$$R_H = \frac{1 - (1-P).R_L}{P} \ldots \ldots (2)$$

When $R_L = 0$, $R_H = R_H^{Max}$ and (2) simplifies to $R_H^{Max} = 1/P \ldots \ldots (3)$.

Table 1 shows the values of $R_H^{Max}$ as a function of $P$ according to (3).
Table 1. Values of the maximum relative risk $R_{H}^{\text{Max}}$ in a sub-population deemed to be at high risk after application of risk factors, according to the proportion of the population found to be at risk

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Comment—Equation 3 shows that, as expected, $R_{H}^{\text{Max}}$ declines as the proportion of the population $P$ deemed to be at high risk increases, but also that the relationship is directly reciprocal. In fact, $R_{L}$ cannot be zero in practice because the complementary group is a low (not zero) risk group. Thus $R_{H}^{\text{Max}}$ is best regarded as an upper limiting value that will overestimate the true value of $R_{H}$ that obtains in practice, to a degree that depends on how small a difference of $R_{L}$ from zero is considered reasonable.

In terms of the Australasian thromboprophylaxis guidelines, the calculations show that the relative risk can be no greater than 1.19 (=1/0.84). I have previously demonstrated that the ratio of benefit to hazard (major bleeding) at such a value of relative risk is less than unity. Thus the property of these guidelines that they apply to 84% of acutely unwell medical patients necessarily raises questions over their validity.

J Alasdair Millar
Consultant Physician and Clinical Pharmacologist
Divisional Director, Medicine
Medical Department, Southland Hospital
Invercargill

References:

Ten-year dispensing trends of hypnotics in New Zealand

Insomnia is a very common presenting complaint. UK data shows that it affects about one third of the population in any given year. Hypnotics are one strategy for the management of insomnia. Medicines for the management of insomnia that are available in New Zealand include zopiclone, triazolam, temazepam and nitrazepam. These are funded by district health boards (DHBs) in accordance with the Pharmaceutical Schedule.

Aim—The aim of this study is to describe the community dispensing trends in all 21 New Zealand DHBs of these hypnotics for the ten financial years of 2000/01 to 2009/10.

Method—Data for all subsidised community dispensing of zopiclone, triazolam, temazepam and nitrazepam between the financial years of 2000/01 and 2009/10 were extracted from the data warehouse managed by New Zealand Health Information Service. Population data from Statistics New Zealand were combined with this database to enable population analysis. Defined daily doses (from the WHO database) were used to determine the number of daily doses dispensed each financial year. These data were analysed on an Excel™ spreadsheet.

Results—Zopiclone dispensing increased from 216,069 defined daily doses (DDD) in 2000/01 to 719,957 DDD in 2009/10. Triazolam dispensing increased from 86,428 DDD in 2000/01 to 100,114 DDD in 2009/10. Temazepam dispensing decreased from 81,593 DDD in 2000/01 to 64,538 DDD in 2009/10. Nitrazepam dispensing decreased from 31,904 DDD in 2000/01 to 23,818 DDD in 2009/10

When corrected for population, DDD/person were: zopiclone - 0.056 in 2000/01 and 0.167 in 2009/10; triazolam - 0.022 in 2000/01 and 0.023 in 2009/10; temazepam - 0.021 in 2000/01 and 0.015 in 2009/10; and nitrazepam - 0.008 in 2000/01 and 0.006 in 2009/10.

Discussion—There was evidence of considerable regional variation in the 2009/10 data. While most DHBs share of the dispensing of hypnotics reflected their share of the population, there were some outliers. Zopiclone dispensing was 2.0 times the national mean DDD/person in Wairarapa DHB; 1.5 times the mean in MidCentral DHB and 1.4 times the mean in Hawke's Bay DHB. Triazolam dispensing was 1.7 times the mean DDD/person in Canterbury DHB; 1.4 times the mean in South Canterbury DHB and Hawkes Bay DHB. Temazepam dispensing was 2.6 times the mean DDD/person in South Canterbury; 2.1 times the mean in Nelson-Marlborough DHB and 1.6 times the mean in Canterbury DHB. Nitrazepam dispensing was 5.4 times the mean DDD/person in Whanganui and 4.0 times the mean in Otago DHB.

