THE NEW ZEALAND MEDICAL JOURNAL
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This Issue in the Journal

Increasing medical student interest in general practice in New Zealand: where to from here?
Phillippa Poole, David Bourke, Boaz Shulruf

This discussion paper looks at the level of interests of University of Auckland medical students in general practice within the wider context of NZ's future health needs and the current GP workforce. NZ students have levels of interest in general practice comparable with international data. With the limitation that this study measures intentions only and not who eventually worked in general practice, the level of interest is insufficient. Ways to increase interest in general practice are discussed. This might involve medical schools enrolling more students from groups with higher interest levels (rural, Māori and Pacific, NZ-born), a greater emphasis on the positive aspects of general practice, and on GPs as equals to other specialists.

Rural hospitals in New Zealand: results from a survey
Martyn Williamson, Andrew Gormley, Susan Dovey, Patrick Farry

We conducted a survey of all New Zealand rural hospitals (both DHB-governed and community governed) to describe the variety and range of work that they perform, and to examine the factors that might influence either of these. We found that their catchment populations range from 750 to 45,000. They are staffed by either Medical Officers of Special Scale or General Practitioners, they do not all have laboratory services and radiology services available on-site and they care for a wide range of patients and manage health conditions covering many different vocational areas of practice. We conclude that rural hospitals play an important and unique role in New Zealand's healthcare system which is currently unrecognised.

Rural general practitioner perspectives of the needs of Māori patients requiring palliative care
Ross Lawrenson, Dot Smyth, Erena Kara, Rachel Thomson

This paper discusses rural general practitioners perspectives on the palliative care needs of Māori. Whilst some rural doctors rarely encounter Māori patients, for others caring for Māori who are in need of palliative care is an important part of their practice. Key themes that appeared were the need for better communication when dealing with Māori, the need for more Māori nurses, and increased information about hospice/palliative care services for Māori. Further research in this area from a patient perspective would be valuable.

Is the prevalence of *CYP2C19* genetic variants different in Pacific people than in New Zealand Europeans?
Nuala Helsby, Michael Goldthorpe, Peter Gow, Janak de Zoysa

There are large differences in how people respond to therapy: some people respond well, others have little or no benefit and some will have side effects. This inter-individual variability may be due to differences in how the body degrades drugs. Drugs are degraded in the body by liver enzymes such as cytochrome P450 (CYP). Many of the CYP enzymes display variability which can be predicted from a person's genotype (*pharmacogenetics*). For example, CYP2C19, an enzyme involved in the metabolism of more than 10% of the top 200 prescribed drugs, has genetic variants (*CYP2C19*2 & CYP2C19*3*) which result in a poor metabolism in certain people. Another variant (*CYP2C19*17)* has been associated with ultrarapid metabolism. These variants and their consequences have been extensively studied in European populations, but little is known about their presence in Pacific peoples. This study suggests that further work in this area is warranted.

A multi-setting audit of the management of genital *Chlamydia trachomatis* infection

Jane Morgan, Andre Donnell, Anita Bell

In 2008, the New Zealand Ministry of Health drafted guidelines for chlamydia management that emphasised targeted testing of those with known risk factors, along with prompt identification of cases and treatment of their sexual contacts. This paper reports an audit of case management of genital chlamydia infection in a range of clinical settings in the Waikato District Health Board, using the proposed new guidelines as the recommended standard. Identified potential gaps include documentation of advice given as part of case management and, more importantly, lack of effective partner management. This baseline audit has helped shape the development of education and training resources for all local providers as part of implementation of the new management guidelines. Further, it is hoped that participation in the audit may in turn contribute to improved case management.

An audit of patients treated for syphilis at Auckland Sexual Health Service

Sunita Azariah

This paper is a retrospective review of the clinical management of 109 patients who were recently treated for syphilis at Auckland Sexual Health Service. Syphilis was rare in NZ until the last 5 years and most cases were acquired overseas. However syphilis is becoming increasingly common in NZ and the main people at risk are men who have sex with men. This is a trend that has happened in other developed countries such as the USA, UK, Europe and Australia. Correct treatment and follow-up is important to ensure that the infection resolves as syphilis can have serious complications. Syphilis can be transmitted sexually or from a pregnant woman to her unborn baby. This paper discusses the results of treatment and follow-up of 109 cases and concludes that management at Auckland Sexual Health Service compared well with UK audits of syphilis management.

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The future disposition of the New Zealand medical workforce

Des Gorman

The New Zealand health system is challenged. The extent of that challenge will increase significantly; even conservative predictions of the demand for health services are such that the supply of conventional health workers and resources will be well outstripped over the next decade.[1]

As is the case for all the OECD countries, the costs of modern health services are increasingly unaffordable.[2,3] New Zealand's situation is relatively worse than most of the other organisation's members because: we are small and relatively poor and, from a health perspective, "joined at the hip" to Australia; and, because of what is already an unsustainable reliance on immigrant health workers.[1,3]

The remedy of this complex demand-supply-affordability mismatch is to be overseen in part by Health Workforce New Zealand (HWNZ). The predictable mission is to achieve a sustainable and fit for purpose health workforce. The consequentially proposed tactical responses are underpinned by central themes of intelligent planning, innovative (and hence disruptive) service configurations and models of care,[4] and by clinical leadership.[5]

The paper in this issue of the *Journal* by Professor Phillippa Poole and her colleagues at the University of Auckland attends to two of these elements,[6] namely health intelligence, which can enable sensible planning, and clinical leadership. There is a hypothesis that is central to this cited paper and it is that we need a much greater proportion of our medical graduates to choose a career as general medical practitioners (GPs) and that we especially need them to work in rural and metropolitan areas of high health need. This posit is agreed and has supportive financial and health outcome data.[1,7]

Acceptance of this hypothesis is also at the core of the recent agreement between HWNZ, the Royal New Zealand College of General Practitioners and the New Zealand Medical Council to work together to reconfigure both the training and employment of GPs. A new scheme is intended for introduction at the beginning of 2012 and is expected to include expanded scopes of practice and especially in the context of hospital-based roles.

Health planning has to be informed; at the risk of being thought too cynical, it is my opinion that we are currently "drowning" in data, but, are largely free of health and health system intelligence. Some data collection (monitoring) is distracting and perhaps even destructive. I am reminded of the analogy of a gardener assessing the health of their plants by pulling them out of the ground to inspect the roots.[8]

To illustrate this point, most of the variance in our health system's productivity from 1999 onwards (a notable increase to 2001, a steady but significant decline from then until 2008/9 and an improvement since) remains unexplained.[9,10] This situation is

unacceptable as the contextual "why" is essential to enable policy setting, planning, funding and implementation.

Central to any programme aimed at increasing the attraction of careers as GPs is an understanding of what determines career choice for today's medical graduates, as compared to the dinosaurs of my generation. Unless these factors are understood explicitly with respect to influence and direction we will not be able to respond adequately at a tactical level to this strategic challenge. Serendipity has been the cornerstone of New Zealand health system planning and delivery for too long. It is for good reasons then that the National Health Board and HWNZ are concentrating on establishing an inclusive and across-sector health intelligence.

Professor Poole and colleagues base their conclusions on career intentions as compared to actual choices, but, their and the University of Otago's student and graduate tracking systems are sadly young and this is an informative and valuable first contribution that will be influential in the very short term.[11]

The clinical leadership shown by this Auckland group is also to be encouraged as we doctors recognise the broader health system obligations that are part of our professionalism. Quite simply, the reforms we need are only likely to be successful if clinically led. I would encourage all readers to recognise this challenge and to contribute as best they can.

Health Workforce New Zealand has a website for you to access and for you to share your opinions and advice (www.healthworkforce.govt.nz). Both are more than welcome; they are essential in fact.

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Author information: Professor Des Gorman, Executive Chairman, Health Workforce New Zealand, Wellington

Correspondence: Professor Des Gorman, Health Workforce NZ, Ministry of Health, PO Box 5013, Wellington 6011, New Zealand. Fax: +64 0(4) 4962191; email: d.gorman@auckland.ac.nz

References:

1. Gorman DF, Brooks PM. On solutions to doctor shortages in Australia and New Zealand. Medical Journal of Australia 2009;190:152-6.
2. Fogel RW. The escape from hunger and premature death. 1700-2100. Cambridge, Cambridge University Press, 2004.
3. Zurn P, Dumont J-C. Health workforce and international migration: can New Zealand compete? WHO DELSA/HEA/WD/HWP (2008)3.
4. Christensen CM, Bohmer R, Kenagy J. Will disruptive innovations cure health care? Harvard Business Rev 2000; Sep–Oct:102-111.
5. Brown J, Connolly A, Dunham R, et al. In Good Hands. Report of the Minister of Health's Taskforce 2009. http://www.nzihm.org.nz/documents/InGoodHandsReport.pdf
6. Poole P, Bourke D, Shulruf B. Increasing medical student interest in general practice in New Zealand: where to from here?. N Z Med J 2010;123(1315). http://www.nzma.org.nz/journal/123-1315/4137/content.pdf
7. Baicker K, Chandra A. Medicare spending, the physician workforce, and beneficiaries quality of care. Data Watch, 07 April 2004, W4-184-97.
8. Onera O'Neill, Reith Lecturer, 2002.

9. Manipathy M. Productivity performance of New Zealand hospitals 1998/99 to 2005/06. New Zealand Business Roundtable October 2008.
10. The New Zealand Medical Workforce in 2008 Medical Council of New Zealand 2009. http://www.mcnz.org.nz/portals/0/publications/workforce_2008.pdf
11. MSOD project: a national database for medical education research and workforce planning. Medical Deans Australia and New Zealand, 2009. http://www.medicaldeans.org.au/msod.html

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Postgraduate medical education in New Zealand: at the crossroads

Don Simmers

Earlier this month a memorandum of understanding was signed between the Medical Council (MCNZ), Health Workforce New Zealand (HWNZ), and the College of General Practitioners (RNZCGP).

The three parties have agreed to "implement a revised vocational training programme for general practitioners from 2012".[1] The new programme aims to raise the popularity of the vocation of general practice among medical students and junior doctors and involves GP registrars embarking on a 3-year course which combines training in both community and hospital settings. Sitting alongside this development is the announcement that it will also be "scoping the feasibility of requiring doctors to have vocational registration in order to work in general practice in roles other than as a trainee"[2]—resulting in a quantum leap of numbers undergoing GP registrar training.

RNZCGP's Fellowship of the Division of Rural Hospital Medicine, operational since December 2008, has many similarities with this proposal.[3] It is a combination of sitting relevant papers available at the two medical schools with experiential registrar level learning in general practice and at various provincial hospitals. It concludes with a comprehensive assessment.[4,5] The recently signed memorandum starts with reviewing this well thought-out programme and it is to be hoped, if not assumed, that the enormous effort that has already gone into establishing the Rural Hospital Medicine programme will be recognised and built on.

The new 3-year programme, if implemented and funded appropriately, could result in significant improvements to the delivery of New Zealand's health care, while compulsory vocational registration will solve a number current thorny problems around lack of vocational registration in some parts of the health system. But the change process and initiation of the programme needs to be handled carefully if some of its drawbacks are to be minimised.

In explaining the effects of the new programme in his interview with Radio New Zealand,[6] Professor Des Gorman described how GPs could admit and look after their patients when they need acute hospital treatment. While this may be a possibility in some provincial hospital settings—and already occurs in rural facilities—it would seem a most unlikely scenario in the major centres. The costs alone would be prohibitive no matter how funding is structured, but there are also issues of unplanned disruptions to GPs' surgeries and gradual erosion of skills and knowledge used only occasionally.

Acute medical admissions within a GP's practice population are relatively uncommon. A far better approach is to include the inpatient's GP in any decision-making, particularly if the clinical situation is complex. There is, of course, no good reason why this should not be a routine occurrence now.

A much more obvious improvement will be the ability of GPs to expand the depth, breadth, and quality of the services they already provide in community-based settings. The increased knowledge, experience, and confidence that will come from the registrar experience will result in fewer hospital specialist referrals, fewer acute admissions and better handling of chronic disease. However, there will need to be a number of structural changes made to fully realise these advances.

There will need to be better networking between specialists and GPs, and GPs will need an unfettered access to imaging. This will have to be matched by rounds with radiologists and more than the current cursory contacts will have to be arranged with pathologists, pharmacists and other allied health professionals. All of this takes time—and money.

Expansion of GP services into the vacuum created by the decades-old demise of the general physician is an obvious attraction of this new scheme. Also, there are clear advantages in GPs providing more comprehensive ED services, mental health care, and elderly health care. GP registrars need to be encouraged to pursue areas of special interest during their training and have this recognised through gaining recognisable postgraduate qualifications. They could continue to develop and use this expertise through working in specialist-led clinics, or provide specialist services in outreach clinics, or provide services for their peers in their own integrated family health centres.

GP obstetricians need to reappear in provincial and rural areas and be comfortable with a basic range of interventions as well as cope with any obstetric emergency. But how far should this "generalists can do anything" thinking go? Should there be a return of the GP anaesthetist, and should GPs get into laparoscopies or perform caesarean sections? In some provincial areas of New Zealand, the answer may well be yes, given the perennial difficulties of retaining a range of specialist services in these locations.

As mentioned, the process of developing this programme will have to be well managed. Providing the educational environment in which this greatly increased population of GP registrars will work in will be a significant challenge. Consultation rooms plus the availability of quality teachers and supervisors in the general practice setting loom as the biggest hurdles. General practice cannot be expected to meet these challenges on its own—government support and funding will be essential. The retention of university-led education programmes, as developed for Rural Hospital Medicine training, where registrars have time away from service-dominated clinical work, needs to be considered.

There is already a shortage of GPs and of those who are left many are near retirement.[7] In urban areas, at least, only a few will have the necessary skills to consult, let alone teach at the appropriate level required. There will need to be a significant investment in new or expanded facilities. There will need to be significant investment in teaching the teachers and provision of ongoing support, including an appropriate income.

Added to this are any number of issues including grandfathering (proper recognition of GPs already qualified under old regulations), registrars who only wish to work

part-time, the fate of those who fail, and not least, the relationship between RNZCGP and the other specialist colleges.

If all of this is not a big enough conundrum, then added to this is the anticipated increase in medical school graduates looking for work in New Zealand from 300 per annum in 2009[8] to possibly 500 in about 5 years' time. At current employment levels for PGY1s within the hospital system, an extra 200 positions will need to be found, and by default these will have to be in community settings.

The deliberations of the working group responsible for the review are awaited with keen anticipation.

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Author information: Don Simmers, GP, Newtown Medical Centre, Wellington and NZMA Board Member, Wellington

Correspondence: Dr Don Simmers, NZMA National Office, PO Box 156, Wellington, New Zealand. Fax: +64 (0)4 4710838; email: dsimmers@xtra.co.nz

References:

1. Health Workforce New Zealand's website: http://www.healthworkforce.govt.nz/news/2010/05/07/joint-approach-to-gp-training-reform-announced
2. Memorandum of Understanding http://www.rnzcgp.org.nz/assets/Uploads/e_pulse_pdf/2010_pdf/Memorandum-of-Understanding.pdf
3. Division of Rural Hospital Medicine training programme at RNZCGP website http://www.rnzcgp.org.nz/assets/Uploads/education/Division-of-Rural-Hospital-Medicine-Training-Programme.pdf
4. Nixon G, Blattner K. Recent developments in rural hospital medicine I: Rural hospital medicine special scope. NZ Family Physician 2008;35(6):402-4.
5. Dawson J, Nixon G. Recent Developments in rural hospital medicine II: Experiential pathway to Fellowship of the Division of Rural Hospital Medicine. NZ Family Physician 2008;35(6):405–6.
6. Radio New Zealand website http://www.radionz.co.nz/national/programmes/ninetonoon/20100506
7. 2008 RNZCGP Membership Survey http://www.rnzcgp.org.nz/assets/Uploads/research/Research-WorkforceSeries84web.pdf
8. Dr Brandon Adams, ACE Programme Coordinator, personal communication, 2009.

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Increasing medical student interest in general practice in New Zealand: where to from here?

Phillippa Poole, David Bourke, Boaz Shulruf

Abstract

Introduction To meet increasing health demands, increasing the proportion of local graduates entering general practice is imperative.

Methods Students entering or exiting The University of Auckland's medical programme from 2006 to 2008 were invited to complete a tracking project survey. Levels of interest in general practice were determined along with characteristics associated with a greater or lesser interest in this career.

Results 712 students replied—a response rate of 80%. At entry, 40% of students had a *strong interest* in a career in general practice, and at exit, 29% (P =0.003). A quarter at each time point had *no interest.* The proportion of domestic students born outside NZ or Australia was 160/376 (42.5%). There were significantly higher levels of interest in general practice among females, students born in NZ, and those from outside Auckland - especially rural origin. Flexibility in career was more important to students with a *strong interest* in general practice than those with *no interest*.

Discussion Auckland medical students have levels of interest in general practice comparable with international data. Increasing this interest further may require admission of a greater proportion of students from those groups with higher interest levels, greater emphasis on the positive aspects of general practice, and on GPs as equals to other specialists.

In New Zealand (NZ) and globally, health care delivery is jeopardised by shortages in the general practitioner (GP) workforce. In 2008, a third of the doctors in NZ were GPs (3435/10,552 or 32.5%).[1] This proportion has been stable in recent years, however, it masks vulnerability in this workforce.

The GP recruitment rate is lower than the leaving rate; almost one-third of GPs, mostly male, intend to retire or emigrate in the next 5 years,[2] compared to about a quarter of GPs in the UK.[3] Over 40% of NZ GPs are international medical graduates with this factor being associated with a lower likelihood of staying in NZ in the longer term.[1]

Over the past 8 years, the average number of hours worked by GPs, on average, has fallen from 42 to 38 per week.[2] General practice is a popular specialty for women doctors in NZ. However, as women work about seven hours fewer per week than their male counterparts[1], shortages will be further exacerbated as the proportion of women in general practice approaches 50%.

Specific initiatives that may address GP shortages in NZ are underway:

- Since 2004 there have been 40 extra places per year for rural origin medical students;
- Up to 300 new student places will be created over the next few years;
- The number of GP registrar training places has increased;
- The NZ government has offered $30,000 financial incentives to doctors who work in hard-to-staff regions then train in general practice, general medicine, general surgery, psychiatry or pathology.[4]

Recently, the Medical Training Board noted—'of special importance is the need to direct much more of the medical school intake of the future into general practice.'[5] To inform medical schools' contribution to increasing the number of GPs, this study aimed to use student data from one NZ school to:

- Identify student characteristics at entry associated with greater or lesser interest in general practice;
- Compare interest in general practice between entry and exit cohorts, and explore possible reasons for any difference.

Methods

The University of Auckland has one of two NZ medical schools for a population of over four million. A quarter of NZers live in the greater Auckland area, with another half outside the major cities. Students for the six-year Auckland programme are selected after one year at university, or a prior degree.[6] The majority are domestic students: i.e. NZ or Australian permanent residents or citizens. In 2009, applicants competed for 155 domestic places, 30 of which were reserved for Māori and Pacific admission scheme students (MAPAS), and 20 for students of rural origin (ROMPE).

Since 2006, medical students have been invited to participate in the Faculty of Medical and Health Sciences Tracking Project, described previously.[7, 8] This study used data from medical students completing a Tracking Project questionnaire at entry or exit in 2006, 2007 or 2008. Both entry and exit questionnaires have a similar question on career intention: for a range of 18 specialties (including general practice), students indicated whether they had a *strong interest*, *some interest* or *no interest* in pursuing that career. The entry questionnaire also asks about student background and demographics. Purposive subgroups were chosen for further analysis: entry pathway, place of birth, home address and gender. The exit questionnaire includes questions about impacts on career choices.

All students returning a survey and completing the relevant question were included in the analyses, except for the comparison between those from within and outside Auckland, from which full-fee paying international students were excluded. Categorical data were analysed using Pearson's chi-square except where Goodman and Kruskal's gamma test was used.

Results

Response rates averaged 82% (397 students) in the three entry cohorts and 79% (322) in the three exit cohorts, however not all students answered every question. The levels of interest in a GP career of students at entry and in selected admission subgroups are shown in Table 1.

Table 1. Levels of interest in general practice at entry, overall and by entry pathway - number (%)

Variables	Strong interest	Some interest	No interest	Comparison with other students
Entry (all)	157 (40%)	129 (33%)	102 (26%)	
- ROMPE	31 (61%)	10 (20%)	10 (20%)	*P* = 0.006
- MAPAS	32 (52%)	13 (21%)	17 (27%)	*P* = 0.059
- Graduate	41 (51%)	21 (26%)	19 (23%)	*P* = 0.102

Of the 397 entering students, 187 (47%) were born in a foreign country but of these, 6 (1.5%) were born in Australia, and 21 (5%) were international full-fee paying students. The proportion of domestic students not born in Australia or NZ was 160/376 or 42.5%. The levels of interest in a general practice career by country of birth, home address in NZ, and language spoken at home are shown in Table 2.

Table 2. Levels of interest in general practice by birthplace, address in NZ and language spoken at home—number (%)

Variables	Strong interest	Some interest	No interest	Comparison
NZ-born	99 (47%)	60 (29%)	51 (24%)	*P = 0.005*
Born outside NZ	58 (31%)	70 (37%)	59 (32%)	
From out of Auckland	61 (48%)	28 (22%)	39 (30%)	*P = 0.006*
From Auckland	81 (34%)	89 (37%)	71 (29%)	
English main language at home address	127 (44%)	87 (30%)	74 (26%)	*P = 0.011*
English not main language at home address	30 (27%)	43 (40%)	36 (33%)	

A comparison of the levels of interest at entry and exit, by gender, is shown in Table 3. Factors at exit such as marital status and having children were not associated with the level of interest in general practice (data not shown). Levels of interest in general practice in exiting students were significantly lower than in students at entry (p = 0.003).

Table 3. Levels of interest in general practice at entry and exit, overall and by gender—number (%)

Gender	Strong interest	Some interest	No interest	Responses	Gender comparison
Entry (all)	**157 (40%)**	**129 (33%)**	**102 (26%)**	**388 (100%)**	
Female	100 (48%)	61 (29%)	48 (23%)	209 (63%)	*P* = 0.006
Male	57 (32%)	68 (38%)	54 (30%)	179 (37%)	
Exit (all)	**89 (29%)**	**136 (44%)**	**83 (27%)**	**308 (100%)**	
Female	61 (32%)	90 (47%)	42 (22%)	193 (63%)	*P* = 0.027
Male	28 (24%)	46 (40%)	41 (36%)	115 (37%)	

Students at entry indicated a *strong interest* in four disciplines on average; in the exiting students this was three disciplines, but the range was wide. At entry, general practice was the fourth most popular specialty of the 18 listed; behind medical

subspecialties, general surgery and surgery subspecialties. At exit, it was second only to medicine subspecialties.

In response to the exit survey question, 'please rate the extent to which your interest in [general practice] was determined by your clinical attachment', 172/315 (55%) of students reported a *positive effect* of the general practice attachment on their career choice, 96/315 (30%) *little* or *no effect*, and 47/315 (15%) a *negative effect*.

Students were asked in another question to 'rate the importance of selected factors on their career choices'. We compared how students with a *strong interest* in general practice and those with *no interest* rated each of the factors (see Table 4). Compared with those with *no interest* in general practice, students with a *strong interest* were significantly more likely to rate 'flexibility', and "area of need in health system' as important factors in career choice, and 'experiences in lectures / teaching' as less important. The other differences were not significant.

Table 4. Comparison of factors affecting career choice between those with *strong interest* in general practice, and those with *no interest*

Factors affecting career choice	Strong interest in general practice (n = 92)			No interest in general practice (n = 92)			Statistical significance	
	Positive Effect	Little/No Effect	Negative Effect	Positive Effect	Little/No Effect	Negative Effect	Gamma	*P*
Positive experience during clinical attachments	88	4	0	91	1	0	-0.61	0.17
Flexibility of specialty	87	5	0	67	23	2	0.73	< 0.001
Positive experience of lectures/teaching	53	39	0	67	25	0	-0.33	0.03
Medical role models	76	14	2	84	8	0	-0.38	0.07
Area of need in health care	47	43	2	34	54	4	0.28	0.04
Remuneration available	32	58	2	29	58	5	0.11	0.15
Friend/Family in area	21	67	4	16	69	7	0.19	0.23
Extent of student debt	8	73	11	9	70	13	0.028	0.868

Discussion

Current levels of interest in general practice —In recent years, 40% of medical students at entry to one of NZ's two medical schools signalled a *strong interest* in general practice. Over the same time period, the proportion of graduating students expressing a *strong interest* was 29%. Just over a quarter of both entering and exiting students reported *no interest* in a GP career. Allowing for differences in definitions and study methods, the proportion of Auckland students with a *strong interest* is consistent with levels of interest shown by UK and Australian medical students.

A quarter of medical graduates in the United Kingdom (UK) list general practice as their first choice of career, however this varies by medical school from 12 to 32%.[9] A recent report from Australia suggests 25% of graduates anticipate a GP career.[10] These levels are higher than seen in the USA, where the proportion of medical

students interested in a GP career reportedly dropped from 35.6% in 1999 to 21.5% in 2002.[11]

The response rate was about 80% however we believe the results are generalisable to all Auckland students for two reasons: firstly, the student backgrounds are representative of the medical student body at large; secondly, in the questions about career, general practice appeared as one specialty in an alphabetical list with 17 others.

The major limitation of this study is that it does not yet allow paired comparisons between intentions at entry and exit intentions, and thence with longer term data on eventual location and vocational scope of practice. For example, the observed drop in interest at exit may be explained by cohort bias. As an example, the introduction of ROMPE from 2004 may have prompted greater interest in a general practice career outside urban centres in the entry cohorts.

Despite the limitations we believe that the study is large and robust enough on which draw some conclusions as to what schools might do to increase further the proportion of medical students predisposed to a general practice career in NZ. These are considered under student and curriculum factors.

Student factors—There were definable subgroups of Auckland students with a greater or lesser interest in general practice. Students with a *strong interest* were more likely to be born in NZ, to speak English as a primary language at home, and to have come from outside the Auckland region.

Nearly two-thirds of ROMPE students had a *strong interest* in general practice and levels were significantly higher than in non-ROMPE students. This is consistent with other studies which show student background is three times more important than curriculum experiences in a rural career choice.[12, 13] Indeed, other recent data from Australia and NZ confirm the strong relationship among rural background, intention to work outside major centres and generalist career intent.[14, 7]

There were higher levels of interest in general practice among MAPAS students, but this did not reach statistical significance. This may be a Type 2 error based on small numbers, as current Māori and Pacific doctors are more likely to work in general practice than other disciplines.[1] increasing the number of Māori and Pacific students is a priority based on equity grounds,[6] but these data may provide another argument to do so.

With respect to graduates, our findings are consistent with others: graduates may have greater interest in general practice at entry than their peers, but their career paths ultimately prove similar to other doctors.[15]. The pros and cons of increasing the number of graduate entrants in NZ were discussed in this journal recently.[6]

At both entry and exit, females had significantly higher levels of interest in general practice than their male peers. Additionally, a desire for flexibility was the strongest differentiating factor in career choice between those with a *strong interest* in general practice and those with *no interest*. These are not new findings; general practice has long been the career choice for a higher proportion of women than men and the first choice for women. Women doctors seem prepared to trade some career aspiration for career flexibility.[16] Given the biological and social realities for women with children,

continued promotion of the flexibility of training and work, and career opportunities in general practice, seem paramount.

An unexpected finding of this study was that such a high proportion of domestic students in this programme was born outside NZ or Australia, with South Africa and Asia (including India) being the most common regions of origin. The proportion is similar to that reported in Australian medical schools in the 1990s[17] with both being approximately double the proportion of overseas-born domestic medical students reported in the UK.[18]

As in the current study, overseas-born medical students in the UK are less likely to indicate an interest in general practice, with one explanation offered being the low prestige of general practice their birth countries.[18] Over 60% of medical students in this programme come from the Auckland area where there has been rapid diversification in the population in recent years. In the 2006 census, only 64% of the Auckland population identified as New Zealand European or 'New Zealander' compared with 76% in 1991.[19]

Some might regard our findings as a reason to reduce the numbers of overseas-born students selected for the programme on the basis they are less likely to indicate a *strong interest* in a career in general practice. It should be noted, however, that the great majority of overseas-born domestic medical students are now NZ citizens. As such, they have demonstrated commitment to NZ, and are subject to the same rights as other citizens. At this stage we would argue that the evidence is yet not strong enough for such a step - two thirds of students born overseas have at least *some interest* in general practice.