The overall decline in dispensing of DDDs over the ten year period of temazepam and nitrazepam is most likely due to concerns about benzodiazepine addiction. In contrast, the use of zopiclone has increased by over 300%. This may reflect patients being switched to zopiclone from other benzodiazepines in combination with an overall increase in number of patients being treated with it.
There is evidence to suggest that zopiclone is a relatively safe hypnotic and it does not have the same dependence potential of benzodiazepines.\footnote{\textsuperscript{5,6}} Despite this, zopiclone does act on benzodiazepine receptors and is associated with a similar adverse effect profile as benzodiazepines (i.e. dependence and withdrawal effects on discontinuation).\footnote{\textsuperscript{5}} Prescribers may have increased their use of zopiclone over time, as it is a safer alternative to the benzodiazepines, in the context of insomnia being a common presenting complaint in general practice.

Triazolam was withdrawn in the UK in 1993, following evidence of rebound phenomena on discontinuation and withdrawal symptoms of: amnesia, delirium, psychosis and behavioural disturbance. These were thought to be due in part to its very short half life.\footnote{\textsuperscript{7}} We would have expected to see a downward dispensing trend in New Zealand given these concerns rather than staying constant as seen in DDD/person of 0.022 in 2000/01 and 0.023 in 2009/10.

Benzodiazepine hypnotics and zopiclone are associated with a range of adverse effects. A meta-analysis looking at the usage of hypnotics in older people found that although hypnotics did improve sleep with a number needed to treat (NNT) of thirteen (i.e. for every thirteen patients treated, one patient would experience improved sleep), they were associated with a range of adverse effects including ataxia, falls, daytime fatigue and memory impairment. The number needed to harm (NNH) for a hypnotic when compared with a placebo agent was six (i.e. for every six patients treated, one would experience an adverse reaction).\footnote{\textsuperscript{8}}

The risk of a patient on hypnotics (i.e. zopiclone and benzodiazepines) having a road traffic accident was increased in a Norwegian study and a British study.\footnote{\textsuperscript{9,10}} These observations suggest that the benefits of hypnotics particularly in the elderly barely outweigh the risks.

This study has some limitations. Data are of dispensings and compliance rates are unknown. Indication and duration of therapy were unavailable as were the numbers of patients. Finally, there is no outcome data easily available to clarify whether increased usage of zopiclone and triazolam and decreased usage of temazepam and nitrazepam resulted in better clinical outcomes.

**Conclusion**—The increased use of zopiclone is a worrying trend in light of its potential to cause harm. This may be partially balanced out by the decrease in the use of temazepam and nitrazepam and the resultant decrease in harm potential. Similarly the increase in triazolam use is of concern in light of its withdrawal elsewhere. Hypnotic agents should be prescribed for the shortest period of time and at the lowest dose possible. Patients on long term hypnotics should be reviewed regularly with a view to reducing and stopping the hypnotic where possible. The reasons behind why some DHBs prescribe particular hypnotics at higher rates than the rest of the country is worth examining in terms of clinical outcomes.

Andrew McKean  
Senior Pharmacist  
Pharmacy Department, Hillmorton Hospital  
Christchurch  
andrew.mckean@cdhb.govt.nz
Jane Vella-Brincat
Drug Utilisation Pharmacist
Clinical Pharmacology Department, Christchurch Hospital
Christchurch

References:
The Government’s Goal for a Smokefree New Zealand by 2025: more decisions, and more detail, are urgently needed

In their Response to the Report from the Māori Affairs Select Committee (MASC) Inquiry,1 the New Zealand Government has articulated the goal of a smokefree nation by 2025.2 This is a wise and visionary move, which is critical to protect the health of all New Zealanders in the face of the ongoing tobacco epidemic. It is also consistent with strong public (and often majority smoker) support for progress with tobacco control.3–8 Nevertheless, a close reading of the Response to the MASC Report suggests that the Government has avoided decisions it could make now, and there are many areas of the Response that urgently need further detail.