Curriculum—The determinants of a student career choice in general practice are complex.[20] A recent review found factors intrinsic to the student to be the most important, although external factors such as learning experiences and serendipitous events, especially advice that general practice is a career of 'last resort', also have an impact.[20] One study reported only 30% of those initially interested in primary care remained interested at all three time points in the curriculum, compared with 68% of those interested in non-primary specialties.[21] In that study, the proportion interested in primary care declined from 44% at entry to 32% in the final year.[21]

A negative effect of a general practice attachment on career choice was reported by 15% of our students, although it is not possible to determine from this study why this was. Others have voiced concerns regarding systematic bias in the medical education continuum towards careers in non-primary care fields.[22] The importance of optimism of GPs about their specialty in their interactions with students cannot be overstated.[23]

The footprint of general practice in the Auckland programme has been similar since 2000, apart from the introduction of a Year 5 regional-rural pathway for 20 volunteer students from 2008.[24] Students undertake general practice attachments in Years 4 (4 weeks), 5 (2 weeks) and 6 (6 weeks). The Year 4 and 6 attachments are further subdivided into urban and rural components. The optimum undergraduate student experience (e.g. timing, length, curriculum, and environment) for promotion of a general practice career is not well defined, especially for those students who do not have a *strong interest* in general practice to start with.

Evidence is mounting that to stimulate a career in rural general practice, an attachment needs to be at least a month long,[25, 26] but much of this evidence comes from rural immersion programmes for which students have self-selected. Fewer and longer primary care attachments in urban areas may be better than repeated short ones, but this needs further study. Others have suggested engagement of students in general practice interest groups throughout their programme is useful.[27]

Conclusions

Medical schools have been challenged to ensure a greater proportion of medical graduates enter general practice. The students in this study will become specialists between 2012 and 2020; NZ needs all those signalling a *strong interest* in general practice to enter it, and many more.

In time, data from this project and the Australasia-wide Medical Student Outcome Database (MSOD) will help confirm the optimum configuration of clinical attachments for promoting a general practice career, and how student intentions relate to eventual practice.[14]

Our study suggests the following approaches would be useful immediately:

- Increasing the proportion of domestic students from outside Auckland, especially from rural areas;
- Highlighting the positive aspects, flexibility and range of GP careers;
- Ensuring GPs engaged in primary health care are consistently seen by students as equivalent to other medical specialists.

To achieve the second and third point will require synergy of effort among medical schools, the RNZCGP, DHBs, MCNZ and the new Ministry of Health workforce agencies.

Disclaimer: The opinions are those of the authors and not necessarily those of the University of Auckland.

Author information: Phillippa Poole, Head, Medical Education Division, School of Medicine, University of Auckland; David Bourke, Medical Registrar, formerly Clinical Medical Education Fellow, University of Auckland; Boaz Shulruf, Senior Lecturer, Centre for Medical and Health Sciences Education, University of Auckland.

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Correspondence: Associate Professor Phillippa Poole, University of Auckland, Faculty of Medical and Health Sciences, Private Bag 92019, Auckland, New Zealand. Email: p.poole@auckland.ac.nz

References:

1. The New Zealand Medical Workforce in 2008. Medical Council of New Zealand, 2009. http://www.mcnz.org.nz/portals/0/publications/workforce_2008.pdf
2. Pande M, Stenson A. GP workforce and demographics in 2007: gender, age, ethnicity, and work arrangements. NZ Fam Physician 2008;35:191-6.

3. Sibbald B, Bojke C, Gravelle H. National survey of job satisfaction and retirement intentions among general practitioners in England. BMJ 2003;326:22.
4. Ministry of Health. Voluntary Bonding Scheme Wellington: Ministry of Health 2009.
5. The future of the medical workforce: discussion paper. Ministry of Health, 2008. http://www.moh.govt.nz/moh.nsf/pagesmh/8413/$File/futureofworkforce.pdf
6. Poole P, Moriarty H, Wearn A, Wilkinson T, Weller J. Medical student selection in New Zealand: looking to the future. NZ Med J 2009;122:88-100.
7. Pasley T, Poole P. Characteristics of University of Auckland medical students intending to work in the regional/rural setting. NZ Med J 2009;122:50-60.
8. Poole P, McHardy K, Janssen A. General physicians- born or made? Use of a tracking database to answer workforce questions. Int Med J 2009;39:447-52.
9. Goldacre M, Turner G, Lambert T. Variation by medical school in career choices of UK graduates of 1999 and 2000 Med Educ 2004;38:249-58.
10. Students warming to general practice. Australian Medical Association (WA) http://www.amawa.com.au/media/releases/2009/2009_02_25.asp
11. Newton D, Grayson M. Trends in career choice by US medical school graduates. JAMA 2003;290:1179-82.
12. Hsueh W, Wilkinson T, Bills J. What evidence-based undergraduate interventions promote rural health? NZ Med J 2004;117:U1117.
13. Rabinowitz H, Diamond J, Markham F, Paynter N. Critical factors for designing programs to increase the supply and retention of rural primary care physicians. JAMA 2001;286:1041-8.
14. Jones M, Humphreys J, Prideaux D. Predicting medical students' intentions to take up rural practice after graduation Med Educ 2009;43:1001-9.
15. Rolfe I, Ringland C, Pearson S-A. Graduate entry to medical school? Testing some assumptions. Med Educ 2004;38:778-86.
16. Lawrence J, Poole P, Diener S. Critical factors in career decision making for women medical graduates. Med Educ 2003;36:1-9.
17. Hawthorne L, Minas I, Singh B. A case study in the globalization of medical education: assisting overseas-born students at the University of Melbourne. Med Teach 2004;26:150-9.
18. Morrison J, Murray T. Career preferences of medical students: influence of a new four-week attachment in general practice. Br J Gen Pract 1996;46:721-5.
19. Ethnicity. Statistics New Zealand, 2009. http://www.stats.govt.nz/people/population/auckland-regional-council-project/ethnicity/ethnicity.htm
20. Shadbolt N, Bunker J. Choosing general practice: a review of career choice determinants. Aust Fam Physician 2009;38:53-5.
21. Compton M, Frank E, Elon L, Carrera J. Changes in U.S. medical students' specialty interests over the course of medical school. J Gen Intern Med 2008;23:1095-100.
22. Bodenheimer T, Grumbach K, Berenson R. A lifeline for primary care. N Engl J Med 2009:2693-6.
23. O'Hagan L. Whither general practice education in the next 5–15 years? NZ Fam Physician 2006;33:364-7.
24. Poole P, Bagg W, O'Connor B, et al. The Northland Regional-Rural program (Pūkawakawa): broadening medical undergraduate learning in New Zealand. Rural Remote Health 2010;10 (online):1254.
25. Denz-Penhey H, Shannon S, Murdoch C, Newbury J. Do benefits accrue from longer rotations for students in rural clinical schools? Rural Remote Health 2005;5:414-22.
26. Tesson G, Strasser R, Pong R. Advances in rural medical education in three countries: Canada, the United States and Australia. Rural Remote Health 2005;5:397-405.
27. Kerr J, Seaton M, Zimcik H, et al. The impact of interest. How do family medicine interest groups influence medical students? Can Fam Physician 2008;54:78-9.

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Rural hospitals in New Zealand: results from a survey

Martyn Williamson, Andrew Gormley, Susan Dovey, Patrick Farry

Abstract

Aim To describe the variety and range of work that New Zealand rural hospitals perform, and to examine the factors that might influence either of these, including: the characteristics of the doctors who work in rural hospitals; the facilities available; and environmental factors (such as geographical isolation and the size of the catchment population).

Method Structured postal questionnaire.

Results There are about 44 rural hospitals in New Zealand, depending on definition. Catchment populations range from 750 to 45,000. They are staffed by either Medical Officers of Special Scale (MOSSes) or General Practitioners (GPs). They have varying levels of resources such as laboratory services and radiology services available on-site. They care for a wide range of patients and manage health conditions covering many different vocational areas of practice.

Conclusion Rural hospitals should be defined and recognised as a distinct entity to assist the development of appropriate vocational training pathways for their staff. They play an important and unique role in New Zealand's healthcare system which is currently unrecognised.

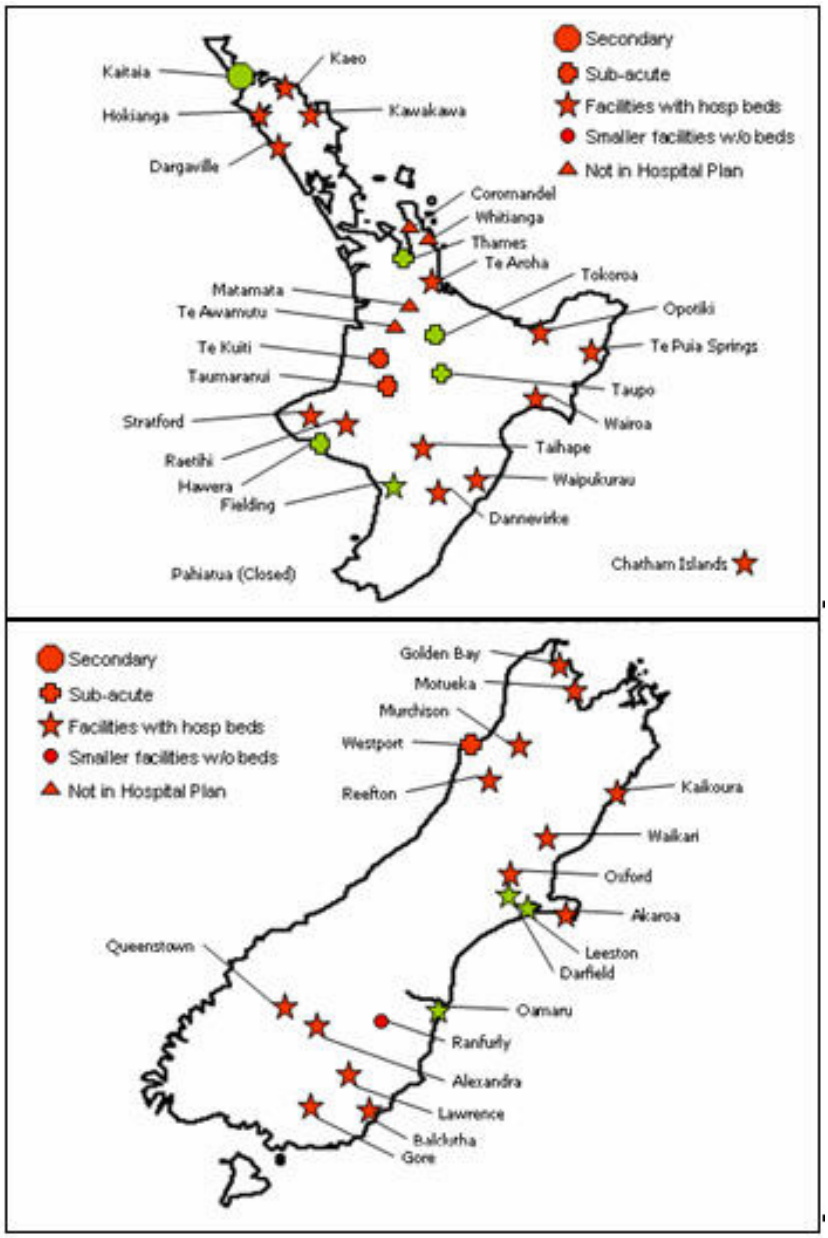
There is relatively little research about rural hospitals in New Zealand. In 1999, Janes proposed a definition of New Zealand rural hospitals: *"a facility with no resident medical specialists, where acutely ill patients are admitted and cared for solely by generalist doctors, either general practitioners (GPs) or medical officers of special scale (MOSSes)"*.[1] He also listed the hospitals that complied with this definition and provided additional information such as acute bed numbers, population served, travel time to base hospital and the number of doctors working at these rural hospitals categorised by their employment status.

In New Zealand there is no official definition of a rural hospital. The terms used in the Ministry of Health's hospital services plan are "health centres" (with and without beds), "sub acute units" and "secondary hospitals".[2] Janes' definition of rural hospitals included facilities listed in all of these categories.

The Ministry of Health website currently refers to "public" hospitals, which it lists.[3] This list does not include some rural hospitals because they are run by community organisations. The Ministry of Health deems them to be "private", although they are supported by public money, funded via contracts with their respective District Health Boards.

Figure 1 shows the geographical location of all the hospitals in rural New Zealand locations, including the Ministry of Health's classification of the hospitals, the hospitals included on the Ministry of Health list, and the hospitals in Janes' survey.

Figure 1. The location of rural hospitals in the study by Janes[1] and also in the present study



Note: Hospitals in green appear in our study but not in Janes' study. Hospitals denoted by a triangle are not in the Ministry of Health Hospital Services Plan.[2]

Despite rural hospitals serving approximately 10% of the population[1] rural hospital practice is in its infancy in terms of development as a recognised branch of medical practice. Nixon[4] and Dawson[5] have recently described the new vocational pathway to specialist registration of rural hospital doctors. This started in 2008.

It is crucial for the provision of safe and equitable services to our rural communities that we learn more. What conditions can and should be managed in these hospitals? How well are they meeting community needs? What type of training should be available for their staff? How well do they fit into the health system overall and where are the optimum examples from which we can learn?

This survey is a first step in defining the work of New Zealand rural hospitals. Factors we thought might influence the nature of services provided were distance from base hospital, the make-up of the medical workforce, the nature of governing body and the size of the catchment population.

Method

We defined a rural hospital as: "a hospital in a rural setting at least 30 minutes from a secondary or tertiary level base hospital, where acutely ill patients are usually admitted and cared for by generalist doctors who may as a consequence, be required to practice in a variety of different vocational domains at any one time." This definition retains the key feature of rural hospitals in New Zealand, which is the presence of a workforce of generalist doctors who respond to a wide range of presenting medical problems. It also includes hospitals that may have the services of one or more specialists for some of the time.

The two major groups in the rural hospital generalist medical workforce are GPs who, in addition to their practice, work at the local hospital and are often salaried on MOSS rates appropriate to the workload, including out of hours cover, and the smaller group of MOSSes whose sole or main work is at the hospital. Our questionnaire distinguished between these two groups.

Forty four hospitals met our definition of rural. These were contacted by phone to obtain the name of a person to receive the questionnaire (i.e. Nurse Manager, Hospital Manager etc). Questionnaires were posted to all 44 rural hospitals in 2002/03, along with a postage-paid reply envelope and a covering letter. After 3 months, non-respondents were contacted by phone, and if required, another copy of the questionnaire was sent out. This process was repeated with the survey being closed after 1 year. Contact people did not necessarily complete the forms themselves.

We sought information about the facilities available at these hospitals such as laboratory tests and radiology services, and other general information. The questionnaire also nominated 35 medical conditions representing different vocational domains within rural hospital practice.

For each condition, respondents were asked about the general course of action taken in the first 24 hours if a patient with such a condition presented at the hospital: "*usually managed", "sometimes managed"* or *"seldom managed"* at the hospital, or "*always transferred"* to the base hospital. A similar question listed 23 procedures and for each asked whether it could be performed if required. "*Managed"* was defined as "providing more than 24 hours care". The categories "*usually managed"* and "*sometimes managed"* were combined for analysis.

Information about the availability of laboratory and radiology services was also collected. A list of 11 laboratory tests was given, and for each test type, respondents were asked whether urgent results could be available with 60 minutes, and also whether bedside/near patient tests could be performed for 9 tests.

The analysis examined the effect of key features such as time from base hospital (<90mins,>90mins), size of catchment population and type of doctor working at hospital, (identified as GP-primarily working in general practice or MOSS-primarily employed to work at the rural hospital). Because of skewed distributions, medians were used to represent typical responses.

Results

We received responses from 31 of the 44 rural hospitals (70%), although not all responses contained complete information.

The catchment population ranged from 740 to 45,000 with a median of 13,000. The Maori percentage of the catchment population ranged from 1% to 70% with a median

of 15%. The median travel time by road to base hospital was 75 minutes, with a range of 30–180 minutes.

Most (72%) rural hospitals are governed by their local District Health Board but 28% were governed by their local community (by trusts, incorporated societies and charitable companies). Distance from base hospital was not associated with type of governance group.

Overall, 14% of the hospitals had a doctor on site 24 hours, and the average travel time to the hospital for an on-call doctor was 5–10 minutes. Less than half (41%) of the hospitals had a facility for a doctor to sleep in the hospital. Retrieval teams were available at 75% of the hospitals; 64% could authorise an air ambulance. Hospitals serving larger catchment areas (>10,000) were more likely to have all these facilities.

Catchment area size (<5000, 5000–10,000, and >10,000) was reported by 30 hospitals. As shown in Table 1, hospitals with catchments of 5000-10,000 were more often staffed by general practitioners while hospitals with larger catchment populations (>10,000) were more often staffed by MOSSes.

Table 1. Rural hospital staff by estimated catchment population

GP or MOSS run	All		<5000		5000–10,000		>10,000	
	n	%	n	%	n	%	n	%
GP	10	33%	4	40%	4	67%	2	14%
MOSS	15	50%	3	30%	2	33%	10	71%
Not Specified	5	17%	3	30%	0	0%	2	14%
Total	**30**	**100%**	**10**	**100%**	**6**	**100%**	**14**	**100%**

Note: Some "GP run hospitals" have GPs on call, but not on staff; MOSS=Medical Officers of Special Scale.

Tables 2 and 3 show the number of rural hospitals able to manage the 35 nominated conditions (Table 2) and procedures (Table 3). The range was wide. For example, one hospital indicated that they would *usually manage* 89% of the listed conditions, whereas another indicated that they would *always transfer* 74% of the listed conditions.

In general, rural hospitals in more remote areas (>90 minutes from a base hospital) and serving larger populations (>10,000) were more likely to manage the nominated conditions and complete the nominated procedures.

The only conditions posing substantial problems for these hospitals were intrapartum obstetrics (especially obstetrics with assisted deliveries) and meningitis, and the only procedures that often could not be done in this setting were use of combitube and sciatic nerve block. The median percentage of listed procedures that could be performed at responding hospitals was 70%.

Overall, 50% of responding hospitals had on-site laboratory testing available, but this ranged from 0% for hospitals serving populations of <5000 to 86% for the hospitals serving populations of >10,000. Additionally, a laboratory technician was available 24 hours for 43% of hospitals overall (13% of hospitals serving small communities and 71% of hospitals serving large communities) and off-site same day laboratory test

results were available for 64% of rural hospitals (88% of hospitals serving small communities and 50% of hospitals serving large communities).

Table 2. Number of hospitals able to "Usually" or "Sometimes" manage nominated conditions, by catchment population and time to base hospital

Variables	All	<5000		5000–10,000		>10,000	
		<90min	>90min	<90min	>90min	<90min	>90min
	(n=28)	(n=4)	(n=4)	(n=2)	(n=4)	(n=10)	(n=4)
Acute Exacerbation COPD	28	4	4	2	4	10	4
Acute exacerbation chronic CHF	27	3	4	2	4	10	4
Acute Asymptomatic Atrial Fibrillation	26	3	3	2	4	10	4
Cellulitis	26	2	4	2	4	10	4
Pneumonia	26	2	4	2	4	10	4
Acute Asthma	25	3	4	2	3	9	4
Acute LVF	24	2	3	2	4	9	4
Acute Renal Colic	23	2	3	2	4	8	4
Acute Diverticulitis	21	3	3	2	3	6	4
Acute Pyelonephritis	21	2	3	2	3	8	3
Hyperemesis	21	3	3	1	4	7	3
Acute Cholecystitis	20	2	3	2	3	7	3
Pre Renal Failure	20	2	2	2	3	8	3
Acute Hemiplegia	19	2	2	1	2	8	4
Croup	18	2	4	1	3	4	4
DVT	18	3	2	0	1	8	4
Hypoglycaemic coma	17	1	3	1	2	6	4
Poisoning /OD	17	2	1	0	2	8	4
Acute Gastroenteritis	16	1	4	1	2	4	4
Convulsion	16	2	2	0	3	5	4
Intrapartum obstetrics w/o assisted deliveries	16	1	2	1	3	7	2
MI Uncomplicated	16	1	1	1	2	7	4
Subacute Bowel Obstruction	16	1	2	1	3	6	3
Closed Fracture of Tibia	13	0	1	1	3	5	3
Lobar Pneumonia	13	0	3	0	2	4	4
Pyrexia of Unknown Origin	13	1	3	1	1	4	3
Acute Pneumothorax	12	0	2	0	3	4	3
Stable Spinal Fracture	11	1	1	1	1	4	3
Hyperosmolar coma	9	0	1	0	0	4	4
Ketoacidosis	9	0	1	0	0	4	4
Intrapartum obstetrics with assisted deliveries	7	0	2	0	1	3	1
Septicaemia	7	0	0	0	0	4	3
MI Complicated	6	0	0	0	0	2	4
Meningitis	5	0	0	0	0	3	2
Acute Psychosis	4	1	0	0	1	0	2

Table 3. Number of hospitals able to perform nominated procedures, by catchment population and time to base hospital

Variables	All	<5000		5000–10,000		>10,000	
		<90min	>90min	<90min	>90min	<90min	>90min
	(n=28)	(n=4)	(n=4)	(n=2)	(n=4)	(n=10)	(n=4)
Intubation - unconscious	26	3	4	1	4	10	4
Joint Aspiration	25	3	3	2	4	9	4
Chest drain (tube)	23	2	3	1	4	9	4
Needle chest drain	23	2	4	1	4	8	4
Reduction of Dislocation: Shoulder	23	2	4	1	4	8	4
Pleural Tap	22	1	4	1	4	8	4
Surgical IV Access	22	1	3	2	4	8	4
Cricothyroidotomy	21	3	3	1	3	7	4
IV Sedation	21	2	4	1	4	7	3
Proctoscopy	21	3	2	2	4	7	3
Interosseous needle infusion	20	2	3	1	4	6	4
Reduction of Dislocation: Elbow	19	1	4	1	4	5	4
Reduction of Dislocation: Patella	19	2	3	1	3	6	4
Intubation - administer muscle relaxant	16	0	1	1	1	9	4
Sigmoidoscopy	16	1	0	2	3	6	4
Reduction of Dislocation: Hip	14	0	2	1	3	4	4
Surgical Airway	14	1	2	1	2	5	3
Biers block	13	0	3	0	3	3	4
Nerve block: Femoral	12	0	2	0	3	4	3
Nerve block: Axillary	9	0	0	0	3	3	3
Use of Combitube	8	0	2	0	2	2	2
Temporal artery biopsy	6	0	0	0	2	1	3
Nerve block: Sciatic	4	0	0	0	0	2	2

Table 4 shows the availability of urgent and near patient laboratory tests for hospitals serving communities of different sizes and located more or less than 90 minutes from a base hospital.

Almost all hospitals serving smaller communities (<5,000 people) were unable to perform the listed tests, regardless of their distance from a base hospital, whereas almost all hospitals serving communities of >10,000, especially those >90 minutes from a base hospital, were able to perform the listed tests. Near patient electrolyte tests were conducted almost exclusively in hospitals closer to base hospitals and only one of the 27 hospitals responding to this part of the survey could not conduct near patient glucose tests.

Table 4. Number of hospitals able to provide urgent and near patient laboratory test results within 60 minutes, by catchment population and time to base hospital

Variables	All	<5000		5000–10,000		>10,000	
		<90min	>90min	<90min	>90min	<90min	>90min
	(n=27)	(n=4)	(n=4)	(n=1)	(n=4)	(n=10)	(n=4)
Lab Test <60min							
Troponin	15	0	0	0	2	9	4
Blood Count	14	0	0	0	1	9	4
Electrolytes	14	0	0	0	1	9	4
Glucose	14	0	0	0	1	9	4
Renal Function	14	0	0	0	1	9	4
Cardiac Enzymes	13	0	0	0	1	8	4
Blood Gases	11	0	0	0	0	7	4
Cross Match	11	0	0	0	1	6	4
D-dimer	11	0	0	0	1	6	4
Gram Stain	11	0	0	0	1	6	4
Toxin Screen	8	0	0	0	0	4	4
Bedside/near patient							
Glucose	22	2	3	0	3	10	4
Troponin	16	1	2	0	3	8	2
D-dimer	11	0	0	0	0	3	0
Toxin Screen	11	0	0	0	0	3	0
Blood Gases	9	1	0	0	0	6	2
Electrolytes	9	1	0	0	0	7	1
Renal Function	7	1	0	0	0	6	0
Blood Count	6	1	0	0	0	4	1
Cardiac Enzymes	5	1	0	0	0	4	0

There was a radiographer available 24 hours in 39% of hospitals (60% of hospitals serving communities of 5,000–-10000 and 57% of hospitals serving larger communities) and a day-time only radiographer in a further 21% of hospitals. In 29% of hospitals (serving communities of all sizes) a doctor or nurse could operate radiology services out-of-hours and in 21% of hospitals a doctor or nurse could provide daytime radiology services. Only 11% of hospitals (all serving communities of >10,000) had urgent access to tele-radiology services.

Few hospitals (9%) could get same-day radiology reports for routine cases. No hospitals serving small communities (<5000) could get routine radiology reports in less than 2 days and for most of these hospitals routine reports took >7 days. Most (86%) hospitals serving communities of >10,000 people had routine radiology reports available in less than a week.

Discussion

The results of this survey show a diversity of service provision at New Zealand rural hospitals in 2002/03, providing a baseline for measuring the impact of subsequent changes in organizational, management and community involvement in rural health services. Factors we thought might influence the services provided were distance from base hospital, the make-up of the medical workforce, the nature of governing body and the size of the catchment population.

This analysis focuses on the size of catchment population and remoteness, interpreted as distance from a base hospital. Categorising and studying rural hospitals based on bed numbers, numbers of medical staff and facilities and equipment available is inherently risky as these are features which should reflect the needs of the population served and should be related to demographic and geographic features such as distance from base hospital and size of catchment population. We therefore chose these latter characteristics as more direct measures.

The most influential factor appears to be the size of a hospital's catchment population. In this survey, hospitals serving populations of greater than 10,000 people tended to be staffed by dedicated MOSSes, who have more opportunity than GPs to develop skills focused on their rural hospital work. Most GPs would have trouble in coping with a larger hospital workload along with a busy general practice. Remote hospitals >90 minutes from a base hospital were more likely to have access to basic radiology services provided by local clinicians.

The size of the catchment population appears to be associated with availability of laboratory services, unrelated to distance from base hospital. In fact fewer hospitals >90 minutes from a base hospital had ready access to basic laboratory tests, despite there being now many available bedside and near patient tests. This result could be due to centrally driven decisions based on unit service/cost figures, rather than an overall view of the requirements of the service as a whole.[6]

The results suggest a diversity of services provided in New Zealand rural hospitals. Clearly, medical and other healthcare staff working in rural hospitals need a broad range of knowledge and skills which straddle many different disciplines of medicine to allow them to provide these services. These skills cover a broader spectrum than those required for any one of the traditional medical specialties, even general practice. The wide scope of conditions managed is a heartening indicator of the capability of rural hospitals to perform a substantial role in the healthcare of their community.

Although a large range of conditions is managed, there is considerable variation between hospitals. Differences in patterns of care could be due to many factors, which may be historical rather than based on any systematic evaluation of the healthcare needs of rural populations. Medical and nursing workforce availability and skills, services and resources targeted to the rural hospital, and the degree of clinical and managerial support from the base hospital are all likely to play a role. The capability of local clinical governance to provide a clear vision and strategy of service development appropriate to their population's need is also important.

Long-serving rural GPs or MOSSs are more likely to have developed their skills over time to help manage the conditions they come across. It is possible for rural hospitals to perform approximately 40% of the hospital workload for rural communities (measured by hospital discharge) and in particular they are likely to play a crucial role in the care of the high health service user group of patients aged >75 years.[7]

Although the response rate to the survey was quite high (70%) we were disappointed not to get greater engagement from hospitals because there is very little known about rural hospital work in New Zealand. The complexity of the questionnaire may have detracted from the response, because it may not have been easily completed by one person at the hospital. Some questions required a more clinical view, and some more

of an administrative perspective. Not all hospitals have a clearly defined clinical governance structure to bring these attributes together. It is possible that no one person took responsibility for ensuring the questionnaire was completed.

Issues of overwork, understaffing and rapid turnover of staff could have influenced the ability of a single contact person to respond. The challenge to complete a questionnaire, albeit a somewhat complicated one, on a topic crucial to the development of rural hospitals themselves, could reflect a problem inherent in rural hospitals with regard to having a coherent clinical and management team whose primary interest is the hospital and the community, as opposed to being part of a hierarchical structure with its power at the urban base.

The smaller the structure of a rural hospital, the more multi-skilled the workforce needs to be. The medical workforce for rural hospitals is often an issue. In some places the workforce can be quite transient, with varying levels of skill which affects the level of service provision. Our experience suggests that opportunities for up-skilling are the result of hard work by motivated rural hospital practitioners in response to clinical need, rather than a centrally driven quality improvement programme. The nursing workforce also needs to have some consistency of medical practice to develop and maintain their own skills.

Both doctors and nurses are reliant on their relationship with their base hospital, which may be more or less supportive depending on whether they are seen to be in competition for health funding, or regarded as an important and integral part of the health system.

This study provides the first appraisal of the work of New Zealand's rural hospitals. The diversity of results suggests that New Zealand rural hospital do not fit a homogenous concept.

Since this survey was undertaken, a training pathway for rural hospital doctors has been established[4,5] and this has caused the definition of rural hospitals to be refined further to: "*A rural hospital is a hospital staffed by suitably trained and experienced generalists (both medical officers and rural general practitioners), who take full clinical responsibility for a wide range of clinical presentations. While resident specialists may also work in these hospitals, specialist cover is limited to 24 hr / 7 day cover in no more than one specialist area*".

Further research is required on the nature of services, their appropriateness, their delivery and the identification of rural areas where there are gaps in services.

Competing interests: None known.

Author information: Martyn Williamson, General Practitioner, Alexandra Medical Centre, Alexandra—and Senior Lecturer, Department of General Practice, Dunedin School of Medicine, Dunedin; Andrew Gormley, Research Assistant, Te Waipounamu Rural Health Unit, Dunedin School of Medicine, University of Otago, Dunedin; Susan Dovey, Associate Professor, Department of General Practice, Dunedin School of Medicine, University of Otago, Dunedin; Patrick Farry, Director, Te Waipounamu Rural Health Unit, Dunedin School of Medicine, University of Otago, Dunedin

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Correspondence: Associate Professor Susan Dovey, Department of General Practice, Dunedin School of Medicine, PO Box 913, Dunedin, New Zealand. Fax: +64 (0)3 4797431; email: susan.dovey@otago.ac.nz

References:

1. Janes R. Rural Hospitals in New Zealand. N Z Med J 1999;112:297-9.
2. Hospital Services Plan: securing better hospital services into the future. Ministry of Health: Wellington; 1998.
3. Public Hospitals 2009. http://www.moh.govt.nz/publichospitals
4. Nixon G, Blattner K. Recent developments in rural hospital medicine I: Rural hospital medicine special scope. NZ Fam Physician 2008;35(6):402-4.
5. Dawson J, Nixon G. Recent developments in rural hospital medicine II: Experiential pathway to Fellowship of the Division of Rural Hospital Medicine. NZ Fam Physician 2008;35(6):405-6.
6. Strasser R, Harvey D, Burley M. The health service needs of small rural communities. Aust J Rural Health 1994;2:7-13.
7. Williamson M, Gormley A, Farry P. Otago Rural Hospitals Study: What do utilisation rates tell us about the performance of New Zealand rural hospitals? N Z Med J 2006;119(1236). http://www.nzmj.com/journal/119-1236/2030/content.pdf

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Rural general practitioner perspectives of the needs of Māori patients requiring palliative care

Ross Lawrenson, Dot Smyth, Erena Kara, Rachel Thomson

Abstract

Aim We aimed to identify rural general practitioners perspectives of the needs of Māori patients receiving palliative care and to discover what actions the general practitioners had undertaken to meet these needs.

Methods This was a cross sectional postal survey of rural general practitioners. A questionnaire was developed which included a number of questions relevant to cultural needs when providing palliative care to Māori.

Results 186/440 rural general practitioners responded to the survey. 52% said that they had no Māori with palliative care needs in the last 12 months, 23% had one patient and 25% had looked after 2 or more. An estimated 126/204 (62%) Māori patients had died at home. The greatest need identified by rural general practitioners when dealing with Māori patients requiring palliative care appears to be for good communication which they saw as especially important when a large family/whānau are likely to be involved. Other notable concerns were the apparent gaps in some areas for home care and the demand for more Māori nurses to be available in rural areas.

Conclusions It appeared that there was great variation in the demand for palliative care services for Māori. Some rural general practitioners rarely encounter Māori patients whilst for others caring for Māori who are in need of palliative care is an important part of their practice. There is some demand from general practice for cultural competency training and support from Māori providers and Māori services in District Health Boards. Further research in this area would be valuable.

Although the New Zealand Palliative Care Strategy (2001) (NZPCS) aims to ensure equitable provision of services—at the time of its publication there were concerns expressed about access to care for rural patients and for Māori.[1]

The international literature suggests there maybe disparities in the care provided for those suffering from non cancer causes of terminal illness, for the socially deprived, the elderly and those from ethnic minorities.[2,3]

In many clinical areas such as diabetes, heart disease and some cancers there are good studies to show the disparities in outcomes for Māori.[4] However there are few measures of disparity for palliative care and consequently little objective evidence of need. Cormack et al noted anecdotal reports of differential utilisation of palliative care services by Māori—and a belief that late referral of Māori to palliative care resulted in reduced access to equipment and support services.[5]

Research from Australia has demonstrated the needs of their indigenous population.[6,7] In particular there has been concern that there is a lack of domiciliary support and so

many Aborigines die in hospitals in a culturally unfamiliar environment.[8] The need for culturally appropriate services for indigenous people has been cited in a number of papers and this is likely to be relevant for Māori.[9–11]

The provision of more culturally appropriate services for Māori has been improved through a growth in the number of Māori providers of health care services, although an internal study showed few Māori providers in the Waikato District Health Board offer palliative care services.[12] There have also been moves to improve the cultural competency of non-Māori health services staff. The RNZCGP quality assurance program for general practice—the Cornerstone Accreditation—includes a section on cultural competency[13]—and the Medical Council has introduced cultural competency as a requirement for all New Zealand registered medical practitioners.

Access to specialist palliative care services is seen as a key issue in rural areas where distance from a relatively scarce resource means that rural patients are more dependent on their local general practices and district nursing services for palliative care provision. Given that many Māori live in rural areas, or return to their ancestral/tribal home when terminally ill, means that they are disadvantaged in their access to specialist services. There may also be cost issues when transferring care from one District Health Board to another

As part of a survey of the needs for palliative care services in rural areas we aimed to identify the opinions of rural general practitioners about the needs of Māori patients receiving palliative care and to discover what actions they had undertaken to meet these needs.

Methodology

This was a cross sectional survey of rural general practitioners. We report here the findings from specific questions about cultural aspects of palliative care that we asked as part of a larger study. The participants were all general practitioners identified by the New Zealand Institute of Rural Health in a recent workforce survey.[14] A questionnaire was developed partly based on a questionnaire that had been used in Australia.[15] A number of questions relevant to provision of palliative care for Māori were added after discussion with Te Puna Oranga, the Māori Health Unit of the Waikato District Health Board.

The New Zealand Rural General Practice Network were consulted and also advised on the questionnaire. Key questions that were asked included: How many Māori 'palliative care' patients have you managed in the last 12 months? Where have your Māori patients died? Are there specific needs that you have identified for your Māori patients? Are there allied health professionals with experience in Palliative Care and on whose expertise you may draw? (including Māori providers). What do you see are the main gaps in the provision of palliative care for Māori? Have you done anything in your practice to ensure you provide culturally appropriate services for Māori palliative care patients?

The questionnaire was piloted with a small number of semi-rural doctors who were not to be included in the main study and minor changes were made – overall the questionnaire seemed acceptable to the pilot doctors. Questionnaires were then posted to each rural general practitioner with a stamped addressed envelope. Questionnaires had a unique identifier. If after 4 weeks there was no response then a repeat posted questionnaire was sent or if the first questionnaire was returned indicating that the doctor had left then attempts were made to identify the replacement doctor. Ethical approval was received from the Northern Y Regional Ethics Committee.

Analysis

The general practitioner responses were grouped and tabulated with percentage response rates. Open questions were assessed by grouping key themes. This was

carried out independently by two researchers and then the key points compared and discussed.

Results

186/440 rural general practitioners responded to the survey—42% of those sent a questionnaire. The age of the respondents were recorded in categories—50% were aged 35–49 years and 49% were aged 50 plus. Only two respondents were aged less than 35 years. Thirty-two percent were female.

Ten general practitioners did not answer the question "*How many Māori patients have you looked after in the last 12 months*" Of the 176 that did 91 (52%) said that they had no Māori patients, 40 (23%) had 1 patient and 45 (25%) had looked after 2 or more. If the responses were categorised depending on which Island the practice was located then we find 51/69 (73.9%) of South Island practices responded they had no Māori palliative care patients whilst only 40/107 (37.3%) of North Island practices said they had no Māori.

There were an estimated total of 204 patients who had been looked after in the last 12 months by the 176 general practitioners who responded. An estimated 126/204 (62%) of these patients had died at home compared to an overall estimate of 46.5% for all palliative care patients (16). 59/176 (33%) of respondents said they had used Māori Health providers for support of their palliative care patients.

56/139 (40%) answered "Yes" to the question "Are there specific needs that you have identified for your Māori patients?" 83 answered "No". Where doctors had answered "Yes" and elaborated as to their perception of need the strongest theme coming through was the need to involve whānau/family in the management. This included comments about the space needed to accommodate whānau when someone was dying.

There were comments about the need to follow tikanga/Māori principles/protocols when caring for Māori, in particular noting the sensitivity when dealing with particular parts of the body or the requirements for a tangi (Māori funeral). There were comments on the need for more time/interaction/communication when involved with Māori patients and to identify the key people with in the family.

Other comments included a perception that Māori preferred to be cared for and die at home or some general practitioners noted the converse—that many Māori did not want to go to or die in hospital. There was also a feeling that there was a reluctance to attend clinics or have blood tests. One respondent mentioned poverty as an issue. Of those who said "No" to Māori having specific needs – most commented they had very few Māori patients. One general practitioner commented "All our patients are treated the same"

In response to the question "What do you see are the main gaps in the provision of palliative care for Māori?" 86/186 (46%) did not respond to this question whilst 31/186 (17%) stated that there were no particular gaps or they had no experience with Māori. In those that noted gaps, key themes that appeared were the need for better communication, the need for more Māori nurses, or Māori palliative care nurses and some mentioned the need for more home care services or services out of hours.

Several respondents commented that the lack of knowledge about hospice/palliative care services by some Maori patients was a gap that needed attention. Other points made were the problems of access for patients who were living in isolated or very rural areas, the issue of costs/lack of resources/lack of heating, and the problem of rising demand at a time when rural general practitioners were becoming scarcer. One respondent mentioned that Māori often request an alternative medicine approach.

78/186 (42%) responded "Yes" to the question "Have you done anything in your practice to ensure you provide culturally appropriate services for Māori palliative care patients?" On the other hand 43 general practitioners did not respond to this question and 65 said "No".

There was a strong sense that general practitioners were asking patients and family about their wants and needs and responding to their request. One respondent commented:

"I am aware of a large band of strong capable women who know what to do—will consult/tell me what they want and I do as I am told". Working with whānau was seen as important, whilst others talked of seeking guidance from local Marae and local kaumātua. Some recorded that they had attended tangi.

One general practitioner stated: 'I have been in New Zealand for 5 years and I am still learning'. Some 15 practices seemed to have initiated involvement with local Māori Health providers or with the Māori Health services of their local DHB. Finally nine general practitioners noted that they had attended or arranged cultural competency training and one doctor specifically mentioned the Cornerstone programme.

Discussion

This survey seems to show that there is variable involvement of rural general practitioners with Māori patients who require palliative care services. Those practicing in the South Island were more likely (74%) to have no involvement with Māori palliative care patients. Only 25% of rural general practitioners looked after 2 or more Māori palliative care patients in a 12-month period.

Whilst it is known that there are variations in recording of ethnicity in general practice and on the National Health Index [17] we do not know whether there is systematic under recording of Māori ethnicity in rural general practice. However it is possible that our data under records the need.

Sixty-two percent of rural Māori patients died at home. We know from the NZPCS that in general Māori patients requiring palliative care are more likely to die at home than non-Māori—53.2% compared with 30.8%[1] but our data suggests that rural Māori maybe more likely to die at home than urban Māori patients. This maybe due to reduced access to resthome or hospice beds[5] or more family support for rural patients. The need to be with family at this time reflects similar findings from Australia.[18,19]

For those general practitioners who are involved in looking after Māori patients who are dying—it was the role of the family/whānau that marked the main difference to managing care for non-Māori patients. This is known as Te Whakawhanaungatanga—the gathering of family and friends to provide spiritual and practical support.[20] This involves issues of space when accommodating large numbers, whether in hospital or

at home, the need for good communication and the need to acknowledge traditional practices. A study from the West Coast of New Zealand reported that when whānau provided palliative care they were not eligible for financial support which was seen as inequitable.[21] The above findings are similar to those noted in other publications on the needs of indigenous people from Australia[9] or North America.[10,11]

We found that 111/186 (59%) of the rural general practitioners in this survey rated their current level of Palliative Medicine knowledge as good or very good. However the majority also indicated they would like more training. In regards to their knowledge of cultural factors it appeared to us that some practitioners have made an effort to improve their understanding of the cultural needs of their patients either through some formal cultural competency training, or by seeking advice from local kaumatua, Māori providers or the Māori Health advisors from their local District Health Board.

On the other hand there were many that believed there were no gaps or special needs for Māori. This would suggest that there is a need for more research to explore the differences between Māori and non-Māori patients requiring palliative care so the needs for any cultural competency training could be better informed.

The strengths of this paper is that it is one of the first that we could find that has looked specifically at the needs of Māori patients requiring palliative care—all be it from the perspective of the general practitioner. There is an important paper on the palliative care needs for prisoners within New Zealand which notes that those dying in prison are usually Māori, given the over representation of Māori in the prison population.[22] and mention is made of the needs of Māori in a paper on the introduction of a Palliative Care Partnership[23] as well as a section in the report 'Access to cancer services for Māori.'[5]

A potential weakness of the study was the response rate—only 42% of rural general practitioners responded to the survey. It maybe that the views of non-responders would be different from those who did complete the questionnaires. However we believe our findings are of interest. As stated above this survey was from the view point of rural general practitioners.

We acknowledge that relying on general practitioners recall may also introduce a bias but we believe that it is useful to try and quantify their workloads. It may well be that the views of patients and their families, or nurses and other health professionals may have given a different perspective. Again there appears to be a need for further research in this area. We believe it is also important to look at the needs of Māori patients living in urban as opposed to rural settings.

One theme that did not emerge with respect to rural Māori with palliative care need was any need for specialist input. Only one respondent mentioned this as a particular need for Māori patients. This may have been because most doctors had good telephone access to specialist advice[16] or they did not see this as being a particular issue for Māori when compared to non-Māori rural patients.

In summary it appears that there is great variation in the requirement for palliative care services for Māori from rural general practitioners. Some rarely encounter Māori patients whilst for other rural general practitioners caring for Māori who are in need of palliative care is an important part of their professional practice.

The greatest need appears to be for good communication which respondents saw as especially important when a large family/whānau are involved. It maybe that more in depth research is required into the involvement of whānau in the management of dying patients.

Other notable concerns are the apparent gaps in some areas for home care and the demand for more Māori nurses to be available in rural areas – something that Primary Health Organisations and District Health Boards could consider. Finally it was apparent that there is some demand for cultural competency training and the continuing support of Māori providers and Māori services in District Health Boards to support the provision of Māori palliative patients in the community.

Competing interests: None

Author information: Ross Lawrenson, Professor of Primary Care, Waikato Clinical School, University of Auckland, Hamilton; Dot Smyth, General practitioner, Glenview Medical Centre, Hamilton; Erena Kara, Te Puna Oranga (Māori Health Service), Waikato DHB, Hamilton; Rachel M Thomson, Rural General Practitioner and Senior Lecturer Waikato Clinical School, University of Auckland, Hamilton

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Correspondence: Ross Lawrenson, Waikato Clinical School, Peter Rothwell Academic Centre, Waikato Hospital, Private Bag 3200, Hamilton, New Zealand. Fax: +64 (0)7 8398712; email: LawrensR@waikatodhb.govt.nz

References:

1. The New Zealand Palliative Care Strategy. Ministry of Health, Wellington. February 2001.
2. Ahmed N, Bestall JC, Ahmedzai SH, et al. Systematic review of the problems and issues of accessing specialist palliative care by patients, carers and health and social care professionals. Palliative Medicine. 2004;18(6):525-42.
3. Rosenwax LK. McNamara BA. Who receives specialist palliative care in Western Australia--and who misses out. Palliative Medicine. 2006;20(4):439-45
4. Robson B, Harris R. Hauora: Māori standads of health IV. A study of the years 2000-2005. Wellington: Te Rōpu Rangahau Hauora a Eru Pomare. 2007
5. Cormack D, Robson B, Purdie G, et al. Access to cancer services for Maori. Wellington: Wellington School of Medicine and Health Sciences & Auckland University of Technology; 2005 Feb 2005.
6. McGrath P. Holewa H. Kail-Buckley S. "They should come out here ...": research findings on lack of local palliative care services for Australian aboriginal people. American Journal of Hospice & Palliative Medicine. 2007;24(2):105-13.
7. Maddocks I. Rayner RG. Issues in palliative care for Indigenous communities. Medical Journal of Australia. 2003; 179(6 Suppl):S17-9.
8. McGrath P. Holewa H. McGrath Z. Practical problems for Aboriginal palliative care service provision in rural and remote areas: equipment, power and travel issues. Collegian; Journal of the Royal College of Nursing, Australia. 2007;14(3):21-6.

9. McGrath P. Aboriginal cultural practices on caring for the deceased person: findings and recommendations. Int J Palliat Nurs. 2007;13(9):418-25.
10. Kelly L. Minty A. End-of-life issues for aboriginal patients: a literature review. Canadian Family Physician. 2007; 53(9):1459-65
11. Kitzes J. Berger L. End-of-life issues for American Indians/Alaska Natives: insights from one Indian Health Service area. Journal of Palliative Medicine. 2004;7(6):830-8.
12. Kara E. Stocktake of Palliative Care Education and Support needs for Māori Providers within Waikato DHB District. Waikato District Health Board publication. 2008.
13. Aiming for excellence. RNZCGP publications, Wellington. 2009.
14. Goodyear-Smith F. Janes R. The 2005 Rural Workforce Survey. NZIRH Cambridge, New Zealand. 2005.
15. Pereira GJ. Palliative care in the hinterlands: a description of existing services and doctors' attitudes. Aust J Rural Health. 2005;13(6):343-7
16. Smyth D, Farnell A, Dutu G, Lillis S, Lawrenson R. Palliative Care Provision by Rural General Practitioners in New Zealand. Journal of Palliative Medicine. October 2009, epub ahead of print.
17. Health Utilisation Research Alliance (HURA). Ethnicity data and primary care in New Zealand: lessons from the Health Utilisation Research Alliance (HURA) study. N Z Med J. 2006;119(1231). http://www.nzmj.com/journal/119-1231/1917/content.pdf
18. McGrath P. 'I don't want to be in that big city; this is my country here': research findings on Aboriginal peoples' preference to die at home. Australian Journal of Rural Health. 2007:15(4):264-8.
19. Yates P. Palliative care for specific populations. Australian Family Physician. 2006:35(10):776-9.
20. Ngata P. Death dying and grief. A Māori perspective. In: The undiscovered country: customs of the cultural and ethnic groups of New Zealand concerning death and dying. Wellington. Dept of Health 1987.
21. Doolan Noble F, McKinlay E, Cormack D. The journey of treatment and care for people with cancer on the West Coast. Greymouth: West Coast District Health Board and Wellington School of Medicine and Health Sciences; 2006.
22. Lum KL. Palliative care behind bars: the New Zealand prison hospice experience. Journal of Pain & Palliative Care Pharmacotherapy. 2003: 17(3-4):131-8; discussion 139-40
23. McKinlay E. McBain L. Evaluation of the Palliative Care Partnership: a New Zealand solution to the provision of integrated palliative care. New Zealand Medical Journal. 2007:120(1263). http://www.nzma.org.nz/journal/120-1263/2745/content.pdf

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Is the prevalence of *CYP2C19* genetic variants different in Pacific people than in New Zealand Europeans?

Nuala Helsby, Michael Goldthorpe, Peter Gow, Janak de Zoysa

Abstract

Aim To undertake a preliminary assessment of the prevalence of *CYP2C19* ultra-rapid and poor metaboliser genetic variants in Pacific people compared with NZ Europeans.

Method Individuals who self-identified as either Pacific people (n=14) or NZ European (n=12) were genotyped for the **2, *3* or **17* functional variants of *CYP2C19*.

Results There was a significantly lower frequency (P<0.01) of the *CYP2C19*17* allele in Pacific people compared with NZ Europeans. No *CYP2C19*17* variant alleles were detected in Pacific people in this preliminary study.

Conclusions The presence of *CYP2C19*17* may be low in Pacific people and may lead to altered efficiency at metabolising some common drugs such as omeprazole. Further studies to confirm this preliminary finding are warranted.

The human liver cytochrome P450 enzyme, CYP2C19, is involved in the metabolism of drugs from an extensive range of therapeutic classes, including omeprazole, diazepam and proguanil.[1] Individuals who are homozygous for the loss of function variants (*CYP2C19*2* and *CYP2C19*3*) are "poor metabolisers" of these drugs.[2] Recent reports indicate that an additional variant (*CYP2C19*17*) is associated with ultra-rapid metabolism of these drugs.[3,4]

Up to 5% of Caucasians are *CYP2C19* genotypic poor metabolisers[5] and between 18–22% of Caucasians are carriers of the *CYP2C19*17* allele.[3,6] A genotyping approach for pharmacogenes such as *CYP2C19* is often advocated to "personalise therapy" in individuals with variant alleles.

In contrast to Caucasian populations, however, there have been no reports regarding the prevalence of *CYP2C19* variant alleles in Pacific people.

Methods

Following informed consent a cohort of New Zealand (NZ) lupus nephritis patients were genotyped for the *CYP2C19* genetic polymorphism as part of a larger study to determine the role of pharmacogenetics in the response to cyclophosphamide therapy. Ethics approval for this study was obtained from the Northern X Regional Ethics Committee. Of this larger cohort of 41 patients, 14 subjects self identified as Pacific people (6 Samoan, 4 Tongan, 1 Cook Islander, and 3 Fijian) and 12 subjects identified as NZ European (Table 1).

DNA was prepared from blood samples using the PAXgene blood DNA kit (Qiagen, Hilden, Germany). *CYP2C19* genotype was determined by PCR-RFLP analysis of the two major loss of function allelic variants (*CYP2C19*2* and *CYP2C19*3*) and the gain of function variant (*CYP2C19*17*) using previously published methods.[3,7] Statistical differences in allele frequencies were determined using Fishers exact test (two- tailed) using Graphpad Prism (v5.02).

Results

Six (of the 14) Pacific people were carriers of *CYP2C19* (**2* or **3*) loss of function variants (Table 1) while three (of the 12) NZ Caucasians were heterozygote carriers of the **2* variant (including one subject who was homozygous variant (**2/*2).* No NZ European subjects had the **3* variant. The frequency of the loss of function variant alleles, though higher (21.4%) in Pacific people, was not significantly different from the frequency in NZ Europeans (16.6%).

Using the Hardy-Weinberg equation ($p^2 + 2pq + q^2=1$) the expected frequency of *CYP2C19* loss of function homozygous (poor metaboliser) subjects in Pacific people in this small sample is 3.6%.

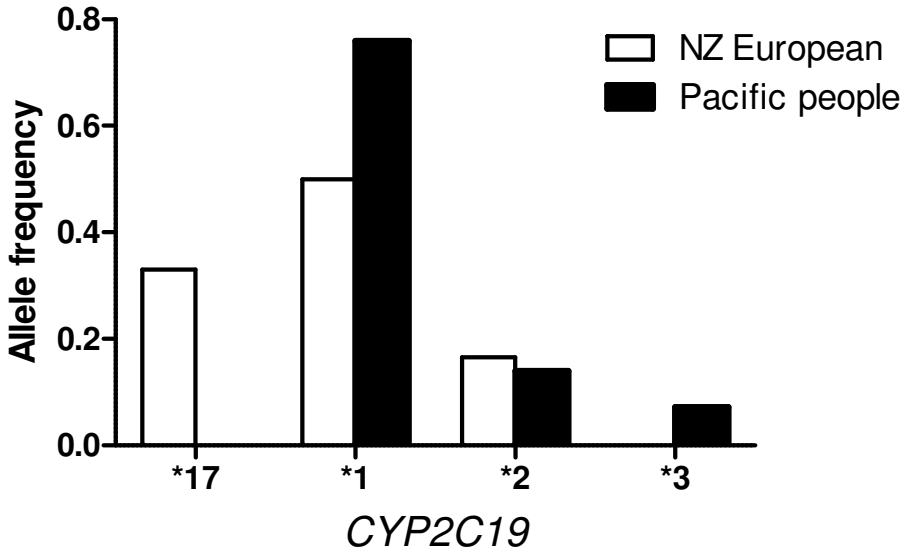
Table 1. *CYP2C19* genotypes of subjects who self identified as Samoan, Tongan, Cook Islander, Fijian, or NZ European

Ethnicity	*CYP2C19* genotype	Ethnicity	*CYP2C19* genotype
Samoan	**1/*2*	NZ European	**1/*17*
Samoan	**1/*1*	NZ European	**1/*2*
Samoan	**1/*1*	NZ European	**1/*17*
Samoan	**1/*3*	NZ European	**1/*1*
Samoan	**1/*1*	NZ European	**1/*1*
Samoan	**1/*1*	NZ European	**17/*17*
Tongan	**1/*1*	NZ European	**2/*2*
Tongan	**1/*1*	NZ European	**1/*2*
Tongan	**1/*1*	NZ European	**1/*17*
Tongan	**1/*2*	NZ European	**1/*1*
Cook Islander	**1/*2*	NZ European	**17/*17*
Fijian	**1/*1*	NZ European	**1/*17*
Fijian	**1/*2*		
Fijian	**1/*3*		

In contrast, the frequency of *CYP2C19*17* was significantly lower (P=0.0053) in Pacific people than in NZ Europeans (Table 1). No *CYP2C19*17* variant alleles were detected in samples from Pacific people whereas in NZ Europeans two subjects were homozygous variant for *CYP2C19*17* and four subjects were heterozygous carriers of this variant.

Hence the overall pattern of *CYP2C19* variant alleles differs in Pacific people compared with NZ Europeans (Figure 1).

Figure 1. The frequency of individual *CYP2C19* alleles in Pacific people and New Zealand (NZ) Europeans



Note: *1 is the wild type allele, the *17 variant is associated with "ultra-rapid metaboliser" status, the *2 and *3 variants are associated with a loss of function "poor metaboliser" status.

Conclusions

No reports of the prevalence of *CYP2C19* genetic variants in Pacific people have been published previously. However, a study that measured CYP2C19 activity, using the probe drug proguanil, reported that 13.6% of "Polynesian" subjects had a poor metaboliser status.[8]

The predicted frequency of *CYP2C19* loss of function homozygous poor metabolisers in the current small study of Pacific people is much lower at 3.6%. However, a significantly increased frequency of the *CYP2C19*2* variant in Maori compared with Caucasians has been reported, with 25.7% of Maori subjects *CYP2C19* loss of function carriers.[9] This is similar to the prevalence of heterozygote carriers identified in the current small study in Pacific people. However, possibly due to the small sample size in this preliminary study we did not observe a significant difference between Pacific people and NZ Europeans in the prevalence of *CYP2C19* loss of function carriers. Hence, further studies with a larger sample size are warranted to confirm the frequency of *CYP2C19* loss of function variants in Pacific people.