The Table below briefly summarises some of these areas.

Table 1. Key areas urgently requiring further detail around the Government’s Goal for a Smokefree Nation by 2025

<table>
<thead>
<tr>
<th>Issues requiring decisions and/or detail</th>
<th>Additional comment</th>
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<tbody>
<tr>
<td><strong>Detail on the goal</strong></td>
<td>The goal in the Government’s Response is defined as: “reducing smoking prevalence and tobacco availability to minimal levels, thereby making New Zealand essentially a smoke-free nation by 2025”. However, such an important goal deserves to be more clearly defined. Doing so will make progress measurable. For example, the goal could be “a daily smoking prevalence of &lt;0.5% of the adult population with an interim milestone of &lt;10% by 2018”. Or the goal could be “a complete ban on the sales of tobacco in 2025” (with the few residual smokers having to grow their own tobacco). The latter option has many advantages as it communicates an unambiguous message: (i) to the tobacco industry that its time in this country is up; and (ii) to youth and current smokers that there is no long-term future in smoking (and thus every reason not to start, or to quit now).</td>
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<tr>
<td><strong>A timetable and plan</strong></td>
<td>In a previous NZ Medical Journal editorial9 some of us stated that detailed and urgent implementation planning is required. The Government’s Response promises “further detailed work” to set “mid-term targets”, but avoids saying when those targets will be set. Instead of noting that: “The Government is considering …”, the Response would have achieved more if it provided details on the process by which a more detailed plan will be formed (e.g., a task force), and the timeline this will follow. The Response states that the “Government already has a comprehensive action plan”, but the last such plan was for the 2004 to 2009 period. A new Ministry of Health plan for tobacco control has been urgently needed since 2009.10 In particular, critical decisions need to be made now about which of the following four major mechanisms will be pursued: (i) an annual “sinking lid” on tobacco sales down to a sales ban11–13; (ii) an ongoing system for regular tobacco tax increases until a sales ban12; (iii) a system for phasing down nicotine levels in tobacco12 14; and (iv) using alternative nicotine delivery products during the tobacco phase-out period.15</td>
</tr>
<tr>
<td><strong>The details around why proposed new legislation is not</strong></td>
<td>The proposed legislation that will eliminate tobacco displays at point-of-sale to which the Response refers, appears to be a highly desirable step towards the goal. However, there is also an opportunity for proposed law changes to ensure NZ maintains parity with other developed countries, many of which have adopted more far-reaching tobacco control</td>
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<td>Issues requiring decisions and/or detail</td>
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<td>more comprehensive policies. Examples include banning smoking in cars with children and expanding smokefree areas (e.g., the outdoor areas at hospitality venues)(^\text{16}). Other opportunities including updating the current sets of graphic health warnings(^\text{17}) and declaring an intention to introduce plain packaging with Australia.(^\text{18})</td>
<td></td>
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<tr>
<td>Outlining bipartisan support for the goal</td>
<td>We note that the “2025” date is five electoral cycles away. Responding to the tobacco epidemic requires major political parties to forge substantial common ground, as has already occurred in some policy domains in NZ (e.g., superannuation, nuclear-free policy, and putting a price on carbon emissions). Developing (and committing to) a shared tobacco control agenda will be pivotal to bringing about the tobacco endgame – and moves to achieve this cooperation need to outlined by the Government.</td>
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Many other issues require attention if rapid progress towards the goal is to be made. Key examples include:

- Benchmarking New Zealand policies against international best practice, behind which New Zealand currently sometimes lags (e.g., smokefree cars with children\(^\text{19}\) and expanded smokefree areas\(^\text{16}\)). Further aligning tobacco control policies internally to reduce policy incoherence\(^\text{20}\) is also desirable.

- Enhancing capacity of the Ministry of Health tobacco control team, especially if a Tobacco Control Agency is not to be implemented. At present there are only a small number of staff dedicated to tobacco control, offering limited capacity to deal with the large body of work required to achieve the goal.

- Reducing the overall level of fragmentation of the tobacco control sector in New Zealand and enhancing the extent of knowledge transfer between different DHB districts and between organisations.

- Ensuring that progress for Māori is as rapid as for non-Māori in the path towards the tobacco endgame. This will require a mix of national and local policies, led by iwi (tribes) or undertaken in close partnership with iwi, local health agencies and non-governmental agencies.

In summary, the goal of a smokefree nation is an important step forward, but achieving this will only be possible if it is supported by sustained leadership across major political parties, by the necessary work on the major mechanisms, and appropriate timetabling and resourcing. If these are achieved it will be a major advance for the health of the population and an important way to reduce the still substantial health gaps between Māori and non-Māori New Zealanders.

Nick Wilson\(^*\)^\(^1\), Tony Blakely\(^1\), Janet Hoek\(^2\), Heather Gifford\(^3\), Richard Edwards\(^1\), George Thomson\(^1\)

\(^1\) Department of Public Health, University of Otago, Wellington
\(^2\) Department of Marketing, University of Otago, Dunedin
\(^3\) Whakauae Research Services, Whanganui

\(^\text{*}\)nick.wilson@otago.ac.nz


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References:


The Plunket Nurse: part 1

Written by Dr L. Talbot, Timaru and published in NZMJ November 1910:41–45.

CORRESPONDENCE.

To the Editor N.Z. Medical Journal

Sir,—The work of the Society for the Health of Women and Children appears to be causing great apprehension in the minds of the medical profession of the dominion. I think this is due to a widespread misunderstanding on the part of the profession, and to a less degree on the part of the public, of the functions of the Plunket nurse.

The word “nurse” is, as applied to her, a misnomer. The Society is not a body of women banded together for the purpose of obtaining cheap nursing—there is not, in most places in New Zealand, any serious difficulty in getting cheap medical and nursing attendance where necessary, thanks to our hospital system.

It is a Society formed by women with the avowed object of instructing women in hygiene, more particularly the hygiene of infancy; in the management of children; in the way to clothe and feed them; and so on. As instructors, it employs hospital trained nurses, first giving them a special training (under medical supervision) at Karitane.

The Plunket "nurse" is not a nurse—she does not perform the duties of a nurse, as usually understood—she is a teacher of hygiene, of common sense. The medical officer of health is not a "doctor," though he possesses the title and the qualifications, he is an instructor in hygiene, backed up by the law.

The work of both the Plunket "nurse " and the "doctor" of public health is not primarily in, though not necessarily against, the interests of doctors and nurses, but in the interests of the nation. Not without heart-burning, the medical officer of health has come to be regarded as necessary by the rest of the profession, and it is now said with pride that we are working unceasingly towards our own extinction.

The Plunket “nurse” is now passing through the misunderstanding and hostility which the medical officer of health has outgrown—the public has not yet fully realised that she will not nurse nor prescribe for the babies, and that in case of illness she will refuse to attend unless under the instructions of a medical man; and the medical profession has apparently not realized it at all.

She is merely a sensible woman, with a decent nursing training, and special training in hygiene and baby feeding, who takes the place of the ignorant women who press their advice upon mothers; she attempts, by encouraging women to persevere with breast feeding, to counteract the persistent attentions of the patent food vendors, who push the "advantages" of artificial feeding on every new mother with persuasively worded pamphlets and tempting little free samples.