The *CYP2C19*17* variant has only recently been identified as a novel gain of function SNP which results in an ultra-rapid metaboliser phenotype.[3,4] Prior to this study no information about the incidence of this variant in Pacific people had been reported. The incidence of this allele in NZ Europeans was 33%, which is higher than the prevalence reported in other Caucasian groups (18-22%)[3,6] In contrast, this allelic variant is reported to be low in Japanese (1.3%)[10] and Chinese (4.4%).[3,4] Since *CYP2C19*17* was not detected in this small study of Pacific people it is possible that

ultra rapid metabolism of drugs which are substrates for CYP2C19, such as omeprazole, clopidogrel and diazepam, will not be observed in these populations.

There are a number of limitations to this preliminary study, in particular the small sample size. Moreover, the Pacific peoples in the study included both Melanesian and Polynesian individuals, and ethnic diversity within Pacific peoples should not be overlooked in future studies. In addition, the participants in this study were lupus nephritis patients who had received, or were about to receive, cyclophosphamide treatment. The *CYP2C19* pharmacogene plays a significant role in the bioactivation of this drug[11] and may adversely affect therapeutic outcome. As such the prevalence of *CYP2C19* allelic variants in lupus nephritis patients may differ from that observed in healthy subjects.

In conclusion, there appears to be a difference in the pattern of *CYP2C19* genetic variants in Pacific people compared with Caucasians. Further studies to confirm this preliminary finding are necessary.

Competing interests: None known.

Author information: Nuala A Helsby, Senior Lecturer[1]; Michael Goldthorpe, Research Technician[1]; Peter Gow, Consultant Rheumatologist[2]; Janak de Zoysa, Consultant Nephrologist[3]

1. Molecular Medicine and Pathology, Faculty of Medical and Health Sciences, University of Auckland
2. Department of Rheumatology, Middlemore Hospital, CMDHB, South Auckland
3. Renal Medicine, Auckland City Hospital, ADHB, Auckland

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Correspondence: Dr Nuala Helsby, Molecular Medicine and Pathology, Faculty of Medical and Health Sciences, University of Auckland, Private Bag 92019, Auckland, New Zealand. Fax: +64 (0)9 3737492; email: n.helsby@auckland.ac.nz

References:

1. Helsby NA. Pheno- or Genotype for the CYP2C19 Drug Metabolism Polymorphism: The Influence of Disease. Proc West Pharmacol Soc 2008;51:5-10.
2. Desta Z, Zhao X, Shin JG, Flockhart DA. Clinical significance of the cytochrome P450 2C19 genetic polymorphism. Clin Pharmacokinet. 2002;41:913-58.
3. Sim S, Risinger C, Dahl M-L, et al. A common novel CYP2C19 gene variant causes ultrarapid drug metabolism relevant for the drug response to proton pump inhibitors and antidepressants. Clin Pharmacol Ther 2006;79:103-13.
4. Baldwin RM, Ohlsson S, Pedersen RS, et al. Increased omeprazole metabolism in carriers of the CYP2C19*17 allele; a pharmacokinetic study in healthy volunteers. Br J Clin Pharmacol. 2008; 65:767-74.
5. Xie H-G, Stein CM, Kim RB, et al. Allelic, genotypic and phenotypic distributions of S-mephenytoin hydroxylase (CYP2C19) in healthy Caucasian populations of European descent throughout the world. Pharmacogenetics 1999;9:539-49.

6. Ragia G, Arvanitidis KI, Tavridou A, Manolopoulos VG. Need for reassessment of reported CYP2C19 allele frequencies in various populations in view of CYP2C19*17 discovery: the case of Greece. Pharmacogenomics. 2009;10:43-9
7. de Morais SMF, Wilkinson GR, Blaisdell J, et al. Identification of a new genetic defect responsible for the polymorphism of (S)-mephenytoin metabolism in Japanese. Mol Pharmacol 1994;46:594-98.
8. Wanwimolruk S, Bhawan S, Colville PF, Chalcroft SCW. Genetic polymorphism of debrisoquine (CYP2D6) and proguanil (CYP2C19) in South Pacific Polynesian populations. Eur J Clin Pharmacol 1998; 54: 431-435.
9. Lea RA, Roberts RL, Green MR, et al. Allele frequency differences of cytochrome P450 polymorphisms in a sample of New Zealand Māori. N Z Med J. 2008;121:33-7.
10. Sugimoto K, Uno T, Yamazaki H, Tateishi T. Limited frequency of the CYP2C19*17 allele and its minor role in a Japanese population Br J Clin Pharmacol. 2008; 65:437-9.
11. Helsby NA, de Zoysa JR, Coller JK, et al. Pharmacogenetics of Cyclophosphamide Bioactivation in Lupus Nephritis: a Combined Role for CYP2C19 and CYP2B6. 43rd Annual Scientific Meeting of the Australasian Society of Clinical and Experimental Pharmacologists Sydney Australia, Nov 29- Dec 2nd 2009.

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A multi-setting audit of the management of genital *Chlamydia trachomatis* infection

Jane Morgan, Andre Donnell, Anita Bell

Abstract

Aim To audit current management of genital chlamydia infection in the Waikato District Health Board (DHB), using 2008 Ministry of Health (MOH) management guidelines as the standard.

Methods Any setting within Waikato DHB that diagnosed 25 or more cases of chlamydia during February–October 2008 was eligible to participate. Each site was asked to complete an audit using a proforma for 20 consecutive cases.

Results Nineteen of 20 eligible sites provided data on 415 cases; 18.4% of all Waikato DHB cases during the 9 months. Treatment was documented for 380 (91.6%); of these, 369 (97.1%), or 88.9% of all 415 cases, had treatment within 28 days. Documentation of discussions with cases and outcomes was limited, restricting assessment of actual practice. Nonetheless, effective partner notification was lacking. Participants noted they had reviewed their own processes and made suggestions for improvements.

Conclusion The audit has identified potential gaps between recommendations within the MOH guidelines and current practice. This has helped the development of ongoing education and training resources for local providers. Further, it is hoped participation in the audit may contribute to improved case management in high-caseload settings in our district. There is commitment to re-audit to evaluate this.

Genital *Chlamydia trachomatis* (chlamydia) is the most common bacterial sexually transmitted infection (STI) in New Zealand.[1] In 2008, the Waikato district chlamydia surveillance rate of 849 cases per 100,000 population was markedly higher than reported rates of 201 per 100,000 in 2007 for the UK and 274 per 100,000 in 2008 in Australia.[1] Achieving control of this infection remains elusive, in part because many chlamydia infections are asymptomatic.

In 2008, the New Zealand Ministry of Health (MOH) drafted guidelines for chlamydia management that emphasised targeted testing of those with known risk factors, along with prompt identification of cases and treatment of their sexual contacts.[2] When planning to implement new guidelines, it is important to first identify any gaps and potential barriers between recommended practice and current practice.

Therefore it was decided to audit current case management of uncomplicated genital chlamydia infection in a range of clinical settings in the Waikato District Health Board (DHB), using the new chlamydia management guidelines as the recommended standard. Information from this audit will be used to tailor implementation of the management guidelines.

Methods

Two Waikato laboratories perform all chlamydia testing for the district, which had an estimated resident population of 357,000 in 2008, of whom approximately 21% are Māori compared with 15% nationally. Both laboratories provided data on all tests carried out on residents from 1 February–31 October 2008. Closure of another laboratory in January 2008 meant earlier data was unavailable. Non-genital site samples were excluded. All urogenital samples were tested using nucleic acid amplification methods (NAATs), as recommended in the MOH chlamydia guidelines.

Positive laboratory chlamydia test results by provider were used to enable case finding for audit purposes, as most primary care settings do not assign diagnostic codes for non-chronic health events such as uncomplicated chlamydia infection. Any practice or clinic setting within Waikato DHB that diagnosed 25 or more cases of chlamydia during 1 February–31 October 2008 was invited to participate in the audit.

The New Zealand MOH guidelines are closely aligned to UK guidelines for the management of uncomplicated genital chlamydia infection; hence, a UK validated national chlamydia management audit tool was used as a basis for our audit proforma.[3] The proforma was adapted to more closely reflect the New Zealand guidelines and differences in health-care settings (Appendix 1). Each site was provided with a list of their cases and asked to complete an audit proforma for each of 20 consecutive cases seen from 1 February 2008.

Recommendations in the MOH guidelines that relate to index case diagnosis, management, and partner notification were identified and used as standards for audit purposes. (Table 1)

Table 1 Recommendations in Ministry of Health chlamydia guidelines

1. Appropriate sampling should be undertaken
    a. Asymptomatic women should be sampled with a low vaginal swab or, if undergoing a speculum examination, a cervical swab
    b. Asymptomatic men should be sampled with a first catch urine
    c. Symptomatic people require examination and testing for other STIs, including gonorrhoea, syphilis and HIV.
2. The patient is aware of the implications of a positive test
3. Treatment should be given for presumed chlamydia infection if there is a high index of suspicion (e.g. known contact of chlamydia infection, male with urethral discharge) without waiting for laboratory confirmation.
4. Treatment of uncomplicated chlamydia infection should be with standard treatment (drug, dose, duration). The standard recommended treatment regimens for uncomplicated infection are azithromycin 1 g stat, or doxycycline 100 mg twice daily for seven days.
5. A test-of-cure is recommended if the patient is pregnant
6. All patients identified with chlamydia infection should have partner notification discussed with them at the time of treatment *by a trained health professional.*
7. All recent sexual contacts need to be notified that they require testing and treatment.

Waikato DHB audit support unit provided resources for database development, data entry and data analysis. Statistical analysis was performed using Statistica (Statsoft, Tulsa, USA). Ethical approval was given (NTY/09/25/EXP).

Results

Twenty sites across a range of clinical settings (Table 2) diagnosed 25 or more cases; these settings detected 70% of 2258 urogenital chlamydia cases diagnosed in Waikato DHB during Feb–Oct 2008. All settings agreed to participate and 19 of 20 were able to provide data. The non-participating site was a correctional facility. Seven sites chose to audit more than 20 cases, giving a sample of 415 cases or 18.4% of all Waikato DHB genital chlamydia cases diagnosed during the 9 months.

Standard 1: Appropriate sampling should be undertaken—The MOH guidelines recommend that asymptomatic women undergoing speculum examination should be sampled with a cervical swab. If speculum examination is unnecessary, all other asymptomatic women should be sampled with a low vaginal swab. Of 316 women, 145 (45.9%) were noted as asymptomatic, 165 as symptomatic and six did not have this information documented in their medical record. For 145 asymptomatic women, 10 cases (6.9%) were diagnosed with only low vaginal sampling, 88 (60.7%) with only cervical sampling, 11 (7.6%) on only urine sampling and 36 (24.8%) had a combination of samples—e.g. cervix and urine, or vaginal and urine. Excluding those with only urine sampling meant 93% met the recommendation for asymptomatic female sampling.

The MOH guidelines recommend that asymptomatic men should be sampled with first catch urine. Of 97 men, 34 (35.0%) were noted as asymptomatic, 58 as symptomatic and five did not have this information documented in their medical record. Seven (20.6%) of 34 asymptomatic men were diagnosed by urethral swab sampling, rather than urine. Hence, nearly 80% met the recommendation for asymptomatic male sampling.

For males and females, 122 of 233 (42.4%) symptomatic cases had clear documentation of being examined and tested for other STIs such as *Neisseria gonorrhoea*, 33% had some documentation that inferred examination or additional testing occurred and 14.6% had no documentation of either examination or testing for other STIs. The remainder did not complete this question. Blood samples for tests such as syphilis, HIV or hepatitis did not take place in at least 150 (36.1%) of all 415 cases, with a lack of documentation as to whether this occurred in a further 74 (17.8%). Overall, 75% met the recommendation that symptomatic people require examination and testing for other STIs, if testing for blood-borne infections is excluded.

Table 2. Locality of participating sites

Participating sites (number of sites)	Cases (percent)
Rural-based General Practice	205 (49.4%)
Huntly (1)	25
Matamata (1)	19
Ngaruawahia (1)	20
Thames (2)	44
Te Awamutu (2)	57
Te Kuiti (1)	20
Tokoroa (1)	20
Other primary care	102 (24.6%)
Sexual Health/Family Planning (2)	41
School clinics/University (2)	41
24-hour A&E centre (1)	20
Urban-based General Practice (3)	61 (14.7%)
Hospital settings (2)	47 (11.3%)
All settings (19)	**415 (100%)**

Of the 415 cases, 316 (76%) were female and 317 (78.1%) were under-25 years old (Table 3). By ethnicity, Europeans predominated (48.4% of those with known ethnicity) although Māori were over-represented at 169 of 394 (42.9%).

Table 3. Demographics

Demographics	Men	Women
	99 (including 2 transgender)	**316 (76%)**
Pregnant	–	45
Age		
<15 yrs	0	7 (2.2%)
15-19 yrs	26 (26.3%)	152 (48.1%)
20-24 yrs	39 (39.4%)	100 (31.6%)
25-34 yrs	22 (22.2%)	45 (14.2%)
35-44 yrs	10 (10.1%)	6 (1.9%)
45-54 yrs	0	5 (1.6%)
55+	1 (1%)	0
Missing	1 (1%)	1 (0.3%)
Ethnicity		
NZ European	50 (50.5%)	141 (44.6%)
Māori	29 (29.3%)	140 (44.3%)
Asian	8 (8.1%)	6 (1.9%)
Pacific	7 (7.1%)	12 (3.8%)
Other	0	1 (0.3%)
Missing	5 (5.0%)	16 (5.1%)

Standard 2: The patient is aware of the implications of a positive test—Of the 415 diagnosed cases, 259 (62.4%) had documented that verbal advice or information had been given about chlamydia and 83 (20%) had documented giving a patient information leaflet. Hence, 62% had documentation that Standard 2 was met.

Standard 3: Treatment should be given for presumed chlamydia infection if there is a high index of suspicion (e.g. known contact of chlamydia infection, male with urethral discharge) without waiting for laboratory confirmation— There were 42 cases amongst whom the main reason for testing was as a contact of a sexual partner diagnosed with chlamydia; 29 (69.0%) of these were treated at the time of testing but 13 (30.9%) were not treated until after their positive test result became available. Of 47 men recorded as having either urethral discharge or dysuria or scrotal pain at the time of testing, 25 (53.2%) were treated immediately, 21 were treated after their positive test result became available and one did not receive treatment. Overall, 60% of cases met Standard 3.

Standard 4: Treatment of uncomplicated chlamydia infection should be with standard treatment (drug, dose, duration)—The MOH guidelines' recommended first-line treatment for uncomplicated infection is azithromycin 1g stat, or doxycycline 100 mg twice daily for 7 days. Alternative regimens include erythromycin stearate, 500 mg orally, four times a day for 7 days, or erythromycin ethylsuccinate, 800 mg orally, four times a day for seven days. The recommended treatment for complicated infection is ceftriaxone 250 to 500 mg IM stat plus doxycycline, 100 mg bd for 14 days, with or without metronidazole 400 mg bd, for 14 days.

Treatment drug, dose and duration were clearly documented for 373 (89.9%) cases. For a further seven, it was noted within the medical record that treatment was prescribed but there was no record of drug choice or dose. Thus, 380 cases (91.6%) had some evidence of treatment. The remaining cases were either documented as failing to attend for treatment (five or 1.2%) or there was no treatment documentation of any kind (30 cases or 7.2%). Lack of documentation around treatment outcomes was notable in cases diagnosed in hospital-based settings (Table 4).

Table 4. Participating sites' treatment documentation

Participating sites (number of sites)	Incomplete or no treatment data
Rural-based General Practice (9)	9/205 (4.4%)
Other primary care settings (5)	3/102 (3.9%)
Urban-based General Practice (3)	4/61 (6.6%)
Hospital settings (2)	26/47 (55.3%)
All settings (19)	**42/415 (10.1%)**

Of those with evidence of treatment, same-day testing and treatment occurred for 85 (22.4%), 349 (91.8%) had treatment within 14 days, and 369 (97.1%) within 28 days. Comparable proportions for all 415 cases are 20.5%, 84.1% and 88.9% respectively.

Drug, dose & duration were appropriate, when compared to first-line and second-line drug regimens in the MOH guidelines, in 364 (97.6%) of the 373 cases with clearly documented treatment. Azithromycin was documented as first-line treatment for 334 (80.5%) cases and advice about abstaining from unprotected sex was noted for 143 (34.5%). Overall, there was documentation that Standard 4 was met in nearly 90% of cases.

Standard 5: A test-of-cure is recommended if the patient is pregnant—Of the 45 cases (10.8%) were noted to be pregnant, only eight (17.8%) had any documentation that a test-of-cure was recommended.

Standard 6: All patients identified with chlamydia infection should have partner notification discussed with them at the time of treatment by a trained health professional—The MOH guidelines define partner notification as 'a secondary prevention process through which sexual partners and other contacts exposed to an STI are identified, located, assessed, counseled, tested and treated.' There was limited documentation in most medical records around partner notification and outcomes; 246 (59.2%) had any documentation that partner notification was discussed, 127 (30.6%) had any documentation about the planned method of partner notification (e.g. by the patient or by the provider) and 73 (17.6%) had any documentation about the outcome of partner notification.

It is not known if the health professionals involved in providing treatment of these audited cases had ever received education or training in undertaking partner notification. Using any documentation of any discussion relating to partner management, nearly 60% met Standard 6.

Standard 7: All recent sexual contacts need to be notified that they require testing and treatment—The MOH guidelines acknowledge that partner data will be incomplete; nonetheless, there is a suggestion to monitor the percentage of partners who are contacted or advised about chlamydia and the percentage of partners who are treated and/or tested. The recommendation is that at least 50% of identified sexual partners or contacts should be treated. There was very limited documentation around the outcomes of partner notification in this audit.

Of 21 cases from the Sexual Health Clinic, where there is a designated nurse responsible for case follow-up and partner outcomes, 13/21 (61.9%) cases had documentation that all identifiable partners had been advised and 10/21 (47.6%) had health-worker verified partner treatment. For all other settings in the audit, 76/394 (19.3%) documented that all identifiable partners had been advised, 41/394 (10.4%) noted partner treatment as advised by the index patient and partner treatment was noted as verified by a healthcare worker in 8 (2.0%) cases.

Discussion

This is the first New Zealand multi-setting district-wide audit against proposed national MOH guidelines for managing genital chlamydia infections. The audit has helped to identify issues in current practice in our district. Appropriate sampling for diagnosis and of recommended treatments compare well to their respective standards. Standards that were only partly met include that the patient is aware of the implications of a positive test, that treatment should be given for presumed chlamydia infection if there is a high index of suspicion without waiting for laboratory confirmation, that a test-of-cure is recommended if the patient is pregnant and partner management.

It is important to emphasise that these findings are more a measure of documentation in the medical record, rather than of actual practice. Participants commented that the audit highlighted the sometime brevity of their documentation and also the challenges

of partner management. Many noted that they had reviewed their own processes and shared their recommendations for improvements; some examples included greater use of dispensing treatment to improve adherence, thorough and complete documentation of dispensed treatments, storing written information with drug treatments to facilitate better information giving and telephone follow-up of cases.

The most significant issue was a lack of effective partner notification. This raises concerns not only for optimal management of chlamydia but of all STIs. The MOH guidelines anticipated this finding based on overseas primary care research; their suggestions for improvements include appropriate training and support for primary care providers, DHB or PHO-employed contact tracers and exploring the use of other partner notification practices, such as patient-delivered therapy. However, the current legislative framework in New Zealand appears to limit use of the latter.[4]

Interestingly, one local rural GP setting undertook a post-audit survey of newly diagnosed cases as to how to facilitate notifying their partners, with the majority suggesting written information would help. They have developed a practice letter and are trialing its use at present. Other audit participants suggested additional human resource and support for contact tracing would be very helpful. Finding a way forward to improve on the current situation is now imperative, both locally and nationally.

The audit found appropriate site sampling was used for diagnosis, with combinations of samples, e.g. a cervical swab and a urine sample, also noted. In the two laboratories' original data extract, there were 22191 chlamydia tests from 21311 individuals in 9 months, that is, approximately 4% of all those tested had more than 1 chlamydia sample taken on the same-day.

The MOH guidelines state that 'In general, NAATs have a sensitivity of 90–95%, with the majority of studies indicating that as the number of sites sampled increases, … the greater the detection of *C. trachomatis* in any given population.' However, multiple-site or duplicate testing of an individual greatly increases the cost of the MOH guidelines' recommendation that molecular testing methods be used for diagnosis. That said, it may be possible to reduce molecular testing laboratory costs, for example, if samples were pooled.[5]

The MOH guidelines are intended for primary care. However, a notable issue identified in our audit was management of cases diagnosed in secondary care settings. Test results were often available only after a patient had been discharged; these were copied to a primary care provider but it was not possible to ascertain from the hospital medical record that positive results were ever acted upon or that cases and their partners were ever treated. This is a potential gap that needs to be addressed and ways to further improve local primary-secondary care communication are being considered.

A strength of the audit is that multiple settings were involved and that these reflect where chlamydia is diagnosed and managed in Waikato DHB. Only settings that diagnosed 25 or more cases were invited to participate, as this was felt more likely to be representative of usual care and with less inherent bias related to small case numbers. It was felt important to ensure the audit process was structured in a way that supported participation of small busy settings and high participation attests that this seems to have been successful.

The considerable enthusiasm and interest amongst local practitioners deserves comment. Many noted they have made efforts to improve their documentation and that the audit was a useful learning tool. The audited cases were diagnosed in 2008 before a series of primary care sexual health articles in 2009 by Bpacnz Ltd (Best Practice Advocacy Centre); these articles emphasised some of the issues identified in the audit, such as optimal sampling, treatment and partner management.[6, 7] Also, this is a regional rather than a national audit so the findings may not extrapolate to other areas. More detailed analysis is ongoing to assess for any disparities in case management by age, gender or ethnicity.

Following the audit, anonymous combined results were presented and discussed at local primary care multidisciplinary continuing education sessions. Learning points and suggested changes from the audit participants were included with permission. This included much greater emphasis on optimising partner management. In addition, in response to participant feedback, a local one-page summary provider resource has been developed and disseminated;[8] this is based on the national MOH guidelines but adapted to reflect the audit findings and includes a clear statement around patient follow-up so as to clarify and document treatment adherence and partner management outcomes.

Waikato DHB testing rates for chlamydia are acknowledged as high, particularly amongst young women.[9] Recent national laboratory surveillance data suggests high chlamydia test uptake in other districts too.[10] However, testing without treatment or partner management of this common infection is effectively futile and all aspects of case management need to be considered.

In summary, our audit has helped identify potential gaps between recommended 'best-practice' within the new MOH guidelines and current practice, most notably around documentation of advice given as part of case management and, more importantly, around partner management. This has helped shape the development of ongoing education and training resources for all local providers. Further, it is hoped that participation in the audit may in turn contribute to improved case management in high-caseload settings in our district. There is commitment to re-audit in another 12-24 months to evaluate this.

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Competing interests: None known.

Author information: Dr Jane Morgan**,** Sexual Health Physician**,** Waikato Hospital**,** Hamilton; Andre Donnell, Audit Support Unit, Waikato Hospital, Hamilton; Anita Bell, Public Health Physician, Population Health Service, Waikato District Health Board, Hamilton

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Correspondence: Dr Jane Morgan, Clinical Director, Sexual Health Clinic, Waikato Hospital, Private Bag 3200, Hamilton, New Zealand.
Fax: +64 (0)7 8398892; Email: jane.morgan@waikatodhb.health.nz

References:

1. STI surveillance team. Sexually Transmitted Infections in New Zealand Annual Surveillance Report 2007, Population and Environmental Health Group, Institute of Environmental Science and Research Ltd (ESR). Wellington. 2008. www.surv.esr.cri.nz
2. Ministry of Health. 2008. Chlamydia Management Guidelines. Wellington: Ministry of Health. http://www.moh.govt.nz/moh.nsf/pagesmh/8210
3. British Association for Sexual Health and HIV (BASHH) National Audit Group Proformas. http://www.bashh.org/groups/national_audit_group
4. Medicines Regulations 1984 (SR 1984/143) (as at 07 August 2009). http://www.legislation.govt.nz/regulation/public/1984/0143/latest/DLM96519.html
5. Currie MJ, McNiven M, Yee T, et al. Pooling of clinical specimens prior to testing for Chlamydia trachomatis by PCR is accurate and cost saving. J Clin Microbiol 2004;42:4866-7.
6. Sexually transmitted infections in New Zealand. 2009. http://www.bpac.org.nz/magazine/2009/february/sti.asp
7. Treatment of sexually transmitted and other genital infections. 2009. http://www.bpac.org.nz/magazine/2009/april/sti.asp
8. Waikato DHB Chlamydia Guideline 2009. http://www.waikatodhb.govt.nz/file/fileid/17652
9. Morgan J, Bell A. The highs and lows of opportunistic Chlamydia testing: uptake and detection in Waikato, New Zealand. Sexually transmitted infections 2009;85:452-4.
10. STI surveillance team. Laboratory Surveillance of Chlamydia and Gonorrhoea in New Zealand, Population and Environmental Health Group, Institute of Environmental Science and Research Ltd (ESR). Wellington. 2009. http://www.surv.esr.cri.nz/surveillance/quarterly_stilab.php

(see next page for Appendix 1)

Appendix 1: Chlamydia Audit Data Collection Form 2008

A case is a person who was diagnosed with chlamydia during 1st February – 31st October 2008. Please provide data on the first 20 consecutive cases seen during this interval. If there are less than 20 cases, please provide data on all cases seen. Please exclude cases whose positive chlamydia test was taken by another clinic or service or department. Please note the index patient is the case being audited.

Clinic: _____

A. INDEX PATIENT

1. Date 1st seen (must be between 1st Feb and 31st Oct 2008 inclusive) _____

Please note the patient's clinic ID or NHI or date of birth (NOT name): _____

2. Gender: Male O Female O Transgender O Not documented O

Tick if pregnant: O

3. Age group: <15 O 15-19 O 20-24 O 25-34 O

35-44 O 45-54 O 55 + O Unknown O

4. Ethnicity: _____

Or Ethnicity Not Given O Or Ethnicity Not Documented O

5. Ever tested for chlamydia before: Yes [ ] No [ ] Not documented [ ]

If yes, please note date & result if known _____

6. MAIN Reason for <u>this</u> test (choose one):

- Symptoms [ ]
- Asymptomatic patient requesting check-up [ ]
- Offered by provider, based on sexual history [ ]
- Contact of partner diagnosed with chlamydia [ ]
- Medico-legal case [ ]
- Not documented [ ]

Presenting features (tick as many as apply):

- Asymptomatic [ ]
- Urethral discharge [ ]
- Dysuria [ ]
- Post coital or intermenstrual bleeding [ ]
- Lower abdominal pain [ ]
- Vaginal discharge [ ]
- Scrotal pain
- Complications of chlamydia [ ] specify _____
- Other [ ] specify _____
- Not documented [ ]

7. Diagnosis: please tick all site(s)/samples tested:

Urine [ ] Urethral swab [ ] Cervical swab [ ] Vulvo-vaginal swab[ ]

Other [ ] specify _____

8. Other STIs and / or examination considered:

	Yes	Not documented	Offered but declined or window period
Syphilis			
HIV			
Hepatitis B			
Other STIs			
Genital examination performed			

9. First 'anti-chlamydia' treatment given:

9.1 Either A. Uncomplicated infection: -	Either Script given	OR drug dispensed
• Doxycycline 100mg bd for 7 days	[ ]	[ ]
• Azithromycin 1gm stat orally single dose	[ ]	[ ]
• Erythromycin 500mg bd for 14 days	[ ]	[ ]
• Erythromycin 500mg four times a day for 7 days	[ ]	[ ]
• Amoxicillin 500mg three times a day for 7 days	[ ]	[ ]

- No treatment documented [ ]
- Other treatments [ ] please specify drug, dose and duration: _____

9.2 OR B. Complicated infection e.g. treatments for pelvic infection or epididymitis:

Please specify drug(s), dose and duration: _____

10. When was the index patient treated (choose one)?

- Index patient was treated at the time the chlamydia test was taken [ ]
- Index patient was treated after the date the chlamydia test was taken [ ]
  - How many days later? _____
- Index patient failed to attend for treatment [ ]
- Not documented when index was treated [ ]

11. Advice given to index patient:

	Yes	Not documented
Given advice/information about chlamydia infection?		
Given a leaf let about chlamydia		
Advised to abstain from sexual intercourse until their treatment and of any partners was completed, if applicable?		