If breast feeding be found to be impossible, she is able to show mothers the details of home modification of cow's milk. And his she wishes to do under medical
supervision. These instructions cannot be given in the same way by the general practitioner.

Who among us has even the time, apart from the patience, to visit a woman day after day, to sit down with her, to become "one of the family," and to gradually overcome the rooted aversion to opened windows, to sunlight, to fresh air, her morbid dread of a "draught," to cut out sensible baby clothes for her, instead of the uncomfortable and almost useless heap of clothing now so often wrapped round the infant; to show her how to make a cheap safe which to keep the milk cool and clean; to argue with the old gamps with whom we are all so familiar; and to discuss day after day, after going over the same ground a dozen times, the hundred and one details of baby management?

The oracular utterances of the family doctor, so comforting and convincing to him, have in the past been subjected to the criticism of all the friends of the family, with what disastrous results we all of us know.
Prevention of colorectal cancer (CRC)—benefits from colonoscopy

As most CRC arise from pre-existing polyps, colonoscopy should prevent the development of CRC.

This population-based case control study from Germany reviews this issue. It involves 1688 patients with CRC and 1932 control patients. They report that overall colonoscopy in the preceding 10 years was associated with 77% lower risk for CRC. Consequently they conclude that colonoscopy with polypectomy can be associated with a strongly reduced risk for CRC in the population setting. The best results were noted in reduction of left-sided CRC but reduction of more than 50% was also seen for right-sided colon cancer.


Efficacy of drug treatments for generalised anxiety disorder

As the authors of this meta-analysis point out, generalised anxiety disorder is a chronic or relapsing condition characterised by persistent and pervasive worrying and tension, which causes substantial personal distress and imposes a considerable economic burden.

Yes and there is certainly a lot of it about in this neck of the woods. Apparently in the UK recent guidelines tend to recommend a selective serotonin reuptake inhibitor for first-line treatment of anxiety disorders. This class of drug featured prominently in this analysis.

The conclusion was that fluoxetine ranked first for response and remission and sertraline ranked first for tolerability.

BMJ 2011;342:d1199.

Treatment of acute otitis media in young children

The question of whether young children with acute otitis media should be treated with antibiotics is addressed in two randomised trials—one from the US and the other from Finland. In both trials the diagnosis was confirmed otoscopically—reddened or bulging tympanic membrane in the presence of otalgia and fever. In both trials, the antibiotic used was amoxicillin-clavulanate—for 10 days in Pittsburgh, and 7 days in Turku.

In both trials the children randomised to antibiotic did better than those in the placebo arms. Symptom resolution was quicker and treatment failure was less in those treated with antibiotic. The downside was the incidence of treatment-related diarrhoea and associated diaper area dermatitis.

An alternative treatment of *Helicobacter pylori* eradication

*Helicobacter pylori* (*H. pylori*) is associated with benign and malignant diseases of the upper gastrointestinal tract.

When detected eradication is recommended and the standard treatment is a 7 day course of omeprazole, amoxicillin and clarithromycin. Such treatments are often unsuccessful, presumably due to bacterial resistance to clarithromycin and/or amoxicillin.

This randomised trial was performed in many European cities and compared the standard treatment with 10 days of quadruple therapy with omeprazole plus a single 3-in-1 capsule containing bismuth subcitrate potassium, metronidazole, and tetracycline in adults with documented *H. pylori* infection.

The eradication rates were 80% (174 of 218 participants) in the quadruple therapy group versus 55% (123 of 222) in the standard therapy group (p<0.0001). Adverse effects were similar with both treatments. The trialists recommend quadruple therapy should be considered first-line treatments Sounds reasonable but I wonder whether 10 rather than 7 days’ treatment might be relevant to the superior outcome.


More about whether omeprazole impairs the therapeutic efficiency of clopidogrel

In recent years, clopidogrel has become established as a key antiplatelet therapy in patients with acute coronary syndromes and in those who have had an infarction or have had coronary artery invasive procedures.