B. FOLLOW-UP OF INDEX PATIENT

12 Was the patient followed up (choose one)?

- Yes, face-to-face [ ]
- Yes, by telephone or text [ ]
- No, referred elsewhere for follow-up
  - If so, please note where_____
  - Did patient attend elsewhere Yes [ ] No [ ] Not documented [ ]
- No, recalled but unable to contact / did not attend [ ]
- No follow-up plan [ ]

13 If the patient was followed up:

	Yes	Not applicable	Not documented
Was partner notification discussed?			
Had the patient adhered to the treatment?			
Had any symptoms resolved?			
Appropriate management of non-adherence (e.g. re-treatment etc)			
Test-of-cure recommended, if pregnant			

C. PARTNER NOTIFICATION (PN)

	Yes	Not applicable	Not documented
Was partner notification (PN) discussed?			
Was the method of PN documented?			
Was the outcome of PN documented?			

D. PARTNERS

Record the number of reported sexual partners in the 3 months preceding the index patient's presentation _____ OR tick if not documented [ ]

	As reported by index patient	As verified by a healthcare worker	Index declined to discuss	Not recorded
	Please record numbers only here			
Number of regular partner(s) advised about chlamydia				
Number of regular partner(s) tested for chlamydia				
Regular partner(s) treated for chlamydia				
Number of casual partners advised about chlamydia				
Number of casual partners tested for chlamydia				
Number of casual partners treated for chlamydia				

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An audit of patients treated for syphilis at Auckland Sexual Health Service

Sunita Azariah

Abstract

Aim As there is no New Zealand data, an audit of patients treated for syphilis at Auckland Sexual Health Service (ASHS) was undertaken to see if management conformed to guidelines and was achieving acceptable outcomes.

Methods Cases were initially identified from laboratory data and were categorised as being either infectious or non-infectious according to clinical and laboratory criteria. Management was compared to recommendations from ASHS treatment guidelines and treatment outcome was assessed by serological response.

Results 109 cases of syphilis were identified including 9 with HIV infection (8%). Men who had sex with men were much more likely to be diagnosed with infectious syphilis than heterosexuals ($p<0.0001$). Fifty-one percent of infectious cases (n=35) were asymptomatic. Ninety-four percent (n=103) of cases were treated with antibiotic regimens appropriate for their clinical stage. Discrepancy in management occurred most often in the early latent and unknown duration categories. Ninety-eight cases (90%) completed the full 12 months serological follow-up period and 97% (n=92) of those had an adequate serological response to treatment. There were no treatment failures in patients with HIV infection.

Conclusion Current care of patients with syphilis at Auckland Sexual Health Service is achieving acceptable outcomes. Criteria for diagnosing infectious syphilis cases need to be standardised as it has implications for management and disease surveillance. MSM are a major risk group for acquisition of infectious syphilis and regular serological screening is recommended as a large proportion will be asymptomatic.

The incidence of infectious syphilis has increased in recent years in New Zealand, particularly in the Auckland region. [1,2,3] Published data [2,3] indicates that the majority of New Zealand acquired cases of infectious syphilis occur in men who have sex with men(MSM). However because syphilis is not a notifiable condition the real incidence is unknown, as Institute of Environmental and Research Science (ESR) surveillance is limited to voluntary reporting from sentinel sites such as public sexual health clinics.

An Auckland pilot study of enhanced surveillance [3] found that 22% of 61 identified cases of infectious syphilis would not have been reported to ESR as they were treated and diagnosed at non-sentinel clinical sites (unpublished data). The management of syphilis depends in part on whether cases are classified as infectious or not as this determines duration of antibiotic therapy and whether contact tracing is required. This also has implications for disease surveillance as only infectious cases are notified to ESR.

It may be difficult to determine whether a case of latent (asymptomatic) syphilis is infectious or not if the patient has not had previous serological tests for syphilis (STS). It has been proposed by some experts that classifying asymptomatic cases according to non-treponemal test results[4] as either high titre (infectious) or low titre (not infectious), could simplify management.

A retrospective audit of data for patients recently diagnosed and treated for syphilis was undertaken at Auckland Sexual Health Service (ASHS) to determine whether management of syphilis was conforming to treatment guidelines and whether acceptable outcomes were being achieved as there is no New Zealand data. This study was approved by the Northern X Regional Ethics Committee.

Methods

Cases were initially identified from a review of LabPlus laboratory data from the whole of 2007. LabPlus is the laboratory for Auckland District Health Board and carries out all serological testing for syphilis for ASHS.

In order to exclude individuals with possible false positive serology, cases were only included if they had recorded positive STS on at least 2 occasions and had been coded with a diagnosis of syphilis in the electronic medical record. In addition all cases were required to have both a reactive treponemal enzyme immunoassay (EIA) (Bioelisa syphilis 3.0, Spain) and a reactive treponemal particle (TPPA) agglutination test (Serodia, Japan).

Laboratory results were retrieved electronically from the Lab Plus laboratory database. The electronic case notes were then examined and each case was categorised as being either infectious or non-infectious according to pre-defined clinical and laboratory data. As ASHS is a regional service covering 3 different district health boards there are 6 different clinical sites in operation.

Patient information at ASHS is recorded in both paper files and an electronic database. The paper files contain more complete clinical data than the electronic medical record (EMR) which is used more as a back-up as it can be accessed by staff working at all the different clinical sites. Retrieving all the paper notes would have been impractical so these were only reviewed if there was important clinical information missing from the electronic record.

Determining infectiousness of unknown duration latent cases was based on recommendations by Peterman et al [4], by using rapid plasma reagin (RPR) titres with the following qualifications: the unknown duration category differed in that there was no age restriction, and early latency was defined by a 2-year instead of a 1-year time frame, as ASHS follows the United Kingdom convention in this respect[5].

Categorisation criteria—

- Primary and secondary syphilis cases: case presented with compatible clinical symptoms and signs such as genital ulceration or rash confirmed by examination.
- Early latent syphilis cases: case had no clinical symptoms or signs of syphilis and one of the following: a history of primary or secondary syphilis symptoms within the previous 2 years; known recent sexual contact with a case of infectious syphilis; a documented four-fold or greater rise in RPR titre; or documented seroconversion to positive STS within the previous 2 years.
- Unknown duration: cases had no clinical signs or symptoms of syphilis, no previous documented STS and an RPR titre greater than 1:16.
- Late latent syphilis cases: cases had no clinical signs or symptoms of syphilis, no previous documented STS and an RPR titre of 1:16 or less. Late latent cases also had to have a sexual history incompatible with recent acquisition of syphilis.

The first three categories were considered infectious in this audit. Adequate treatment response for infectious cases was considered to be a four-fold or greater decline in RPR titre by 12 months. Non-infectious cases were considered adequately treated if they remained serofast over the 12 month follow-up period—i.e. their RPR titres did not change by more than 1 dilution from pre-treatment

levels. Treatment response was categorised as not known if the patient had not completed the total 12 months follow-up.

Statistical methods—In order to investigate whether there was a difference in the demographic characteristics of those who were infectious compared to who were not; a logistic regression was fitted with infectious or not as the outcome (modelling infectious) and age, ethnicity, sexual behaviour and HIV status as explanatory variables. Gender could not be included along with sexual behaviour and HIV status, so was investigated separately including gender, age and ethnicity as explanatory variables.

Results

109 cases of syphilis were identified from the 2007 laboratory data. Sixty-eight (62%) of these cases were considered to be infectious: 12 primary, 19 secondary, 26 early latent and 11 of unknown duration. The remaining 41 cases were categorised as having late latent syphilis. There were no cases of neurosyphilis.

Demographic data—The total age range of cases was 18 to 70 with a median age of 34. The median age for infectious cases was lower (32) than for non-infectious cases (37). There was a predominance of men diagnosed (79%, n= 86) as has been previously reported.[2,3]

Table 1 Summary of demographic and clinical data

Variables	Infectious Cases (n=68)	Non-Infectious Cases (n=41)
Age		
Range	18 to 66	25 to 70
Median	32	37
Gender		
Male	58 (85%)	28 (68%)
Female	10 (15%)	13 (32%)
Ethnicity		
European	31 (45%)	4 (10%)
Pacific	6 (9%)	4 (10%)
NZ Māori	4 (6%)	0 (0%)
Indian	14 (20%)	21 (51%)
Other	10 (15%)	12 (29%)
declined	3 (5%)	
Sexual behaviour		
Heterosexual	24 (35%)	39(95%)
MSM	44 (65%)*	2 (5%)*
Symptoms or signs		
None	35 (51%)	
Ano-genital ulceration	11 (16%)	
Rash	18 (26%)	
Other	4 (6%)	
HIV Serostatus		
Negative	60 (85%)	40 (98%)
Positive	8 (15%)	1 (2%)
Treatment response		
Yes	60 (88%)	35 (85%)
No	3 (4%)	0
Not known	5 (7%)	6 (15%)

*P <0.0001.

The majority of cases were of European ethnicity (32%, n=35), followed by Indian (32%, n=35), Other (20%,n=22), Pacific (9%, n=10) and New Zealand Māori (4%, n=4). Three cases (3%) declined to provide ethnicity data on registration at ASHS (Table 1). Indians were over-represented compared to 2006 Auckland population census data while Europeans, Māori and Pacific were under-represented.

There was only weak evidence of an association between infectiousness and age (p=0.11, OR 0.96 [95% CI 02–1.01]) or ethnicity [p=0.13, OR European vs Māori /Pacific 0.16 (0.03–0.99) OR Indian vs Māori /Pacific OR 0.27 (0.06–0.29].

Gender (p=0.330.59 [0.21–1.71]) and HIV status (p=0.60, OR 0 .44 [0.02–9.45]) were also not associated with the probability of being infectious. There was however very strong evidence of an association with sexual behaviour; men who had sex with men being far more likely to be classified as infectious (p<0.0001, OR 41.8 (95% CI 7.0–250.1). The lack of association with any other variables is probably due to the small numbers of cases in this audit.

Clinical presentation—Just over half of the cases classified as infectious had no clinical symptoms or signs (n= 35, 51%). Of those who had symptoms, eleven (33%) had anogenital ulceration and 18(55%) had a rash. Nine cases (8%) had HIV infection, the majority of whom were MSM (n= 8) and nearly all had infectious syphilis (n=8) (Table 1).

Eight of the HIV positive cases had been previously diagnosed and the remaining case was diagnosed simultaneously at the time of his syphilis diagnosis. Two MSM seroconverted to become HIV positive several months after their diagnoses and treatment for syphilis.

Concordance with treatment guidelines—ASHS treatment guidelines are closely based on Centres for Disease Control (CDC) guidelines,[6] that recommend either benzathine penicillin G 2.4 mega units (MU) stat as an intramuscular injection (IMI) or doxycycline 100mg bd orally for 14 days for treatment of early infectious syphilis (primary, secondary, early latent).

Longer courses of antibiotics are recommended for treatment of late syphilis; either benzathine penicillin 2.4 G MU IMI weekly for 3 doses (total 7.2 MU) or doxycycline 100mg bd orally for 28 days. Accordingly the majority of cases (93%, n=101) in this audit had been treated with benzathine penicillin.

Discrepancy with treatment guidelines occurred most often in the early latent and unknown duration categories (both classified as infectious in this audit). The majority (73%, n=19) of the early latent cases were treated with regimens recommended for early infectious syphilis while 7 were over-treated (Table 2). Most of the unknown duration category (82%, n=9), were treated with regimens recommended for late syphilis although most (n=8) had been entered in the electronic medical record as having a diagnosis of infectious syphilis.

In contrast all of the cases of late latent syphilis (non-infectious) and primary and secondary syphilis (infectious) received the recommended treatment for their classification category (Table 2). Reassuringly none of the cases in this audit were under-treated and all were treated with antibiotic regimens recommended in the treatment guidelines.

Table 2. Treatment regimens according to category

Category	Benzathine penicillin 2.4 MU	Doxycycline 14 days	Benzathine penicillin 7.2 MU	Doxycycline 28 days
Primary	11	1	0	0
Secondary	18	1	0	0
Early latent	18	1	6*	1*
Unknown	2	0	9	0
Late Latent	0	0	37	4
Total	**49**	**3**	**52**	**5**

*Over-treated.

Treatment response and follow-up—Ninety-eight (90%) cases completed the 12 month follow-up period and in 11 cases outcome was not known (Table 1). Two of the 11 cases who did not complete follow-up were known to have moved out of the area and the remainder (n=9) did not respond to recall attempts for follow-up blood tests. Ninety-seven per cent of those who completed 12 months of serological follow-up had an adequate treatment response within that time- frame(n= 95).

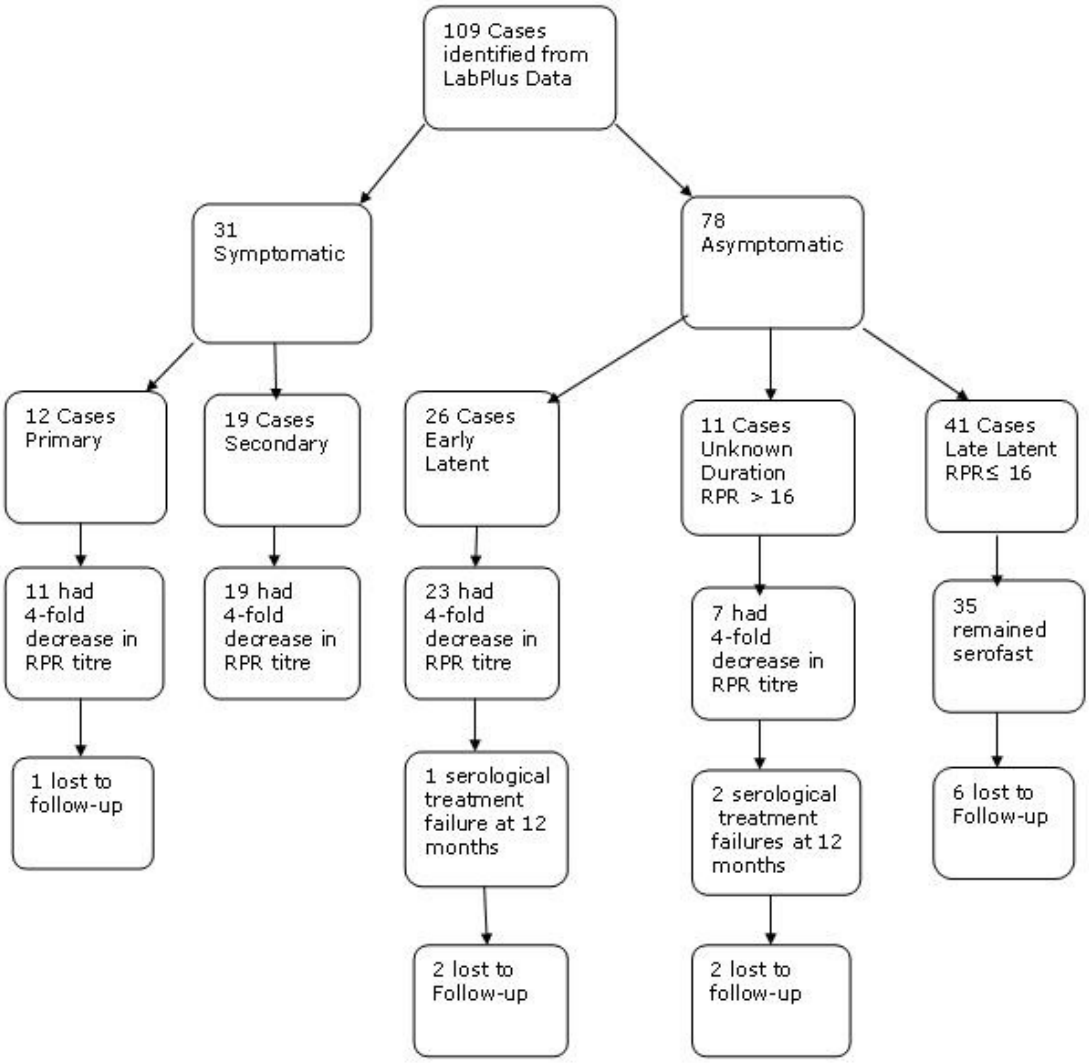
Eight of the non-infectious cases (late latent) remained serofast at RPR titres of 1:8 and one was serofast at a titre of 1:16 following treatment (Figure 1). Only 39(57%) infectious cases attended for all the recommended follow-up blood tests. However the majority (88%, n=60) did have sufficient blood tests to ascertain that they had had an adequate serological response to treatment.

ASHS treatment guidelines recommend a baseline RPR test on the day of treatment for infectious cases, then follow-up tests at 1 month, 2 months, 3 months, 6 months and 12 months after treatment. Late latent cases are recommended to have a baseline RPR test and then repeat tests at 6 and 12 months.

For public health reasons, ascertaining serological response to treatment is more important for infectious cases than non-infectious cases. In this audit, only 51 (47%) cases had had an RPR titre performed on the day of treatment, 35(32%) had had one within 7 days of treatment and the remainder had not had an RPR for 8 days or longer before treatment.

There were only 3 possible serologically defined treatment failures among those who were followed up for 12 months (Figure 1). None of these 3 cases had HIV infection. One was a pregnant woman with syphilis of unknown duration who was treated at 30 weeks gestation with benzathine penicillin 7.2 MU over 3 weeks (pre-treatment RPR was 32). She was subsequently delivered of a healthy infant (the baby's RPR was 4 at birth) and she remained serofast with an RPR of 16, 12 months after completing her treatment so in retrospect she was probably misclassified as infectious.

Figure 1. Flowchart of treatment follow-up



One woman with early latent syphilis also did not have an adequate decline in her RPR titres by 12 months after treatment. However she was re-treated half-way through her 12 month follow-up as there was a possibility of re-infection from an untreated partner and she did not respond to attempts at recall for serology after her second treatment.

The third case of possible treatment failure was a male with syphilis of unknown duration and he subsequently had an adequate decline in RPR after 2 years follow-up without requiring re-treatment. The first 2 cases had not had an RPR titre taken on the day of treatment and this may have impacted on assessment of treatment response.

Outcome of partner notification—Complete documentation at ASHS on outcome of partner notification at ASHS is available only from the paper files however as noted in the methods section it was impractical to pull all the full clinical notes. Therefore

this data is only derived from what was recorded in the electronic medical record and so should be interpreted with appropriate caution.

In 17 of the audit cases (15.5%) there was no documentation in the EMR about outcome of contact tracing. However 8 of these 17 cases had reported multiple anonymous contacts, 3 reported contacts who lived overseas, 2 had left the Auckland area and 1 lived overseas. So for the majority (82%) of these 17 cases contact tracing was not possible. For the remaining cases, 109(68.5%) out of 159 possible contacts documented in the EMR had apparently been notified they were a contact of syphilis. However what proportion of these contacts actually presented to a health practitioner for screening and treatment is unknown. This is because it is not usually possible to link someone who presents to ASHS as a syphilis contact to a particular index case unless they are identified as a regular partner of the index case.

Also some contacts may choose to go to their GP or another health service for screening and treatment. (For recommendations regarding contact tracing look back periods for syphilis the reader is referred to either the UK National guidelines for syphilis[5] or the CDC guidelines for the management of sexually transmitted diseases[6]).

Discussion

Adequate follow-up was achieved for 90% of patients treated and diagnosed with syphilis at ASHS and nearly all of those had a satisfactory serological response to treatment (97%). As noted above, there were only 3 possible serologically defined treatment failures; all in patients with latent syphilis. Of these cases-one may have been re-infected, one was pregnant (pregnancy can affect specificity of non-treponemal tests[7] due to production of anti-phospholipid antibodies) and the third had an adequate serological response after 2 years of follow-up.

Data from non-randomised trials report re-treatment is required in 5% to 11% of patients treated for infectious syphilis because of inadequate decline in RPR[8] titre but this situation appears to be uncommon at ASHS. It is acknowledged that a small number of patients did not return for follow-up and so treatment success may have been over-estimated in this audit.

ASHS 12-month follow-up rates(90%) were better than those reported in 3 audits published from the UK in which adequate follow-up ranged from 32.5%[9] to 74%[10,11] of treated patients. However it is acknowledged that our patient population may not be directly comparable to the populations in those audits.

Adherence to treatment guidelines by ASHS staff was also better than that reported in an audit of early syphilis management by specialist genito-urinary medicine clinics in the UK, in which 14% of clinics did not routinely use recommended antibiotic regimens[12]. ASHS partner notification outcomes appear to be satisfactory when compared to international recommendations, with 68% of contactable partners recorded as having been notified. However as stated above there are limitations as to the accuracy of this data. UK national guidelines recommend that at least 60% of contactable partners should attend for screening and treatment, although they comment that this standard may not be achievable for all settings.[5]

Three cases of syphilis of unknown duration in this audit had a diagnosis of non-infectious syphilis entered into the electronic medical record and so would not have been reported to ESR. Assessment of infectiousness of syphilis in latent (asymptomatic) cases is problematic particularly if there has been no previous testing or if previous results are inaccessible. The clinician frequently has to make a judgement based on sexual history, clinical examination and titres of non-treponemal (RPR/VDRL) tests.

A recent CDC audit[4] found that misclassification of latent syphilis was common with only 48.4% agreement for early latent cases and 49.7% for those of unknown duration. Those results had important implications in terms of treatment, partner notification and disease surveillance. The authors proposed that the current system of staging latent syphilis be dropped in favour of reporting cases as either having low or high titres on non-treponemal tests (VDRL and RPR), with high titre cases being managed as infectious and low titre cases being managed as non-infectious.

There is a clear relationship between duration of infection and the titre of non-treponemal tests. The natural course of untreated disseminated syphilis is to resolve spontaneously, however relapses can occur within the first 2 years of infection but after this time the person is non-infectious to sexual contacts. Non-treponemal test titres rise rapidly after initial infection with syphilis, remain high during the first year and then gradually decline even if the person is untreated.[7]

Sensitivity of non-treponemal tests is much lower in late syphilis[7] (approximately 70%) because of sero-reversal and this correlates with lack of infectiousness. A four-fold or greater decline in titre after treatment also correlates with a high probability of treatment success, however positive low-level titres in the VDRL (<1:16) or the RPR test (≤1:16) sometimes persist despite adequate treatment. This was demonstrated with this data, with 9 cases of late latent syphilis remaining serofast with RPR titres of 1:8 or higher at 12 months. There is little evidence to convincingly indicate that patients such as these harbour replicating treponemes.[13]

Clinical judgement plays a large role in management of latent syphilis with most clinicians preferring to over-treat than under-treat. Fifty-one per cent of cases of infectious syphilis in this audit lacked symptoms and it is recommended that advice be sought from a specialist experienced in managing syphilis when treating such cases, particularly with respect to contact management.

MSM are a known high-risk group for acquisition of syphilis in New Zealand and it is worrying that both the incidence of syphilis[2,3] and HIV is continuing to increase.[14] Syphilis can enhance both transmission and acquisition of HIV,[15] although the proportion of MSM with HIV co-infection (18%) was relatively low in this sample compared with international data.[16] Two men did however seroconvert to HIV during follow-up and it is strongly recommended that all cases of syphilis be tested for HIV infection.[5,6]

There is some clinical debate about the management of people with syphilis and HIV co-infection because of the concern that immune deficiency may increase the risk of developing neurosyphilis or increase risk of relapse of syphilis in these individuals. Early neurosyphilis-type syndromes such as syphilitic meningitis and

meningovascular syphilis have been reported as being more common in HIV infected individuals.[17,18]

Prospective studies comparing the outcome of HIV infected and HIV negative individuals treated with standard therapy have found that HIV infected individuals have similar serological responses to treatment[19–24] although one of these studies[19] was limited by poor follow-up rates. The number of syphilis cases with HIV co-infection in this audit is small, however all those who completed 12 months of follow-up did have an adequate serological response to standard therapy. Most international guidelines do not recommend different management of HIV infected patients with early infectious syphilis.[5,6]

In conclusion current management of syphilis at ASHS is largely conforming to treatment guidelines and has good outcomes in terms of treatment response and follow-up although more care needs to be taken in ensuring that cases of infectious syphilis in particular, have an RPR test on the day of treatment. Assessment of latent syphilis can be difficult even for experienced clinicians and expert advice is recommended when managing syphilis so that correct treatment and follow-up occurs.

MSM are a high-risk group for acquisition of infectious syphilis and HIV although New Zealand rates of co-infection are lower than some international data. As a large proportion of infectious cases in this audit were asymptomatic it is recommended that STS should be part of routine STI testing particularly for MSM.

Competing interests: None known.

Author information: Sunita Azariah**,** Sexual Health Physician**,** Auckland Sexual Health Service**,** Greenlane Clinical Centre**,** Auckland District Health Board, Auckland

Correspondance: Dr Sunita Azariah, Auckland Sexual Health Service, Greenlane Clinical Centre, Private Bag 92024,Auckland, New Zealand. Fax: +64 (0)9 6309783; email: SunitaA@adhb.govt.nz

References:

1. Sexually Transmitted Infection in New Zealand: Annual Surveillance Report 2008. Institute of Environmental Science and Research Ltd. http://www.surv.esr.cri.nz/PDF_surveillance/STISurvRpt/2008_2nd/STIAnnual2008.pdf
2. Cunningham R, Macdonald J, McLean M, Shaw C. An outbreak of infectious syphilis in Wellington, New Zealand. N Z Med J 2007;120(1260). http://www.nzma.org.nz/journal/120-1260/2680/
3. Azariah S, Perkins N, Austin P, Morris AJ. Public Health Alert: Results from the Auckland Voluntary Enhanced Syphilis Surveillance Project. Sex Health. 2008;5:303-304.
4. Peterman TA, Kahn RH, Ciesielski CA, et al. Misclassification of the stages of syphilis: Implications for Surveillance. Sex Transm Dis. 2005;32(3):144-9.
5. Kingston M, French P, Goh B, et al.UK National Guidelines on the management of syphilis 2008. Int J STD AIDS;19:729-740.
6. Centres for Disease Control. Sexually Transmitted Diseases Treatment guidelines 2006. http://www.cdc.gov/std/treatment/2006/toc.htm
7. Wicher K, Horowitz HW, Wicher V. Laboratory methods of diagnosis of syphilis for the beginning of the third millennium. Microbes and Infection. 1999; 1(12):1035-49.
8. Golden MR, Marra CM, Holmes KK. Update on syphilis: Resurgence of an old problem. JAMA. 2003;290(11):1510-1514.

9. Chauhan M, Srisha B, Sankar KN, et al. Audit of the use of benzathine penicillin, post-treatment syphilis serology and partner notification in patients with early infectious syphilis. Int J STD AIDS. 2006;17:200-202.
10. Tayal S, Ahmed MS, Hanif U. Audit of early syphilis: Teeside experience 2005-2007. Int J STD AIDS. 2009;20:647-649.
11. Fernando I, Thompson C. Audit of syphilis treatment, follow-up and contact tracing rates. Int J STD AIDS. 2007;18:128-129.
12. Mclean H, Daniels D, Carne C, et al.UK national audit of early syphilis management. Clinics audit: screening for and management of early syphilis. Int J STD AIDS.2006;17:344-348.
13. Tramont E. Syphilis in Adults: from Christopher Columbus to Sir Alexander Fleming to AIDS. Clinical Infectious Diseases 1995;21:1361-71.
14. AIDS –New Zealand 2009. http://dnmeds.otago.ac.nz/departments/psm/research/aids/pdf/63%20AIDS-NZ%20March%202009.pdf
15. Karp G, Schlaeffer F, Jotkowitz A, Riesenburg K. Syphilis and HIV co-infection. Eur J Intern Med 2009;20(1):9-13.
16. Dougan S, Evans BG, Elford J. Sexually Transmitted Infections in Western Europe Among HIV-Positive Men Who Have Sex With Men. Sex Transm Dis 2007;34(10):783-90.
17. Musher DM.Syphilis,neurosyphilis, penicillin and AIDS.J Infect Dis 1991;163(6):1201-6.
18. Centres for Disease Control and Prevention. Symptomatic Early Neurosyphilis among HIV-positive men who have sex with men-Four cities, United States, January 2002-June 2004.MMWR Morb Mortal Wkly Rep 2007;56:625-28.
19. Goeman J, Kivuvu M, Behets F, et al. Similar serological response to conventional treatment for syphilis among HIV-positive and HIV-negative women. Genitourin Med, 1995;7195):275-9.
20. Yinnon AM, Coury-Doniger, Polito R, Reichman RC. Serologic response to treatment of syphilis in patients with HIV infection. Arch Intern Med 1996;156:321-325.
21. Riedner G, Rusizoka M, Todd J, et al. Single-dose azithromycin versus penicillin G benzathine for the treatment of early syphilis. N Engl J Med. 2005;353(12):1236-44.
22. Manavi K, McMillan A. The outcome of treatment of early latent syphilis and syphilis of undetermined duration in HIV-infected and HIV uninfected patients. Int J STD AIDS. 2007;18 (12):814-8.
23. Rolfs RT, Joesoef MR, Hendershot EF, et al. A randomised trial of enhanced therapy for early syphilis in patients with and without human immunodeficiency virus infection. The Syphilis and HIV Study Group. N Engl J Med. 1997;337(5):307-14.

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The New Zealand World Health Organization Quality of Life (WHOQOL) Group

D Rex Billington, Jason Landon, Christian U Krägeloh, Daniel Shepherd

Abstract

With the approval of the World Health Organization (WHO), AUT University has established a new centre to develop and promote the use of the World Health Organization Quality of Life (WHOQOL) assessment instruments for health and health-related studies in New Zealand. The purpose of this paper is to introduce the NZ WHOQOL Group and to describe the structure and properties of the questionnaires in order to help the reader decide whether the instruments are suitable for their research and their use.

The constitution of the World Health Organization (WHO) defines health as a "state of complete physical, mental and social well-being not merely the absence of disease and infirmity" (p. 1).[1] A full and accurate measurement of the health of a country requires more than experts making inferences from socioeconomic indicators, more than collecting and analysing morbidity and mortality statistics, more than measuring the impact of disease and impairment on daily activities and behaviours, and more than the collective opinions by doctors about the health status and welfare of their patients. While such assessments are very valuable in helping to gauge quality of life, they are not sufficient. They miss that important dimension of what people think and feel about themselves, their subjective perception of their health and well-being. As Fallowfield[2] described it, quality of life is "the missing measurement in health care".

It is possible to be satisfied and happy with one's life, though disabled or incapacitated by illness or disease. One may be missing a limb, be blind, have asthma, have an intellectual impairment, or even have a combination of these disabilities but still feel satisfied with life and health. Therefore, it follows that people themselves should be asked whether they are satisfied with their health and wellbeing. This is the basic rationale and assumption of the WHOQOL measurement instruments. They are tools designed to measure the extent to which people feel satisfied with their health and well-being irrespective of their health status and what the impersonal statistics infer.

The WHO[3] defines quality of life "as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment" (p. 1). Quality of life as defined above is a multifaceted concept. The major WHOQOL instruments therefore produce a descriptive multi-dimensional profile of people's quality of life, not a single index.

Development

The WHO began in 1991 to develop a questionnaire to assess health-related quality of life, described then as the missing dimension in appraising health. The WHOQOL-100 was developed over 5 years in 15 field centres in 14 diverse countries in the developing and developed world.[4,5] More than 10,000 participants were questioned, their answers scored and the results analysed to construct a 100-item questionnaire, the WHOQOL-100. As a result, the core 100 items are considered to be culturally neutral and to apply to all countries.[6,7]

The WHOQOL-100 operationally defines health-related quality of life as a multidimensional construct covering six domains: psychological; social relations; physical health; level of independence; environment; and spirituality, religiousness, and personal beliefs. The 24 facets of the WHOQOL-100 six-domain structure are listed in Table 1. Test results are reported by individual facets and as a six-domain profile, but not as a single index. There are additional items or a national module in some country versions that contribute to assessing additional areas of quality of life they deem of particular importance to their culture. These items are scored apart from the generic core questions.

Table 1. Domains and facets of the WHOQOL-100

Domain	Facet
I Physical health	1 Pain and discomfort 2 Energy and fatigue 3 Sleep and rest
II Psychological health	4 Positive affect 5 Thinking, learning, memory and concentration 6 Self-esteem 7 Body image and appearance 8 Negative affect
III Level of independence	9 Mobility 10 Activities of daily living 11 Dependence on medication or treatments 12 Working capacity
IV Social relationships	13 Personal relationships 14 Social support 15 Sexual activity
V Environment	16 Physical safety and security 17 Home environment 18 Financial resources 19 Health and social care: accessibility and quality 20 Opportunities for acquiring new information and skills 21 Participation in and opportunities for recreation/leisure activities 22 Physical environment (pollution, noise, traffic, climate) 23 Transportation
VI Spiritual domain	24 Spirituality/religion/personal beliefs
Overall	25/26 Overall Quality of life and general health

The WHOQOL-BREF, the 26-item short form, was derived from the WHOQOL-100, but field tested separately.[8] However, component analysis of this shorter version has produced an alternative four-domain structure, where level of independence combines with physical health, while the spirituality, religiousness, personal beliefs domain is subsumed into the psychological domain.[8,9]

Test results for the WHOQOL-BREF may be reported as a six- or four-domain profile and by individual facets, but again not as a single index. While the WHOQOL-100 takes about 15 to 20 minutes to complete, the UK version of the WHOQOL-BREF was found to take about 5 minutes to answer in the UK.[10]

Since the year 2000, additional modules have been added to the core instruments for use with special populations, including the elderly[11] and people infected with or affected by HIV.[12] A special module to enquire more fully about the dimension of spirituality, religiousness and personal beliefs has also been completed.[13] A very short version called the EUROHIS-8 has been developed in Europe from the WHOQOL-BREF to be used in census-type surveys.[14]

The WHOQOL tools have been rigorously tested in each of the collaborating field centres and in other studies to assess both validity and reliability. Results are most satisfactory and attest to highly reliable and valid instruments when used for appropriate purposes.[9,10] Today, the WHOQOL is probably the most widely used health-related quality of life measure in the world with about 58 national versions. AUT University has developed a New Zealand version, which involved finding out if there are other factors important to the quality of life of New Zealanders not found in the core WHOQOL measures and producing a special NZ module to include these facets.

The New Zealand national version is in New Zealand English. In addition to that, AUT University will also be developing various ethnic- and cultural-specific modules and items, if they are needed, such as for Māori and for Pasifika. A weakness of the WHOQOL so far has been that it generally does not, like many other instruments, respond to the relative importance of facets that may differ for various demographic groups within a country.

Some research has confused general health status with health-related quality of life. In New Zealand at present the most widely used measure of health status is the SF36, an American-designed instrument derived from a US Medical Outcomes Study[15] of the late 1980s. The SF-36[16] is described as “a multi-purpose, short-form health survey with only 36 questions. It yields an 8-scale profile of functional health and well-being scores as well as psychometrically-based physical and mental health summary measures and a preference-based health utility index”.

The SF36 is a mixture of subjective and objective items. It produces a profile of domain scores as does the WHOQOL, but it treats health status as a uni-dimensional or unitary concept by permitting the calculation of a single index by a weighted combination of its component facets. The WHOQOL, by contrast, is a multifactorial measure of health-related quality of life, composed of purely subjective items, that produces a six- or four-domain profile of scores, where a composite score or single index is neither calculable nor recognised.

Some studies have tried to compare the WHOQOL tools and the SF36, with mixed results. There are some similarities, but there are also sufficient differences in what they measure and their discriminability.[17] This suggests that an examination of both instruments should be made before selecting the most suitable, hence valid tool, for the intended use. The questions to be asked therefore are whether the desired assessment is to be one of health status or quality of life, whether the individual facets and domains included in each instrument are those that are required for the study and whether a purely subjective measure or a combination of both objective and subjective items matters. Permission to use the SF36 incurs a fee, except for students, while the WHOQOL instruments are free to all qualified users.

To publicise the WHOQOL tools, a local conference was held at AUT University in February 2009, where the NZ WHOQOL Group was formalised. A copy of the proceedings of the conference that was attended by approximately 80 people can be found at the group's website.[18] A second, international conference sponsored by the Health Research Council took place in February 2010.

The Purpose of the WHOQOL Group

While studies have been and are being conducted in NZ using the Australian or British versions of the WHOQOL,[18–21] the new AUT-based group has now developed a NZ version. This version will have the original core as well as other facets and questions derived from field work now being conducted throughout NZ.

Overall, the purpose of the NZ WHOQOL group, based in the National Institute for Public Health and Mental Health Research at AUT University, is to develop and promote the use of the WHOQOL instruments in studies in NZ where the information gathered through the WHOQOL instruments will be of value to stakeholders.

Specific Objectives of the NZ WHOQOL Group are:

1. To *develop NZ versions* of the WHOQOL-100 and WHOQOL- BREF sensitive to cultural issues, values and language(s) particular to NZ and to develop national items if the need is found.
2. To *develop additional modules* to the WHOQOL in order to increase the validity and reliability of studies in New Zealand involving quality of life of particular populations, such as major ethnic groups, the elderly, adolescents or those with various major health disorders.
3. To *accumulate national data* in order to establish and then continually update national health-related quality of life norms.
4. To *produce a users manual* to guide the use and the scoring of the core NZ WHOQOL instruments and any additional modules.
5. To *provide on-line information and guidance* for potential users and on-line analytical software for established users.
6. To *be a national clearinghouse* for information and research that has used or are using the WHOQOL instruments.

7. To *promote the value of health-related quality of life assessment* and the purpose and value of the WHOQOL instruments in particular to researchers in NZ health and health-related fields.
8. To *approve and monitor* the use of the WHOQOL for studies in NZ and elsewhere in order to maintain the integrity of the instruments.
9. To *collaborate* with other universities, and health, state and private institutions in studies using the WHOQOL.

Competing interests: None known.

Author information: D Rex Billington, Adjunct Professor; Daniel Shepherd, Senior Lecturer, Jason Landon, Senior Lecturer; Christian U Krägeloh, Senior Lecturer; NZ WHOQOL Group, AUT University, Auckland

Correspondence: If any reader is interested to use any of the WHOQOL instruments for research or assessment purposes, they may contact:

Dr D Rex Billington, Department of Psychology, AUT University, Private Bag 92006, Auckland 1142, New Zealand. Email: Rex.Billington@aut.ac.nz

or

Dr Daniel Shepherd, Department of Psychology, AUT University, Private Bag 92006, Auckland 1142, New Zealand. Email: Daniel.Shepherd@aut.ac.nz

References:

1. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June,1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p.100) and entered into force on 7 April 1948.
2. Fallowfield L. The quality of life: The missing measurement in health care. London: Souvenir Press. 1990.
3. WHOQOL Group. Development of the WHOQOL: Rational and current status. Int. J Mental Health 1994;23: 24-56
4. The WHOQOL Group. The World Health Organization Quality of Life Assessment (WHOQOL): Development and general psychometric properties. Social Science and Medicine 1998;46(12):1569-85.
5. The WHOQOL Group. Development of the World Health Organization WHOQOL-BREF Quality of Life Assessment. Psychological Medicine 1998;28:551-8.
6. Power M, Bullinger M, Harper A. The WHOQOL Group (1999). The World Health Organization WHOQOL-100: Tests of the universality of quality of life in 15 different cultural groups worldwide. Health Psychology 1999;18: 495-505.
7. Saxena S, Carlson D, Billington R, Orley J, The WHOQOL Group. The WHO quality of life assessment instrument (WHOQOL-Bref): The importance of its items for cross-cultural research. Quality of Life Research 2001;10:711-21.
8. Skevington SM, O'Connell KA. Measuring Quality of Life in HIV and AIDS: A Review of the Recent Literature. Psychology and Health 2003;18(3):331-50.
9. Skevington SM, Lotfy M, O'Connell KA. The World Health Organization's WHOQOL-BREF quality of life assessment: Psychometric properties and results of the international field trial. A Report from the WHOQOL Group. Quality of Life Research 2004:13(2):299-310.
10. Power, MJ. Quality of Life. In Lopez SJ, Snyder CR (Eds.). Positive Psychological Assessment: A Handbook of Models and Measures. 2003; 427-441. Washington, DC: American Psychological Association.

11. Power M, Quinn K, Schmidt S, WHOQOL-OLD Group. Development of the WHOQOL-old module. Quality of Life Research 2005;14(10):2197-214.
12. O'Connell K, Saxena S, Skevington SM, for the WHOQOL-HIV Group. WHOQOL-HIV for quality of life assessment among people living with HIV and AIDS: results from a field test. AIDS Care 2004;16(7):882-9.
13. The WHOQOL-SRPB Group. A cross-cultural study of spirituality, religion and personal beliefs as components of quality of life. Social Science and Medicine 2006; 62:1486-97.
14. Schmidt S, Mühlan H, Power M. The EUROHIS-QOL 8-item index: psychometric results of a cross-cultural field study. Eur J Public Health 2006;16:420-8.
15. Tarlov AR, Ware JE Jr, Greenfield S, et al. The Medical Outcomes Study. An application of methods for monitoring the results of medical care. JAMA 1989;262(7):925-30.
16. Ware, JE. SF-36 Health Survey Update. www.sf-36.org/tools/SF36.shtml
17. Huang IC, Wu A, Frangakis C. Do the SF-36 and WHOQOL-BREF Measure the Same Constructs? Evidence from the Taiwan Population. Quality of Life Research 2006;15(1):15-24.
18. New Zealand WHOQOL Group. www.whoqol.org.nz
19. Taylor WJ, Myers J, Simpson RT, et al. Quality of life of people with rheumatoid arthritis as measured by the World Health Organization quality of life instrument, short form (WHOQOL-BREF): score distributions and psychometric properties. Arthrit Care Res 2004;51:350-7.
20. Hsu P, Krägeloh CU, Shepherd D, Billington R. Religion/spirituality and quality of life of international tertiary students in New Zealand: An exploratory study. Mental Health, Religion, & Culture 2009;12:385-99.
21. Lewis A, Krägeloh CU, Shepherd D. Pet ownership, attachment and health-related quality of life in New Zealand. E-Journal of Applied Psychology 2009;5:96-101.

THE NEW ZEALAND MEDICAL JOURNAL
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Urban rickettsiosis in the Waikato region of New Zealand

Anurag Sekra, James Irwin, Paul Reeve

Abstract

Murine typhus is the only endemic rickettsia that has been shown to cause human disease in New Zealand (NZ). We present a case report of a rickettsial infection in the Waikato region which was not typical for murine typhus. We outline the features which made this case unusual, and discuss the diagnostic uncertainty in assessing rickettsial disease. Rickettsial infection should be suspected in all patients presenting with an undifferentiated febrile illness in NZ, even if they do not fit the typical clinical and epidemiological picture of murine typhus.

Rickettsial infections are zoonoses transmitted by ticks, mites, fleas or lice, and all cause a clinically similar illness. Murine typhus, the only rickettsiosis endemic in NZ, is caused by *Rickettsia typhi* and is transmitted by rat fleas (*Xenophsylla cheopis*). It classically causes a clinical triad of fever, headache and rash.

Two case series of murine typhus in NZ have previously been published in this *Journal*[1] and in the New Zealand Health Report.[2] They demonstrate that the illness usually occurs in people living or working in a rural environment, with a median duration of symptoms before presentation of 5 days. All cases in these two series occurred in winter or spring (between April and October).

Case report

A 26 year old man presented to the emergency department at Waikato Hospital on the 27 January 2009 (midsummer) with a 4-week history of intermittent central abdominal pain, mild jaundice, fevers, vomiting and increasing tiredness. He had not recently travelled overseas. No-one in his household had a similar illness. He lived with his partner and two cats in a townhouse in Hamilton, and worked as a handyman in a residential area on the outskirts of the city. He smoked 10–15 cigarettes per day and drank alcohol only on special occasions. He had previously used intravenous drugs, but not in the 6 months before presentation.

On examination he was afebrile and had mild yellowing of his sclera. His abdomen was soft, non-tender and his liver and spleen were not palpable. He had no rash, and he had no photophobia or neck stiffness.

Routine blood testing revealed (normal values in parentheses) Na=138 (135–145) mmol/L, K=3.8 (3.6–5.2) mmol/L, Creatinine=75 (45–90) µmol/L, Urea=3.6 (3.2–7.7) mmol/L, Bilirubin=86 (0–24) µmol/L, GGT=419 (0–50) U/L, ALP=320 (40–130) U/L, ALT=671 (0–45) U/L, AST=454 (0–35) U/L, CRP=1 (0–5) mg/L, Hb=143 (115–160) g/L, Platelets=245 (150–400) × 10^9/L, White Cell Count=9.1 (4–11) × 10^9/L, Neutrophils=5.8 (1.9–7.5) × 10^9/L, Lymphocytes=2.2 (1.0–4.0) × 10^9/L, Monocytes=0.9 (0.2–1.0) × 10^9/L, Eosinophils=0.2 (0.0–0.5) × 10^9/L. He had negative serology for hepatitis A, B and C, for HIV and for leptospirosis.

Serology for *R. typhi* was positive to a dilution of 1/1024 (IgM) and 1/1024 (IgG). Serology for *Rickettsia rickettsia* was positive to a dilution of 1/256 (IgG), IgM not recorded. (Waikato Hospital uses an Indirect Immunofluorescent Assay (IFA) test manufactured by Focus Diagnostics. The antigens used are taken from *R. typhi* as a representative of the typhus fever group of rickettsia, and *R. rickettsia* as a representative of the spotted fever group). An ultrasound of his abdomen showed no evidence of biliary obstruction.

He was treated with a 2 week course of oral doxycycline at a dose of 100mg twice per day and made a slow recovery.

Discussion

The rickettsiae are gram negative coccobacilli which grow strictly in eukaryotic cells. They are broadly divided into three groups; the spotted fever group (including *R. rickettsii, R. conorii, R. africae, R. felis*), the typhus group (*R. typhi, R. prowazekii*), and the scrub typhus group (*Orientia tsutsugamushi*). The spotted fever group are transmitted by ticks (except *R. felis* which is transmitted by fleas) whilst the typhus group are transmitted by fleas or lice. They all cause a similar clinical illness, with varying presence of fever, rash, headache, myalgia, altered liver tests and thrombocytopenia.

Severity may vary from a mild febrile illness, to a more severe illness with multi-organ involvement. Patients with tick-borne spotted fevers may have an eschar at the site of the tick bite. Rickettsiae are generally sensitive to doxycycline.

Murine typhus is the only rickettsial illness that has been detected in humans in NZ, through the demonstration of *R. typhi* DNA in the blood of a patient with a compatible clinical illness.[2] Cases of human infection with *R. felis* have recently been described overseas,[3] and *R. felis* has been detected in cat fleas in NZ.[4] However, no human infection has been demonstrated in NZ. No other rickettsiae that cause human infection are known to be endemic in NZ.

Murine typhus is a febrile illness caused by the bacteria *R. typhi*. Its lifecycle involves infection of mammalian hosts and flea vectors, transmission occurring through flea bites, the inoculation of infected faeces into pruritic bite lesions or the inhalation of infected faeces. The classic cycle of transmission is between rats (*Rattus rattus* and *Rattus norvegicus*) and the rat flea (*X. cheopis*). Transovarian transmission of *R. typhi* in *X. cheopis* fleas helps maintain a reservoir of infection.[5]

Transmission of murine typhus has also been described in other mammal/flea cycles, for example between opossums (*Didelphis virginiana*) and cat fleas (*Ctencephalides felis*) in the south of the United States.[6] Human infection occurs incidentally and is not considered a sustaining part of the lifecycle of *R. typhi*.

R. felis causes a febrile illness similar to that of murine typhus. It has been detected in *C. felis* fleas, which are the most likely vector for human *R. felis* rickettsiosis. Transmission of infection occurs through flea bites,[7] but may also occur through inoculation of infected faecal material. Transovarian transmission of *R. felis* occurs, maintaining a reservoir of infection in infected fleas.[8] This flea lives on a variety of hosts including domestic cats, dogs, rodents and opossums.

Murine typhus was first described in NZ in 1989.[9] Since then there have been two case series[1,2] describing the epidemiology of murine typhus infection in the Auckland and Waikato regions. Almost all patients in these series lived or worked in a rural environment, which carries more risk of exposure to rats and rat fleas. All patients suffered their illness in winter or spring (April to October).

This case of rickettsiosis was unusual for three reasons. Firstly, the patient lived and worked in the confines of Hamilton city. One of 24 previously described New Zealand patients lived in an urban environment, with the others living or working rurally. Secondly, our patient suffered his illness in January. All previously described patients were unwell between April and October. This pattern is hypothesized to be due to the movement of rats, (hosts of *R. typhi*) closer to human habitation in cold winter weather. Thirdly, our patient presented following a symptomatic period of 4 weeks, demonstrating that rickettsial infection can sometimes cause a prolonged illness. Patients detected in previous case series have had an average duration of symptoms before presentation of 5 days.[1]

The atypical features of this patient's illness, and the observation that he owned two cats, raises the possibility that his illness was not caused by *R. typhi*, but by *R. felis*, or by another as yet unidentified rickettsia. Serological testing for rickettsiae often shows cross reactivity (as in this case) and does not reliably distinguish between species.[10] A definitive demonstration of the infecting organism can be made by PCR analysis of rickettsial DNA present in patient white blood cells, or by western blot analysis of serum immunoglobulins to species specific antigens. PCR analysis can fail to yield a result due to low rickettsial DNA levels in tested blood.

Taking blood samples after the administration of an effective antibiotic, or during the immune phase of the illness (when serological tests are positive) reduces the likelihood of obtaining a result. This represents a significant barrier to obtaining a species diagnosis with PCR; as most patients with a prolonged febrile illness do not have a rickettsiosis, yet on presentation need blood set aside for PCR analysis. This difficulty is highlighted by the observation that only one of the published cases of murine typhus in NZ was confirmed by PCR analysis.[2]

Unfortunately we were not able to pursue a definitive diagnosis for our patient through PCR testing, as the blood specimen had been discarded by the laboratory when we took the decision to write this case report. Serological testing confirmed a rickettsial infection which was most likely to have been murine typhus. From a clinical point of view further definition of the infecting species would not have altered management, as doxycyline was appropriate treatment regardless of the infecting rickettsia.

Further research aimed at identifying the causative agent of rickettsial disease in NZ, using species specific techniques such as PCR or western blot analysis, would help to clarify whether or not *R. felis* (or other rickettsial organisms) cause human disease here in addition to *R. typhi*.

Summary—This atypical case of rickettsial infection occurred in a man who lived and worked within the confines of Hamilton city, during summer. It suggests the diagnosis of rickettsiosis should be considered in all patients presenting with undifferentiated fever.

Author information: Anurag Sekra, Medical Registrar; James Irwin, General Medical Registar; Paul Reeve, Clinical Director; Department of Medicine, Waikato Hospital, Hamilton

Correspondence: James Irwin, General Medical Registrar, Department of General Medicine, Waikato Hospital, Private Bag 3200, Hamilton, New Zealand. Email irwinj@waikatodhb.govt.nz

References:

1. Gray E, Atatoa-Carr P, Bell A, et al. Murine typhus: a newly recognised problem in the Waikato region of New Zealand. N Z Med J 2007;120(1259). http://www.nzmj.com/journal/120-1259/2661/content.pdf
2. Roberts S, Ellis-Pegler R. Murine Typhus in New Zealand. NZ Pub Health Rep 2001;8(10):73-75.
3. Schriefer ME, Sacci JB Jr, Dumler JS, et al. Identification of a novel rickettsial infection in a patient diagnosed with murine typhus. J Clin Microbiol 1994;32(4):949-54.
4. Kelly P, Rolain JM, Raoult D. Prevalence of human pathogens in cat and dog fleas in New Zealand. N Z Med J 2005;118(1226). http://www.nzmj.com/journal/118-1226/1754/content.pdf
5. Farhang-Azad A, Traub R, Baqar S. Transovarial transmission of murine typhus rickettsiae in *Xenopsylla cheopis* fleas. Science 1985;227(4686):543-5.
6. Sorvillo FJ, Gondo B, Emmons R, et al: A suburban focus of endemic typhus in Los Angeles County: association with seropositive domestic cats and opossums. Am J Trop Med Hyg 1993;48:269-73.
7. Wednicamp J, Jr, Foil LD. Infection and seroconversion of cats exposed to cat fleas (*Ctenocephalides felis* Bouche) infected with Rickettsia felis. J Vector Ecol 2000;25:123-6
8. Wednicamp J Jr, Foil LD. Vertical transmission of Rickettsia felis in the cat flea (*Ctenocephalides felis* Bouche) J. Vector Ecol. 2002; 27: 96-101
9. Ellis-Pegler RB, Cooper IP, Croxson MC. Murine typhus in Kaukapakapa? N Z Med J 1991;104:333-4.
10. Znazen A, Rolain JM, Hammami A, et al. Rickettsia felis infection, Tunisia. Emerg Infect Dis. 2006;12:138–40.

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Anticoagulant-induced intramural haematoma of the caecum mimicking a colonic tumour

Jesse Fischer, Paul Samson, Mr Greg Robertson

Abstract

Spontaneous haematoma in the intestine wall may occur. We describe a rare case.

A problematic surgical consequence of anticoagulation therapy is bleeding involving the gastrointestinal (GI) tract. Spontaneous anti-coagulant induced haematoma (AIH) rarely occurs in the large bowel with few previous cases being reported.

We present a case which mimicked a colonic tumour.

Case report

A 52-year-old French woman presented to Christchurch Public Hospital with a 1-day history of cramping abdominal pain and three episodes of rectal bleeding. She denied previous symptoms of gastrointestinal bleeding or malignancy, and had no family history of bowel cancer. Her regular medications included the anticoagulant Previscan (vitamin K antagonist) for a mitral valve replacement following rheumatic heart disease.

On examination she was haemodynamically stable and her abdomen was soft with a palpable mass in the right lower quadrant. Rigid sigmoidoscopy confirmed haematochezia.

Blood tests on admission revealed a normal haemoglobin level, although her prothrombin ratio was elevated at 5.1. Computed tomography (CT) of the abdomen was performed due to presence of a palpable mass, and this showed an abnormal caecum (Figure 1).

Subsequent colonoscopy identified blood in the colon and a firm mass in the caecal wall that looked typical of a bleeding tumour to the experienced endoscopist (Figure 2). The lesion was biopsied but before histology was available the patient experienced further episodes of rectal bleeding and light-headedness, became hypotensive (blood pressure 81/54 mmHg) and profoundly anaemic (Hb 68g/L), and thus was taken to the operating theatre.