Proton pump inhibitors (PPIs) are often administered in combination with clopidogrel to help reduce the risk of bleeding. There is a potential for drug-drug interactions because many proton pump inhibitors are metabolized by or are inhibitors of the cytochrome P450 2C19 (CYP2C19) enzyme which is also required for the metabolic activation of clopidogrel.

This study from France reports on 2744 patients who were treated with either clopidogrel alone or clopidogrel and a PPI. Overall PPI use was not associated with any increased risk for death, reinfarction, stroke or bleeding. And no differences were seen when the type of PPI or CYP2C19 genotype was taken into account.

So it appears safe to propscribe these two important drugs.

*Circulation* 2011;123:474–82.
Fraud Convictions Reflect Adversely on Doctor’s Fitness to Practise

Charge

A Professional Conduct Committee (PCC) charged that Dr Jacques Renard Marchand (the Doctor) had been convicted of fraud charges in the District Court, and that the convictions reflected adversely on his fitness to practise.

The particulars of the charge were as follows:

1. On 14 October 2008, the Doctor pleaded guilty and was convicted in the District Court of 3 representative counts of using a document to obtain a pecuniary advantage with intent to defraud pursuant to section 229A(b) of the Crimes Act 1961 and 1 representative count of dishonestly using a document to obtain a pecuniary advantage pursuant to section 228(b) of the Crimes Act 1961, while practising as a medical practitioner.

2. On 10 December 2008, the Doctor was sentenced in the District Court at Christchurch to a total of 8 months home detention for these offences.

Finding

The Tribunal found the convictions reflected adversely on the Doctor’s fitness to practise. The Doctor conceded that the convictions reflected adversely on his fitness to practise.

Background

On the third day of the criminal trial, the Doctor pleaded guilty to three representative counts of using a document with intent to defraud, and one representative count of dishonestly using a document to obtain a pecuniary advantage.

The Doctor had obtained a total sum of $30,497.00 from this offending. He subsequently made full reparation of that sum.

The evidence led by the Crown in the Court proceedings was based on an analysis by HealthPAC, which identified the general medical services (GMS) claim forms which had been rendered for:

- Failed appointments, where the practice management system annotated “cancelled”, or “dna” (did not attend).
- Faxed or pharmacy generated prescriptions, which were generally signed by the Doctor but generated and faxed to identified pharmacies by a practice nurse. The patient did not attend the Doctor on these occasions.
- Nurse only consultations; those were for services normally provided by the practice nurse that did not require input from the Doctor.
• ACC consultations, where records indicated the initial and subsequent patient consultations were solely accident related and have been claimed accordingly from ACC; yet a GMS claim was also made.

• Flu vaccinations (separate subsidy) provided by the Doctor to patients at Merivale Retirement Village in 2003 and 2004, which were later subject to a GMS claim where there was no indication of such service having been provided.

• Consultations when the Doctor was shown as being on a “day off” for the date of service claimed or visiting Merivale patients at the time of the surgery appointments.

Reason for Finding

The Tribunal was completely satisfied that the conduct, which occurred in the context of the operation of a medical practice, undoubtedly reflected adversely on the Doctor’s fitness to practise. The fraudulent conduct offended not only the law; it breached the practitioner’s professional obligations to behave in a way which is ethical, honest and in accordance with the law. The Tribunal had no hesitation, therefore, in concluding that the charge was established.

Penalty

The Tribunal made the following orders:

1. The Doctor’s registration as a health practitioner was suspended for a period of nine months, with effect from 1 March 2012; this order will only take effect if the condition at paragraph 2(a) below is not fulfilled by 1 March 2012.

2. The following conditions were imposed:

   a The Doctor enter, as soon as a place is available, Stage 1 of the General Practitioners’ Education Programme offered by the Royal New Zealand College of General Practitioners, and to sit the Primex examinations of that programme.

   b The Doctor comply with all directions of the Health Committee of the MCNZ.

   c For a period of three years, the Doctor is not to control the medical practice in which he practises.

The Tribunal censured the Doctor and ordered him to pay $5,000.00 (exclusive of GST) in respect of the Tribunal’s costs of the hearing, and $15,000.00 (exclusive of GST) in respect of the PCC’s costs of inquiry and prosecution of the charge.

A copy of all medical reports relating to the Doctor which were placed in evidence, and a witness’s evidence, was ordered to be made available to MCNZ for the purposes of the conditions set out at paragraphs 2(a) & (b) above.
The Tribunal directed that a copy of this decision and a summary be placed on the Tribunal’s website. The Tribunal further directed that a notice stating the effect of the Tribunal’s decision be published in the New Zealand Medical Journal.

The Tribunal recommended that a competence review be undertaken by the MCNZ, as soon as possible. The Tribunal considered it would be appropriate, for the purposes of that review, to include consideration of issues of distraction during consultations (including home visits and emergency care).

The full decisions relating to the case can be found on the Tribunal web site at www.hpdt.org.nz

Reference No: Med09/133P
Brian Eden Oldham


Brian was born in Frankton Junction and the eldest of one brother and two sisters. He was educated at Hamilton High School, passing with Credit in the University of New Zealand Entrance Scholarship examination in 1948, completing his degree at Otago University in 1955.

From January 1956 to July 1957 he gained experience as a House Officer at Waikato Hospital. From there he moved and became a Junior Medical Registrar at Napier Hospital until the end of 1959.

On 22 January 1950, with a young family, Brian ventured to the United Kingdom and worked at Whittington Hospital, returning to New Zealand in December 1952.

Upon his return he commenced working as a General Practitioner in the practice of Dr Noel Baskett in Mission Bay, Orakei and Kohimarama. The partnership changed names and structure over the years and in May 1975 Brian set out and relocated to Christchurch as a Medical Officer with the Canterbury University.

Unfortunately, this was a short-lived appointment. In November, while visiting Auckland, he climbed a tree to prune it. A limb gave way and he fell over the tow bar of a trailer. This resulted in a compression fracture of L4 and L5 followed by a pulmonary embolism which involved his right lung.

After a rehabilitation of several months he recommenced General Practice in Patteson Avenue, Mission Bay. In early 1979 he moved and set up General Practice in Kohimarama with Dr Graham Hall who had moved up here from Paeroa.

From 1 November 1988 Brian became the part-time Medical Superintendent of Caughey Preston's Rest Homes and Geriatric Hospital. He sold the Practice at Kohimarama on 31 March 1995 and ceased General Practice. However he continued being Medical Superintendent of Caughey Preston until September 2000.

Brian married his first wife, Margaret Main in 1955. They had three children. He married his present wife Jan in 1978 and is survived by his sons Wayne, Jeffrey and Timothy Oldham and his step-children Hadley and Larissa Brown.

Whilst at University Brian was a keen tramper and very interested in plants. He belonged to the Auckland Botanical Society for 28 years and knew native plants inside out. On an earlier property he owned he propagated a vast array of natives and planted a hillside which is now quite a mature woodland.
In 1985 at a "1955 Class Reunion", he visited Dr John Common's garden in Rotorua where luxuriant rhododendrons were growing. As a result, Brian and Jan began growing both temperate and vireya rhododendrons and perfected the art of growing acidic-liking plants in alkaline conditions. They instigated the Auckland Rhododendron Group. Brian began hybridising vireya rhododendrons and now has 14 plants officially listed with the Royal Horticultural Society in England.

His final illness was of 4 months’ duration. He was nursed at home by Jan until the last 12 days, when he was moved to the Mercy Hospice for his final journey.

A gracious man is now at rest.

Jan Oldham (Brian's wife) compiled this obituary with assistance from Professor Sir John Scott.