Figure 1. CT scan showing a heterogenous caecal mass, arrowed (caecal wall thickened and fat stranding inferomedially)

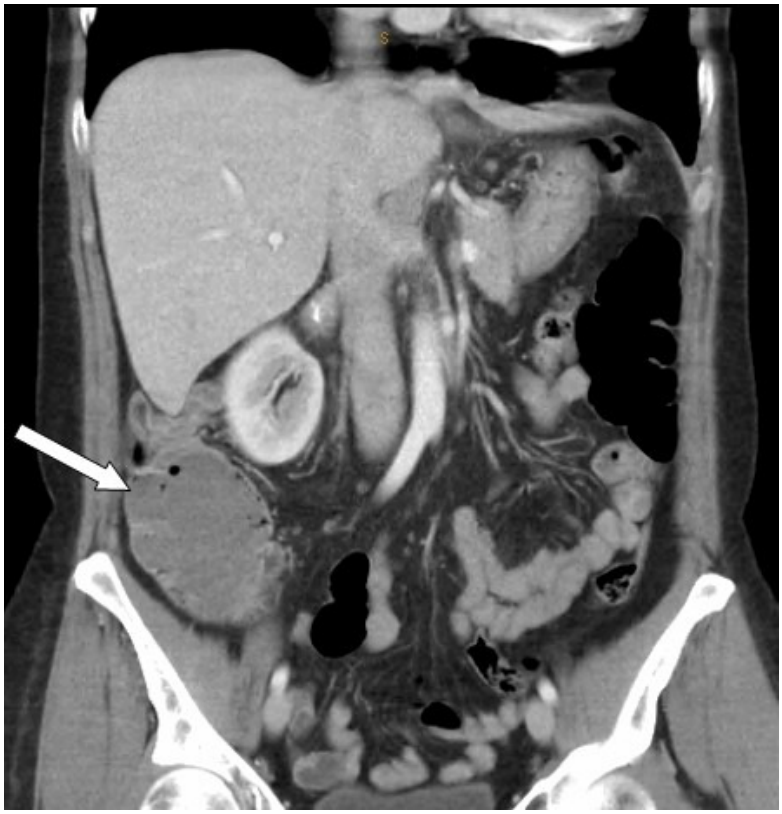
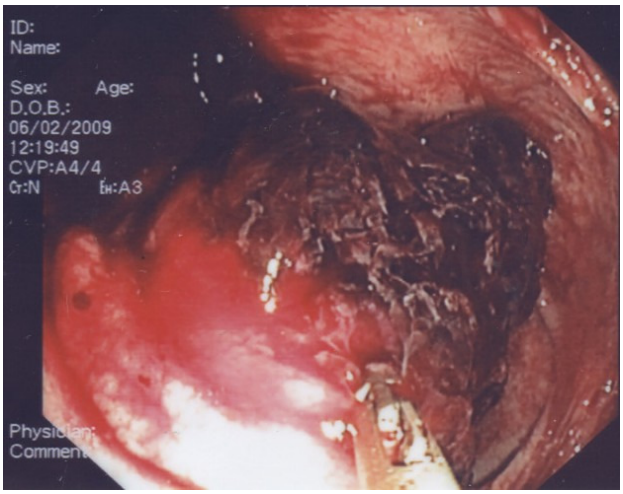


Figure 2. Caecal mass on colonoscopy with biopsy in process



At laparotomy the caecal mass had a “spongy” feel to it, with no regional lymphadenopathy. A standard oncological right hemicolectomy was performed.

Pathologists reported a 60×45×35mm polypoid mass arising in the medial wall of the caecum, partly involving the ileocaecal valve and protruding into the caecal lumen. There were adjacent areas of haemorrhage visible.

On opening the mass it was found to comprise blood clot only. Histological examination identified no neoplasia within the mass or regional lymph nodes.

Discussion

Spontaneous intramural intestinal haematoma is a rare occurrence. AIH of the small intestine occurs in 1:2500 anticoagulated patients per year according to one report,[1] but a 1977 review found only 4/98 patients who developed AIH did so in the large bowel, with the remainder bar one being in the small bowel.[2] Since then at least seven further cases have been reported in the English language literature including three located in the rectum,[3,4,5] one in the ileocaecal valve[6], one the entire length of the colon[7], and two in the caecum[8,9].

In addition to these cases there have been reports of caecal haematoma as a post-operative complication of abdominal surgery[10] and the result of blunt abdominal trauma[11].

Previously described cases of AIH presented with intestinal obstruction, rectal bleeding and/or abdominal pain. Management included conservative cares, simple drainage, radiological and operative approaches. All cases require consideration of risks versus benefits prior to reinstitution of anticoagulation.

A conservative approach was not possible in this case given ongoing blood loss and haemodynamic instability. Simple drainage or radiological embolisation was also not possible due to the site of the haematoma and uncertainty of diagnosis.

There is often considerable difficulty in diagnosing colonic haematomas despite a high index of clinical suspicion; CT and colonoscopy were unable to distinguish haematoma from neoplasm in this case.

If the patient is stable, colonoscopic biopsy may differentiate between haematoma and neoplasm when diagnosis is unclear. Although rare, it is reasonable that surgeons consider AIH as a differential diagnosis for a colonic mass in patients on anticoagulants.

Author information: Jesse Fischer, House Surgeon; Paul Samson, Advanced Trainee (General Surgery); Greg Robertson, Colorectal Surgeon & Clinical Director of General Surgery; Department of General Surgery, Christchurch Hospital, Christchurch

Correspondence: Paul Samson, Department of General Surgery, Christchurch Hospital, PO Box 4345, Christchurch, New Zealand. Email: teamsamson@hotmail.com

References:

1. Bettler S, Montani S, Bachmann F. Incidence of intramural digestive system hematoma in anticoagulation. Epidemiologic study and clinical aspects of 59 cases observed in Switzerland (1970-1975). Schweiz Med Wochenschr 1983;113:630-6.
2. Hughes CE, Conn J, Sherman JO. Intramural hematoma of the gastrointestinal tract. Am J Surg 1977;133:276-279.

3. Babu ED, Axisa B, Taghizadeh AK, et al. Acute spontaneous haematoma of the rectum. Int J Clin Pract 2001 Jan-Feb;55(1):66-7.
4. Attuwaybi B, Visco JJ, Butler BN, et al. Spontaneous rectal intramural hematoma: A rare complication of anticoagulant therapy. Surgical Rounds 2008 March;31(3) 115-8.
5. TerKonda SP, Nichols FC 3rd, Sarr MG. Spontaneous perforating hematoma of the rectum: report of a case. Dis Colon Rectum 1992;35(3):270-272.
6. Hsiao CW, Chao PC. Warfarin-induced intramural haematoma of the ileocecal valve with obstruction. ANZ J Surg 2004 Sept; 74(9): 810-1.
7. Lee SH, Lee JH, Park DH, et al. Intramural colonic hematoma: complication of anticoagulation with heparin. Gastrointest Endosc 2005;62:783-4.
8. Chin C-C, Yeh C-Y, Kuo Y-H, et al. Colon obstruction due to Anticoagulant Induced Intramural Hematoma. J Soc Colon Rectal Surgeon (Taiwan) 2007 December;18:111-115.
9. Garcia Marin A, Martin Gil J, Sanchez Rodriguez T, et al. Spontaneous intramural hematoma of the cecum. Rev Esp Enferm Dig 2009 April; 101(4):296-7.
10. Balaguera JC, Segovia JC, García-Almenta MM, et al. Intestinal occlusion due to Acute Intramural Hematoma of the Ascending Colon after Open Cholecystectomy. The Internet Journal of Surgery ISSN:1528-8242 2007 Volume 13 Number 2.
11. Calabuig R, Ortiz C, Sueiras A, et al. Intramural hematoma of the cecum: report of two cases. Dis Colon Rectum 2002;45(4):564-6.

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A complication of H1N1 influenza A "swine" flu

Alexander E T Finlayson, Jamie M Strachan

Clinical

This 22-year-old asthmatic patient presented with cough, fever, chest pains and was diagnosed with H1N1 influenza A swine lineage upper respiratory tract infection.

On examination the patient had a positive Hamman's sign—a crackling sound heard in synchrony with the heartbeat.

A chest radiograph (Figure 1) and CT scan of the thorax (Figure 2) were performed.

Figure 1. Chest radiograph

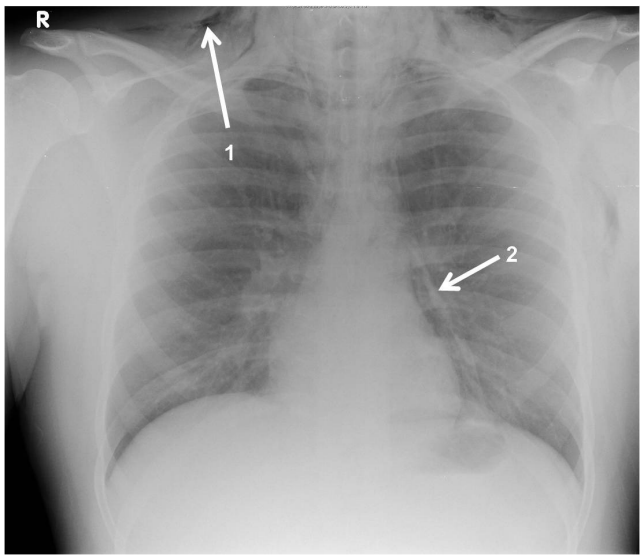
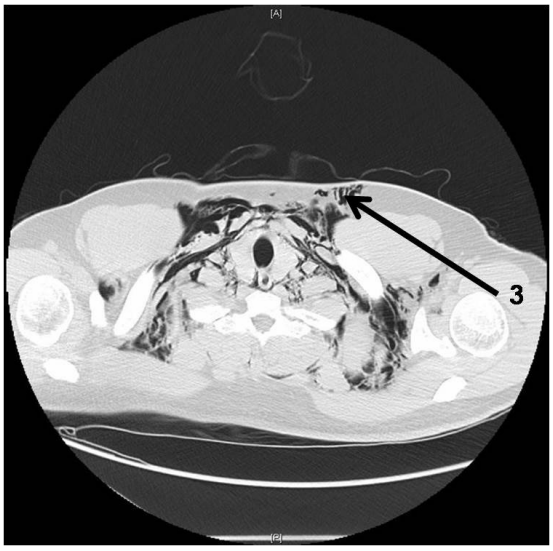


Figure 2. CT scan of the thorax



What is the diagnosis?

Answer

Pneumomediastinum and subcutaneous emphysema.

The chest radiograph shows subcutaneous emphysema (arrow 1), which was also evident on clinical examination, and pneumomediastinum (arrow 2).

The CT scan demonstrates the appearance of subcutaneous emphysema in the upper thorax (arrow 3).

Discussion

Hamman's sign is a crunching or crackling sound heard over the precordium. It was first described in patients with Hamman's syndrome—the association between spontaneous subcutaneous emphysema, pneumomediastinum, and pain.[1]

Swine flu posed a challenge to public health systems in New Zealand at an early phase in the global pandemic.[2]

Pneumomediastinum as a complication of swine flu was first described in one patient in the original cohort of Mexican patients,[3] and has since been described in another two patients from Japan.[4]

Author information: Alexander E T Finlayson, Academic Clinical Fellow, Infectious Diseases, Churchill Hospital, Oxford, UK, Jamie M Strachan, Anaesthetic Specialist Trainee, Milton Keynes General Hospital, Milton Keynes, UK

Correspondence: Dr Jamie Strachan, Milton Keynes General Hospital, Standing Way, Milton Keynes, MK6 5LD, United Kingdom, Email: strachan.jamie@gmail.com

References:

1. Hamman LV. Spontaneous mediastinal emphysema, Bulletin of the Johns Hopkins Hospital, Baltimore, 1939;64:1-21.
2. Jennings LC. Influenza A(H1N1)09: another public health risk to New Zealand. N Z Med J. 2009;122(1298):11-16. http://www.nzmj.com/journal/122-1298/3700
3. Novel Swine-Origin Influenza A (H1N1) Virus Investigation Team, Dawood FS, Jain S, Finelli L, et al. Emergence of a novel swine-origin influenza A (H1N1) virus in humans. N Engl J Med. 2009; 360(25): 2605-2615. Erratum in: N Engl J Med. 2009;361(1):102.
4. Hasegawa M, Hashimoto K, Morozumi M, et al. Spontaneous pneumomediastinum complicating pneumonia in children infected with 2009 pandemic influenza A (H1N1) virus. Clin Microbiol Infect. 2010;16(2)195-199.

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Paratyphoid fever

Part of a paper by Dr W Young that was read before Wellington Division of the N.Z. Branch of B.M.A. and published in NZMJ 1910 May;8(34):1.

When in his presidential address Dr. Purdy stated that medical men were working towards their own extinction, the editor of one of our local papers expressed his doubts and called attention to the increasing number of "new diseases," leading his readers to infer that we are finding more work for ourselves. Here, as in the case of most so-called "new diseases," we are dealing with a new name but not a new disease.

The name" paratyphoid" was first adopted in 1896 to differentiate cases of typhoid fever which did not react to the Grüber-Widal agglutination test; but it was not till 1901 that the nature of the bacillus was determined by Schotmiiller.[1] The name has come to stay, and we find it defined in the Encyclopedia as "A morbid condition simulating typhoid fever clinically but lacking the Widal reaction; it is not due to the typhoid bacillus, but to the paracolon bacillus."

It is almost a century now since typhoid was first differentiated from typhus fever; but although it has long been known that typhoid was a complex disease with many varieties it has been left to the modern bacteriologist to prove that it is, sometimes at least, a mixed infection, and that more than one bacillus may give rise to typhoid-like symptoms,

I have since taken considerable interest in the subject of paratyphoid, and decided that it was a good one for discussion. The first paper on the subject, to which I can find reference, appeared in the American Journal of Medical Science, January, 1903.[3] Since then a number of papers have appeared, notably one by Lieut.-Col. Birt[4] in 1907, and a lecture by Captain Samut[6] last year, and a number of cases have been recorded, especially in the Journal of the Royal Army Medical Corps and in The Lancet. In these journals cases are reported from various parts of the world—America, South Africa, Ceylon, Malta, Mauritius, as well as in England and Europe.

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Do helmets reduce the risk of head and neck injuries among skiers and snowboarders?

These winter sports are popular but are responsible for considerable head and neck injury. Intuitively, safety helmets would seem to be a sensible idea. However, it has been suggested that the use of helmets may increase the risk of neck injury in a crash or fall, particularly in children. This systematic review of 10 case-control studies throws some light on the subject. Over 86,000 injuries were reported in these studies and helmet use appears to be justified as both head and neck injuries were significantly reduced in the helmet wearers. The pooled odds ratio was 0.65 for head injury and 0.89 for neck injury in the helmet wearers.

CMAJ 2010;182:333-40.

Cardiovascular screening for young athletes—is electrocardiography helpful?

It is estimated that 1 in 220,000 young athletes die suddenly each year because of an undiagnosed cardiac abnormality. Apparently in Italy it is mandatory that young athletes have a comprehensive clinical examination and electrocardiogram (ECG) before beginning their career. This study from the USA involved 510 healthy young men and women. All had conventional medical history and physical examination and 12-lead ECG. The investigators report that the addition of the ECG increased the rate of detection of significant cardiac abnormalities—of the 10 identified 5 were in people whose history and examination were normal. The down side was that false positive rate was increased from 5.5% without the ECG to 16.9% with the ECG. So the ECG was very helpful to some and potentially harmful to others.

Ann Intern Med 2010;152:269-75.

Evidence-based approaches to prevent injury due to falls in a residential aged care population

This paper reports on a randomised trial involving 5391 residents in 88 aged care facilities in New South Wales. The trial compared routine care versus evidence-based intervention to prevent falls. A special projects nurse was appointed to encourage the intervention strategies. The strategies were falls risk assessment; mobility assessment; use of hip protectors; calcium and vitamin D supplementation; continence management; exercise programmes; appropriate footwear; medication review; and post-fall management review. Seventeen months later the outcome was disappointing. Despite significant increases in the provision of hip protectors and use of vitamin D supplementation in both intervention and control facilities, there was no difference in the number of falls or falls injuries between the intervention and control groups, nor a reduction in falls overall.

MJA 2010;192:319-22.

Orthostatic hypotension and medication use in the elderly

Orthostatic hypotension (OH) is defined as a drop of at least 20 mmHg in systolic pressure and for a drop of 10 mmHg in diastolic pressure within 3 minutes of standing. This study reviews its epidemiology in 3775 British community dwelling women aged between 60 and 80 years. The prevalence of OH was found to be 28%. The predictors of OH in their subjects were uncontrolled hypertension, use of three or more antihypertensives and multiple co-morbidities. In particular, a key point is made. "Blood pressure lowering with beta blockers and the use of three or more antihypertensives are independently associated with orthostatic hypotension, regardless of co-morbidities, and therefore close monitoring of signs and symptoms of OH is needed." Seems like very good advice which would apply to all elderly women and men at risk.

Age and Ageing 2010;39:51-6.

Strict rate control in patients with atrial fibrillation

Atrial fibrillation is a common disorder in the elderly and when uncontrolled may lead to heart failure and stroke. The authors of this study note that rate control is often the therapy of choice for atrial fibrillation. Usually strict rate control is recommended but this is not based on clinical evidence. Hence, this study which compares strict rate control (resting heart rate <80 beats/minute) with lenient rate control (<110 beats/minute) in a cohort of 614 patients with permanent atrial fibrillation. The primary outcome was a composite of death from cardiovascular causes, hospitalization for heart failure, and stroke, systemic embolism, bleeding and life-threatening arrhythmic events. The primary outcome at 3 years was 12.9% in the lenient control group and 14.9% in the strict control group. Their conclusion is that "in patients with permanent atrial fibrillation, lenient rate control is as effective as strict rate control and is easier to achieve."

N Engl J Med 2010;362:1363-73.

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Marketing tobacco to New Zealand women: 8 ways to reflect on "World No Tobacco Day"

Background—This year's "World No Tobacco Day" on 31 May 2010 ("World Smokefree Day" in New Zealand) focuses on how tobacco is marketed to women.[1] This topic is particularly relevant given the current inquiry by the Māori Affairs Select Committee into tobacco issues[2] and the very high smoking prevalence among Māori women.[3]

Prior to middle age, the health consequences of women smoking are more serious than those caused by male smokers. This is because of the impacts of smoking in pregnancy to the fetus (e.g., perinatal mortality, low birth weight, preterm delivery etc)[4] and the effects of exposing infants and children to second-hand smoke (e.g., sudden infant death syndrome and asthma). Such impacts are experienced disproportionately by Māori.

Evidence from the United States reveals tobacco companies have a long history of marketing to women and brands such as Virginia Slims, Eve, Satin, Capri, and Misty were specifically designed to appeal to women.[5] Overt targeting of women led the US Surgeon General to conclude that "tobacco industry marketing is a factor influencing susceptibility to and initiation of smoking among girls".[4]

Evidence that tobacco companies have systematically and successfully recruited female smokers has prompted us to investigate tobacco marketing to girls and women in New Zealand, an area that has previously been analysed only very briefly.[6]

Methods—We searched for relevant New Zealand literature (Medline) and survey data (e.g., the Ministry of Health website). We also analysed mentholated tobacco use data from the ITC Project survey. This is a national survey of 1376 New Zealand adult (18+ years) smokers surveyed between March 2007 and February 2008. Wave two in the subsequent 12 months involved 923 respondents. Further detail on the survey methods are available in an online *Methods Report*[7] and in publications.[8,9]

In addition we re-examined a collection of discarded cigarette packs obtained for other research purposes (with the methodology detailed elsewhere[10,11]). Further contextual data came from a search of tobacco products for sale via online retail websites,[12 13] and hand searching imported magazines held in Wellington Central Library (May 2010). We used a variant of the "five Ps" of marketing as employed by British American Tobacco in the UK (i.e., product, price, place, promotion and packaging)[14] to consider how tobacco companies' marketing might reach New Zealand women.

Results and Discussion—In total, we identified at least eight mechanisms used to market tobacco products to New Zealand women (see Table 1). These covered four of the "five Ps" of marketing in the framework used (i.e., not particularly "place"). Given the advertising and sponsorship restrictions contained in the Smoke-free Environments Act 1990 (SFEA), persistent marketing represents "policy incoherence" that we have previously discussed.[15]

We document practices that we believe contravene at least the spirit of the SFEA and suggest how these might be addressed (see Table 1).

Table 1. Likely mechanisms for marketing of tobacco products to women in New Zealand

Marketing mechanism	Detail	Possible solutions
Promotion – retail marketing	Retailers throughout NZ continue to display both "unisex" and female-oriented brands in their shops (see Figure 1 for an example). Tobacco products targeted at women are also promoted on NZ-based websites (e.g., the female-oriented brand "Cameo Mild"[12]).	NZ could follow international best practice and ban point-of-sale tobacco displays (currently under consideration in NZ[16]). See also below for introducing standardised plain packaging.
Promotion – magazine advertising	Fashion magazines imported into NZ contain tobacco advertising directed at women e.g., advertisements in *Vogue* magazine (US edition) depict a woman smoking "Davidoff Slims" (a brand available in NZ). Various unisex brand advertisements include white coloured packs (e.g., "Dunhill fine cut" in *Interview* magazine) and have "lights" descriptors that may be more attractive to women (see below). Even imported non-fashion magazines (e.g., *Entertainment Weekly*) contain advertisements that show women smoking.	The NZ Government could promote standardised plain packaging internationally e.g., via the Framework Convention on Tobacco Control.
Packaging – brand names	"Vogue Bleue" has recently become available in NZ. This name is likely to appeal to women, particularly given its link with the major women's fashion magazine, *Vogue*. The pack design and cigarette shape (see below) is consistent with a female audience (see Figure 1). Other brand names on sale in NZ currently that are likely to have been designed to appeal to female market segments include: "Topaz", "Dunhill Essence" and "Cameo" (see details below).	The NZ Government could adopt standardised plain packaging as planned for Australia[17] where brand names will be displayed using a small standard font. Ideally this would be combined with larger pictorial health warnings.
Packaging – light and mild descriptors and associated pack colouring	Our ITC Project (wave 1) found higher reported use of "lights" among women compared to men (27.2% vs 18.5%).[18] This pattern is consistent with international data.[19 20] The marketing of "lights" continues in NZ using words such as "subtle" and "mellow" and colour coding of packs, such as blue colouring for former brands of "lights".[10] Furthermore, in some NZ settings the words "light" and "mild" continue to be used (e.g., the Woolworths website[12] as of May 2010), which is counter to the ruling by the Commerce Commission in 2008.[21] As has been well-documented, the terms "light" and "mild" deceptively suggest particular brands or variants are less harmful, and so may inhibit cessation attempts by appearing to provide less harmful alternatives to regular variants.[18]	As above for standardised plain packaging (for which there are strong public health arguments[22]).
Packaging – pack design & colouring	As well as the brand names used, other elements of package design are likely to appeal to women. For example, the purple colours used on the "Vogue Bleue" pack (Figure 1) may have female connotations and purple is the predominant colour on the front of "Topaz" packs. The elegant pack design of "Davidoff Slims" (a tall thin octagonal shaped pack), and the packs of "Dunhill Essence" (atypically small in size and white/or dark red colouring) are also likely to appeal to women. The "Cameo" brand includes a cameo broach type image of a female head silhouette and associated wording	As above for standardised plain packaging.

Marketing mechanism	Detail	Possible solutions
	"satin tipped". Although pink coloured packs are used elsewhere for marketing tobacco to women,[23] we did not identify these colours in our pack collection.	
Product – "menthols"	Our new analysis of ITC Project data (wave 1) indicated higher prevalence of menthol use (mentholated factory-made cigarettes and RYO tobacco) among women compared to men (20.0% vs 5.0%, odds ratio = 4.74, 95% confidence interval = 2.71 – 8.32). Furthermore, we found that menthol smokers were significantly more likely than other smokers to believe that menthol cigarettes are less harmful than regular cigarettes (wave 2 data). This is a misperception, given that the data generally indicates that menthols are at least as dangerous as their non-mentholated counterparts.[24] The marketing of menthols may therefore work in a similar way to "lights" by providing an alternative to quitting for health conscious (mainly women) smokers.	The NZ Government could consider banning all additives to tobacco products on precautionary health grounds (including menthol but also sugars, flavours etc).
Product – cigarette design	The extra thin cigarettes in brands such as "Vogue Bleue" (Figure 1), "Davidoff Slims" (see an online advertisement[25]), and "Dunhill Essence" (which has the word "superslims" on the side), are likely to appeal to women concerned about their weight or health, or who see these brands as associated with "elegance" (a claim implied in "Davidoff Slims" advertisements featured in *Vogue* magazine).	Regulations could set standardised cigarette characteristics (to go with standardised plain packaging).
Price – RYO & price discounts	NZ women have significantly lower average incomes than men[26] and thus may be more attracted to lower priced tobacco and to price discounts. Indeed, women who smoke roll-your-own (RYO) are more likely to cite price as a reason for their choice than men (76.8% vs 72.9%),[27] though the overall prevalence of RYO use is similar to that for men.[28] This pattern of a significantly higher price reason by women was also evident in our Wave 1 ITC Project data for RYO usage reasons [unpublished data].	Minimum pricing could be established (an approach some countries have taken with alcohol – as detailed in a recent NZ Law Commission Report[29]).
Unclear marketing mechanisms (potentially require further research)		
Promotion – via product placement?	Product placement of branded tobacco products in movies has been documented.[30] Some of the brands shown in internationally popular movies[30 31] are also available on the NZ market and some could be considered to be either unisex brands or have relatively high female appeal (e.g., light variants of "Marlboro"). More generally, the occurrence of smoking in movies and television is problematic, given that it is common (including for NZ[32 33]) and because it is a risk factor for smoking in youth. There is even NZ data indicating that viewing R-rated films is associated with current smoking by adolescents[34] and for television viewing in childhood and adolescence and subsequent adult smoking.[35]	Assigning a high "R" rating to movies that contain smoking has been proposed as an intervention.[36]
Promotion – internet?	Some promotion of smoking by women on the internet is quite overt (e.g., this online advertisement:[25]). Also several authors have provided evidence for tobacco marketing to youth that occurs on the internet.[37-39] Of note is the potential difficulty in determining if associations are unintentional or contrived e.g., the YouTube video called "Vogue" with the pop diva Madonna and some smoking content visible,[40] and the international availability of the "Vogue" cigarette brand (Figure 1). Nevertheless, we lack detailed data on the promotion of NZ-available brands in various internet domains (besides NZ online shopping sites[12 13]).	The NZ Government could promote standardised plain packaging internationally e.g., via the Framework Convention on Tobacco Control.

Figure 1. Packet of "Vogue Bleue" with extra thin cigarettes purchased in a New Zealand dairy (May 2010)

Conclusions—This brief analysis identified at least eight mechanisms used to market tobacco to New Zealand women. The persistence of marketing despite the current law (SFEA) is a major concern, given the size of the tobacco epidemic in New Zealand, the particular harm being done to Māori women, and the harm to fetuses, infants and children. We favour a rapid endgame solution to the tobacco epidemic, involving a sinking lid on sales, and progressing to a complete end of sales in 10 years.[41] Nevertheless, while such a solution is in progress, it is also appropriate for government to consider the specific measures outlined in the Table above, as the evidence suggests these will ameliorate the harms caused by tobacco marketing.

Nick Wilson[*1], Janet Hoek[2], Jo Peace[1], Heather Gifford[3], George Thomson[1], Richard Edwards[1]

[1]Department of Public Health, University of Otago, Wellington

[2]Department of Marketing, University of Otago, Dunedin

[3]Whakauae Research Services, Whanganui

Correspondence: nick.wilson@otago.ac.nz

Competing interests: Although we do not consider it a competing interest, for the sake of full transparency we note that some of the authors have undertaken work for health sector agencies working in tobacco control.

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References:

1. World Health Organization. World No Tobacco Day 2010. Theme: Gender and tobacco with an emphasis on marketing to women. Geneva: World Health Organization, 2009. http://www.who.int/tobacco/wntd/2010/announcement/en/index.html
2. New Zealand Parliament. Inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Maori, 2009. http://www.parliament.nz/en-NZ/PB/SC/BusSum/e/1/6/00DBSCH_INQ_9591_1-Inquiry-into-the-tobacco-industry-in-Aotearoa-and.htm
3. Ministry of Health. Tobacco Trends 2008: A brief update of tobacco use in New Zealand. Wellington: Ministry of Health, 2009. http://www.moh.govt.nz/moh.nsf/pagesmh/9081/$File/tobacco-trends-2008.pdf
4. US Department of Health and Human Services. Women and smoking: a report of the Surgeon General - 2001. Washington DC: US Department of Health and Human Services, 2001. http://www.cdc.gov/tobacco/data_statistics/sgr/2001/complete_report/index.htm
5. Toll BA, Ling PM. The Virginia Slims identity crisis: an inside look at tobacco industry marketing to women. Tob Control. 2005; 14: 172-80.
6. Ministry of Women's Affairs. Women & Smoking: Policy Discussion Paper Number 2. Wellington: Ministry of Women's Affairs, 1990.
7. Wilson N. Methods report for the New Zealand arm of the International Tobacco Control Policy Evaluation Survey (ITC Project) (Updated 2009). Wellington: University of Otago, Wellington, 2009. http://www.wnmeds.ac.nz/itcproject.html
8. Wilson N, Blakely T, Edwards R, et al. Support by New Zealand smokers for new types of smokefree areas: national survey data. N Z Med J. 2009; 122: 80-9.
9. Wilson N, Weerasekera D, Edwards R, et al. Characteristics of smoker support for increasing a dedicated tobacco tax: National survey data from New Zealand. Nicotine Tob Res. 2010; 12: 168-73.
10. Peace J, Wilson N, Hoek J, et al. Survey of descriptors on cigarette packs: still misleading consumers? N Z Med J. 2009; 122(1303): 90-6.
11. Wilson N, Thomson G, Edwards R, et al. Estimating missed government tax revenue from foreign tobacco: survey of discarded cigarette packs. Tob Control. 2009; 18: 416-8.
12. Woolworths. Woolworths Online Shopping. http://www.woolworths.co.nz/HomeShopping/Shop.aspx (Accessed 24 May 2010).
13. Regency. Regency Tax & Duty Free. http://www.regency.co.nz/aryana/index.cfm (Accessed 24 May 2010).
14. British American Tobacco. Modern tobacco marketing. (Updated 7/5/2010). http://www.bat.com/group/sites/uk__3mnfen.nsf/vwPagesWebLive/DO78BDW6?opendocument&SKN=1
15. Wilson N, Thomson G, Blakely T, et al. A new opportunity to eliminate policy incoherence in tobacco control in New Zealand. N Z Med J. 2010;123(1311):89-92.
16. Ministry of Health. Proposal to ban tobacco retail displays in New Zealand. Wellington: Ministry of Health, 2010. http://www.moh.govt.nz/moh.nsf/indexmh/proposal-to-ban-tobacco-retail-displays-in-nz

17. Chapman S, Freeman B. The cancer emperor's new clothes. BMJ. 2010; 340: 1035.
18. Wilson N, Weerasekera D, Peace J, et al. Misperceptions of "light" cigarettes abound: national survey data. BMC Public Health. 2009;9:126.
19. Borland R, Yong HH, King B, et al. Use of and beliefs about light cigarettes in four countries: findings from the International Tobacco Control Policy Evaluation Survey. Nicotine Tob Res. 2004; 6 Suppl 3: S311-21.
20. Cummings KM, Hyland A, Bansal MA, et al. What do Marlboro Lights smokers know about low-tar cigarettes? Nicotine Tob Res. 2004; 6 Suppl 3: S323-32.
21. Commerce Commission. Media Release: Consumers warned 'light' and 'mild' tobacco likely to be just as deadly as regular strength. Wellington: Commerce Commission, 2008.
22. Freeman B, Chapman S, Rimmer M. The case for the plain packaging of tobacco products. Addiction. 2008; 103: 580-90.
23. Freeman B. USA: not so pretty in pink. Tob Control. 2007; 16: 75-6.
24. Giovino GA, Sidney S, Gfroerer JC, et al. Epidemiology of menthol cigarette use. Nicotine Tob Res. 2004; 6 Suppl 1: S67-81.
25. Online advertisement. http://21goweb.com/tinnitus-forum/index.php?topic=8912.new (Accessed 24 May).
26. Statistics New Zealand. New Zealand Income Survey: June 2009 quarter. Wellington: Statistics New Zealand, 2009. http://www.stats.govt.nz/browse_for_stats/work_income_and_spending/Income/NZIncomeSurvey_HOTPJun09qtr.aspx
27. Ministry of Health. Tobacco Trends 2008: A brief update of tobacco use in New Zealand. Appendix 1: Online data tables of the 2008 New Zealand Tobacco Use Survey. Wellington: Ministry of Health, 2009. http://www.moh.govt.nz/moh.nsf/indexmh/tobacco-trends-2008-appendix1
28. Ministry of Health. Tobacco Trends 2006: Monitoring tobacco use in New Zealand. Wellington: Ministry of Health, 2006. http://www.moh.govt.nz/moh.nsf/by+unid/152B30631AC2E55DCC2572450013FE5E?Open
29. New Zealand Law Commission. Alcohol In Our Lives: Curbing the Harm (NZLC R114). Wellington New Zealand Law Commission, 2010. http://www.lawcom.govt.nz/ProjectReport.aspx?ProjectID=154
30. Sargent JD, Tickle JJ, Beach ML, et al. Brand appearances in contemporary cinema films and contribution to global marketing of cigarettes. Lancet. 2001; 357: 29-32.
31. Lyons A, McNeill A, Chen Y, et al. Tobacco and tobacco branding in films most popular in the UK from 1989 to 2008. Thorax. 2010; 65: 417-22.
32. McGee R, Ketchel J. Tobacco imagery on New Zealand television 2002-2004. Tob Control. 2006; 15: 412-4.
33. Gale J, Fry B, Smith T, et al. Smoking in film in New Zealand: measuring risk exposure. BMC Public Health. 2006; 6: 243.
34. Laugesen M, Scragg R, Wellman RJ, et al. R-rated film viewing and adolescent smoking. Prev Med. 2007; 45: 454-9.
35. Hancox RJ, Milne BJ, Poulton R. Association between child and adolescent television viewing and adult health: a longitudinal birth cohort study. Lancet. 2004; 364: 257-62.
36. Anderson SJ, Millett C, Polansky JR, et al. Exposure to smoking in movies among British adolescents 2001-2006. Tob Control. 2010; [E-publication 2 March].
37. Hong T, Cody MJ. Presence of pro-tobacco messages on the Web. J Health Commun. 2002; 7: 273-307.
38. Freeman B, Chapman S. Is "YouTube" telling or selling you something? Tobacco content on the YouTube video-sharing website. Tob Control. 2007; 16: 207-10.
39. Kim K, Paek HJ, Lynn J. A content analysis of smoking fetish videos on YouTube: regulatory implications for tobacco control. Health Commun. 2010; 25: 97-106.

40. Madonna. Madonna - Vogue (video). http://www.youtube.com/watch?v=GuJQSAiODqI . (Accessed 8 May 2010).
41. Wilson N, Edwards R, Blakely T, et al. Submission to the: Inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Māori. Wellington: University of Otago, Wellington, 2009. http://www.parliament.nz/NR/rdonlyres/FA7DEFFA-0AFF-4CC8-85C6-CD5B805D34C9/128156/49SCMA_EVI_00DBSCH_INQ_9591_1_A31755_UniversityofO.pdf

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Australian recruitment advertising in the NZMJ—with response by Don Simmers

I was disappointed to see a banner advertisement across the top of the current NZMJ issue, encouraging NZ doctors to consider going to work in Queensland, complete with a graphic of footsteps crossing the Tasman from NZ to Oz.

Last week I received a glossy brochure in the mail suggesting that I could earn double my current income working as a GP in Australia.

We face a workforce crisis in general practice in New Zealand, and I would have hoped that the NZMJ would have turned down the opportunity for advertising revenue in favour of taking a stand against the aggressive marketing we are currently being subjected to from Australia.

Dr Greg Judkins
General Practitioner and Medical Educator for RNZCGP
Epsom, Auckland

Response

Thank you for your letter which raises an important and topical issue. The NZMA has started the process of developing a formal position on advertising in our publications.

This is a complex and multifaceted subject which requires us to carefully consider a range of associated issues. We will provide an update on the NZMA's formal position in due course.

Dr Don Simmers
NZMJ Management Committee Chair

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Codes, codes, and more codes

I have just received advice that DHBNZ has supplied a read code list to be used to record smoking status. This list contains 26 codes (reduced from an initial 54).

All of these requirements are causing E28.00 to the point that I am now suffering from E2781.00 and 1B1B.11.

Dr F Allan Cockburn
Johnsonville Medical Centre, Wellington

NHI	CKM1309
NZMC	06670
LAB ID	1073
ACC	B24680
HBL	32432
HPI	17ABCK
PER ORG	482262

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Sexual Relationship with a Patient – Professional Misconduct (Med09/120P)

Charge

A Professional Conduct Committee (PCC) charged that the Doctor was guilty of professional misconduct. The particulars of the charge were as follows:

1. Between May 2007 and September 2008, the Doctor entered into a sexual relationship with Mrs U whilst Mrs U was a current patient of his, and continued to treat Mrs U during the relationship; and
2. The Doctor failed to adequately comply with conditions imposed by the Medical Council of New Zealand on his scope of practice, in particular, he:
    - Failed to adequately attend and actively participate in the Royal New Zealand College of General Practitioners seminar programme during 2008.
    - Failed to sit and attain a pass in the PRIMEX assessment in November 2008.

Finding

The Doctor admitted the charge and accepted that the conduct alleged amounted to professional misconduct. The Tribunal found that the Doctor's conduct did amount to professional misconduct.

Background

In September 1990 the Doctor married Mrs N. When they met in 1988 Mrs N had three children from previous marriages. One of these children was Mrs U who became the Doctor's stepdaughter. She was a member of his family for about twenty years, since she was approximately 13 years old.

In April 2002 Mrs U married Mr U and they had a child, L, who was born in 2003 and was delivered by the Doctor. Mrs U was a patient of the Doctor's between approximately 21 December 1999 and 18 October 2008. The Doctor was also Mr U's and L's general practitioner.

In late May 2007, the Doctor and Mrs U commenced a sexual relationship. At the time that the sexual relationship commenced, Mrs U was a current patient of the Doctor. She was also employed at the medical practice where the Doctor worked. The sexual relationship continued throughout the remainder of 2007 and 2008, and was still continuing at the time of the hearing.

Prior to the sexual relationship developing, Mrs U viewed her relationship with the Doctor as one of stepfather and stepdaughter.

Mrs U recalled that she asked for her clinical notes to be transferred to another medical centre in December 2007. However, Mrs U's clinical notes were not transferred until August 2008 and she continued to receive treatment from the Doctor after the clinical notes were transferred.

In June 2007, Mrs U consulted the Doctor who confirmed that Mrs U was pregnant and some months later Mrs U gave birth to I. In August 2008, a paternity test report very strongly supported the conclusion that the Doctor was the biological father of I. In December 2008, the Doctor moved out of his home with Mrs N. Soon afterwards, the Doctor moved in with Mrs U and at the time of the hearing continued to live with her along with L and I. At the time of the hearing Mrs U was four months pregnant with her and the Doctor's second child.

In August 2007, after the affair between the Doctor and Mrs U had begun, the Medical Council of New Zealand (the Council) concerned about the Doctor's practice (not associated with his relationship with Mrs U of which the Council knew nothing) imposed a number of conditions on the Doctor's scope of practice which were effective from 30 August 2007 onwards.

The Doctor complied with most of the conditions. However, The Doctor failed to comply with two of the conditions, as follows:

- Sit and attain a pass mark in the Primex assessment in November 2008; and
- Attend and actively participate in the RNZCGP seminar programme during 2008. Attendance was mandatory unless there were material reasons which precluded him from attending. Prior approval had to be sought from the Council for non-attendance.

Due to the Doctor's failure to adequately attend and complete the RNZCGP seminar programme in 2008, he was ineligible to sit the Primex assessment in November 2008.

Reason for Finding

Particular 1—The Tribunal found that during the period May 2007 and October 2008 the Doctor was acting as Mrs U's general practitioner.

The Doctor:

- Ordered investigations.
- Received results of investigations.
- Received discharge summaries which in the normal course are sent to the patient's general practitioner.
- Prescribed medication on at least 10 occasions.
- Made referrals.

Having regard to the nature of the relationship of the Doctor as Mrs U's stepfather, employer, and general practitioner, and Mrs U's obvious vulnerability, the Tribunal had little hesitation in reaching the view that the Doctor's acts could reasonably be

regarded by the Tribunal as constituting malpractice. The Tribunal further considered that the Doctor's conduct was likely to bring discredit to the profession and that the conduct did warrant a disciplinary sanction.

Particular 2—The Tribunal considered the Doctor's failure to adequately attend and actively participate in a seminar programme, was not the sort of conduct which, by itself, would necessarily amount to professional misconduct and warrant a disciplinary sanction; and similarly with the Doctor's failure to sit and pass a particular assessment.

However, the Tribunal had regard to the conduct in relation to this practitioner and accepted the PCC's submission that the Doctor's failures and the context in which those failures arose, were relevant to the Tribunal's consideration. While it did not consider that either of the matters referred to in particular 2 by themselves amounted to professional misconduct, it did find that cumulatively, within the particular context, they did; and warranted a disciplinary sanction.

Penalty

The Tribunal made the following orders:

- The registration of the Doctor was cancelled with the cancellation taking effect 20 working days after delivery of the Tribunal's decision.
- The Doctor was censured.
- The Doctor was to pay 10% of the costs.

There were permanent name suppression orders made.

Appeal

The Doctor appealed the Tribunal's Substantive Decision to the High Court in particular the cancellation of the Doctor's registration. The High Court dismissed the appeal [*Dr N v PCC* (High Court, Wellington, CIV 2009-485-2347, Ronald Young J, 19 March 2010)].

The full decisions relating to the case can be found on the Tribunal web site at www.hpdt.org.nz
Reference No: Med09/120P.

THE NEW ZEALAND MEDICAL JOURNAL
Journal of the New Zealand Medical Association

Practising without an Annual Practising Certificate – Professional Misconduct (Med09/129P)

Charge

A Professional Conduct Committee (PCC) charged that Dr Ratilal Magan Ranchhod (the Doctor) was guilty of professional misconduct. The particulars of the charge were that:

1. Between 11 December 2008 and 22 January 2009, the Doctor continued to practise medicine whilst not holding a current Annual Practising Certificate.
2. On or about 19 January 2009, the Doctor altered his expired Annual Practising Certificate and submitted the altered Annual Practising Certificate to Saint Andrews Village, Glendowie, Auckland, thereby representing that he was able to practise medicine.

Finding

The Doctor pleaded guilty to the charge. The Tribunal was satisfied that the Doctor was guilty of professional misconduct.

Background

The Doctor provided medical visit services to several Auckland rest homes, Auckland Prison and the New Zealand Police through a company called Housecall Services Limited (Housecall).

Following a meeting held on 2 and 3 December 2008, the Medical Council (the Council) decided not to issue the Doctor with an Annual Practising Certificate (APC).

On 4 December 2008, a Council staff member, phoned the Doctor and advised him that the Council had resolved not to issue him with an APC, but would issue him with an interim practising certificate to enable him to sit the Primex clinical examination on 13 December 2008. He was advised that the interim practising certificate would be issued only to allow him to sit the Primex clinical examination and that he would no longer be able to see patients. A letter dated 7 December 2008 was sent by courier to the Doctor confirming the above.

On 11 December 2008, a further letter was sent to the Doctor which enclosed a copy of the Council's definition of the 'practice of medicine' and stated: "This sets out the activities you will not be able to undertake while you do not have an annual practising certificate".

On 23 December 2008, the Doctor phoned the Council and said that his roster over the Christmas period had been set in November 2008 and he did not have anyone to cover his position. He was told that the Council would not be revisiting its decision to

decline his APC application and he was not allowed to practise medicine from the date when he was notified that an APC would not be issued.

On 16 January 2009 the Council was advised that the Doctor was continuing to practise medicine. Later that day the Medical Council phoned the Doctor. The Doctor stated that he had stopped practising earlier that week and had put in place cover.

On 18 January 2009, the Council received an email from Ms S at Elmwood Village (Elmwood). The Doctor was providing medical services to residents at Elmwood and Ms S had noted that the Doctor's APC had expired on 13 December 2008. On 20 January 2009 Ms S was advised by the Council that no new APC was currently being processed for the Doctor and that his APC had expired on 13 December 2008.

On 20 January 2009, Ms S sent a further email to the Council which stated that up until 20 January 2009, the Doctor had been seeing residents at Elmwood.

On or about 19 January 2009, the Doctor altered his previous (expired) APC by changing the dates on the APC. The altered APC purported to show that the certificate remained valid from 1 June 2008 to 31 May 2009. The Doctor then sent the forged APC by facsimile to Saint Andrews Village (St Andrews).

On 22 January 2009 the Doctor faxed a letter dated 20 January 2009 to the Council stating that he had misunderstood the nature of the interim APC issued to him on 13 December 2008. The Doctor said that he did not realise that cessation of his practise was immediate and assumed cessation would take effect if he did not pass the Primex clinical examination. The Doctor also requested an extension of his APC until 8 February 2009 to allow Housecall to continue to provide services.

On 23 January 2009 the Council sent a letter to the Doctor which said that the Council would not be granting the Doctor an extension to continue practising medicine.

On 23 January 2009, Ms K, from St Andrews informed the Council that St Andrews had received an APC from the Doctor by facsimile which looked like a genuine APC and was valid for the period 1 June 2008 to 31 May 2009.

During the interview by the Professional Conduct Committee in relation to this charge, the Doctor accepted:

- That he saw patients between 11 December 2008 and 22 January 2009 (acknowledged seeing patients at Pacificare Trust Hospital, Saint Andrews Village, Auckland Prison, Elmwood Village, Meadowbank Village and Glenburn Village);
- That he did alter his previous APC and supplied it to Saint Andrews Village; and
- That he made a grave error of judgment in sending the altered APC to Saint Andrews Village.

Reason for Finding

The Tribunal found both Particulars of the charge established.

The Tribunal considered forgery of a document, especially a practising certificate, a very serious matter. It was satisfied that a doctor who deliberately, and in the face of repeated warnings from the Medical Council, alters a document and to hold himself out as having a practising certificate, was clearly deserving of the strongest censure from the Tribunal. The Tribunal considered it a matter of significant public safety that doctors whose practising certificates are suspended do in fact stop work until the issues that led to their suspension are remedied.

The Tribunal was satisfied that the Doctor was left in no doubt by the Medical Council that he could not practise medicine. On 56 separate occasions between the relevant period in December and January, the Doctor had continued to see patients and prescribe and practise medicine.

Penalty

The Tribunal condemned any fraudulent action by health practitioners. A high standard of behaviour is expected from health practitioners. However, the Tribunal considered that rehabilitation of the Doctor was an important factor and if the Tribunal could be satisfied that maintenance of professional standards and confidence and public safety are attended to, then the Tribunal must reflect this in the penalty.

The Tribunal noted that the Doctor seemed to have a hankering to return to some form of similar practice as that carried on by Housecall when he is permitted to practise by the Medical Council. The Tribunal has no jurisdiction to order the Doctor not to be involved in Housecall but it strongly urged upon him its view that he should never again practise in isolation given his personality and communication style, but instead always be employed in a group practice where he has the benefit of ongoing peer review and support.

The Tribunal determined that the fairest method of dealing with the Doctor recognising both public safety and maintenance of professional standards was to impose upon him a short period of suspension for 2 months from 18 December 2009.

The Tribunal imposed the following conditions upon the Doctor upon his recommencement of practice:

- He is to practise only in accordance with the conditions imposed upon him by the Medical Council;
- He is not to practise medicine except in a group general practice for a period of three years from the date of the resumption of his practice and in particular he is not to undertake police, forensic or prison work;

The Doctor was censured and fined the sum of $7,500. He was further ordered to pay costs of $20,000.

The Tribunal recommended to the Medical Council that it give consideration to the Doctor undertaking another competence assessment on or before 31 March 2011.

The Tribunal directed that a copy of this decision and a summary of it be published 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

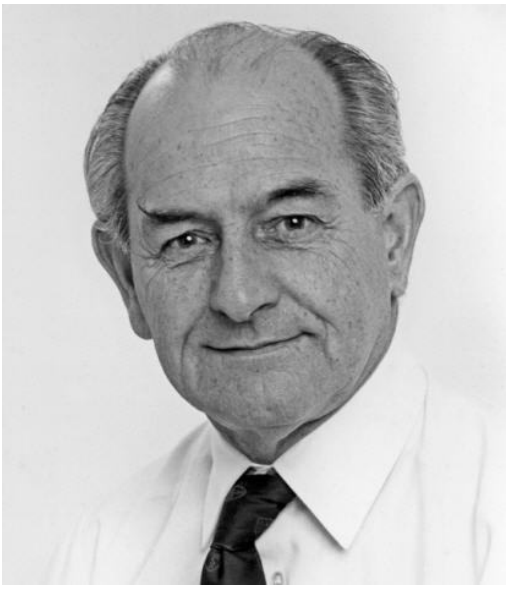
The full decisions relating to the case can be found on the Tribunal web site at www.hpdt.org.nz
Reference No: Med09/129P.

THE NEW ZEALAND MEDICAL JOURNAL
Journal of the New Zealand Medical Association

George Condor Hitchcock

OBE, DFC, MD (Otago); 7 December 1922 – 19 January 2010

George Hitchcock's first expression of interest in medicine came in a chat with a friend in Singapore in 1941. Both were newly qualified pilots in the Royal New Zealand Airforce. His mate Jim Hendry observed that if George saved his service pay, he could put himself through medical school after the war.



Born in 1922 in Te Kuiti and experiencing the rigors of the great depression, George's confidence to follow a course as lofty as medicine foretold many subsequent actions.

George's sound judgment and dedication served the country, community, his patients and family throughout his life.

After completing war service as a Squadron Leader in Bomber Command, George returned to "hit the books" in Dunedin.

He achieved entry to medical school, then graduation in 1951.

Marrying Jocelyn Thomson during his house surgeon year began a new phase in George's life. Jo is the daughter of a returned Gallipoli serviceman—one of the many foundations of their marriage.

Several years were spent in general practice in Panmure. This experience transformed the newlywed couple into a family, with four children arriving between 1955 and 1962. Stories of the general practice years reverberated about the dinner table for decades to come, always with great punch-lines and laughter. There were as many as 100 patient encounters a day. House calls included those by George to patients' homes, and by patients to George and Jo's. Life was fast paced.

George wished to explore other areas of medicine. He applied to Greenlane Hospital as a medical registrar. After a year under the guidance of Gavin Kellaway, pathology beckoned. Steven Williams and Flora Smith were among George's first pathology mentors. At that time an Otago MD degree was the pathway to pathology qualification. This required a self-directed research project and thesis.

After achieving Fellowship of the Royal College of Pathologists of Australasia in 1968, George worked at Greenlane and Auckland Hospitals, then bought into the Medical Laboratory partnership in the mid 1970s.

Throughout his pathology career, George shared his talents for teaching and leadership. He guided Part 1 surgery candidates through the required Walter and

Israel text, then served the Royal Australasian College of Surgeons on the examination committee. Between examining slides at the lab, George drove back and forth across Auckland providing intraoperative diagnoses to surgeons for innumerable patients at the various private hospitals.

Pathology registrars and ophthalmic surgeons enjoyed many years of teaching and service from George at the former Wallace block. In his later years, radiology registrars in Auckland came by the house once a week for slide tutorials over the months leading up to their Pathology exams. Their success was guaranteed.

George served on the Auckland Cancer Society executive, including the mid-1980s as President. With conflicting demands for resources between research and support services, he wanted the Society to give highest priority to the support of cancer patients and their families. Reward for this service included receiving the OBE. George also served the local Medical Society as Auckland Division President, and on the Disciplinary committee.

He was active in National Party politics, but never sought to alienate those of other political or philosophical persuasions. Michael Bassett kindly appointed George to the New Zealand Health Board during Labour years in office. All benefitted from his commonsense and pragmatism.

George did not take retirement casually. He "knocked off" a diploma of financial planning from Massey University, and achieved Ocean Yachtmaster qualification. Furthermore, he volunteered at the Auckland War Memorial Museum.

The frailty of aging caught up with him, and George peacefully "slipped off the twig" on 19 January 2010. In a symmetry that gave great comfort to him and his family, chaplains from the Royal New Zealand Airforce visited George in his final months, and conducted his funeral service at St Marys in Parnell. The organisation that transformed a Te Kuiti boy of 17 years into a confident young man equipped to enter medical school, returned to support his wife and family and honour his life at his final service.

George's passing was followed shortly later by the death of his wife Jo on 25 March—together again. He is survived by brother Peter, four children and nine grandchildren.

The Hitchcock family wrote this obituary with assistance by Bill Brabazon, a classmate and friend of George.

THE NEW ZEALAND MEDICAL JOURNAL
Journal of the New Zealand Medical Association

Murray James Overington

24 January 1954 – 10 April 2010

Dr Murray Overington was born in Auckland, attended Westlake Boys High School where he became Dux in 1971 and completed his medical training at Auckland Medical School in the 1970s.

After briefly working in Auckland Hospital he travelled further afield and while working in Princess Alexandra Hospital in Brisbane he met his wife Nancy, from Canada, who was also a doctor working there.

From there they moved to Canada where he began practising as a GP.

At the time of his death Murray was the lead physician in the creation of the Kingston Family Health Network in Kingston, Ontario, Canada.

The following is from an obituary in the *Kingston Whig Standard* newspaper by Peter Hendra.

Dr Murray Overington, who died from cancer on 10 April 2010, is being remembered for his diligent work ethic and love of taking on challenges.

One of those challenges was the health network concept that was formally introduced in 2003. Dr Ruth Wilson, the architect of the family health model for the province, first met Murray when he returned to Kingston—he had studied at Queen's University—to practise in 1996 after 14 years in Brampton, Ontario. She said Murray "had the courage to be an innovator and was one of the first physicians to see the advantages a team concept of health care offered."

Murray was one of the few that immediately grasped the opportunity and showed real leadership in establishing the first family network in Kingston," said Wilson, currently a professor of family medicine at Queen's. "I was particularly struck because it wasn't a popular thing to do at the time. It was going against the prevailing wisdom a little bit." "I just thought, 'good for you, Murray.' It was as if he had been waiting for this opportunity to come along and he immediately saw the advantage, and then has built it into something really strong that serves Kingston well."

The family health team now has nearly 30,000 patients under its care in Kingston. Dietitian Theresa Schneider worked with Murray during the formation of the network. "My pet name for him was 'Our Fearless Leader,'" she said. "That gives you a sense of his personality."

Dr Robert French, one of the 10 founding doctors of the network and a colleague of Murray's at Centennial Family Physicians, said Murray was "the driving force" behind its formation."Any kind of program the government was trying to promote that was going to help patient care, Murray was gung-ho to do this sort of thing, and this is why he was a great leader in helping us form the family health team and to get things going and keep things going," French said.

As a doctor French said Murray was "wonderfully determined". "Murray was an excellent partner to have in medicine," French said, noting that Murray was always the first to arrive at work and the last to leave and was always willing to help in any was he could. "His work ethic was absolutely marvellous and inspiring."

Murray similarly showed "single-minded determination" in his personal life, said Dr Veronica Mohr, who has called the Overingtons friends for 30 years. "He was very much a Renaissance man," Mohr said. "He played the piano very well, he was very athletic and did lots of sports, he was very devoted to his family and took lots of holidays all over the world with their kids—and he was able to fix things. He renovated several houses. He was a multi-talented guy."

That determination was exemplified in his desire to master the German language, Mohr said. Even though he was from New Zealand, he had taken German lessons for 3 years, and would sometimes travel to Germany, anxious to flex his new lexicon. He was so proficient that he spoke German better than she did. "Whether it was windsurfing, skiing, German…he became incredibly skilful at all of them," she said. "There was no stopping him until he was excellent at it."

Murray also brought the same zeal to his work even after being diagnosed with cancer. "Work meant a lot to him and defined him a lot as a person," Mohr said. He was determined to work as long as he could and as long as he was well enough to work. "Not many people would still be going to work at that point in their diagnosis." Mohr said Murray died the way he wanted. "He worked on Wednesday, he was in a coma by Wednesday night, and he died on Saturday. That was exactly how he wanted it all to end," Mohr said.

Murray was determined not to let the disease slow him down, she said, and he had even travelled to London, England, shortly before he passed away. "I don't think Murray ever hid it," Mohr said. "He took a lot of treatments, and I think everybody was well aware that he had cancer. He certainly never dwelled on it, and he never, ever complained. He just went on living his life to the fullest."

Dr Murray Overington was 56 when he died. He is survived by his wife Nancy, children Sarah, Louise and Jeff and grandchild Kai James.

Phil and Judith Overington (brother and sister in law of Murray) wrote this obituary and provided the photograph.

THE NEW ZEALAND MEDICAL JOURNAL
Journal of the New Zealand Medical Association

31st World Medical & Health Games: Poreč, Croatia 3–10 July 2010

Print the notice at http://www.nzma.org.nz/journal/123-1315/4151/content.pdf then replace this page.

THE NEW ZEALAND MEDICAL JOURNAL
Journal of the New Zealand Medical Association

Medical Benevolent Fund

NZMA Members, and families of deceased Members, may apply for aid when in situations of financial hardship or distress.

Applications should be directed through the NZMA:

Central Office
P O Box 156
Wellington
Tel: 0800 656161

THE NEW ZEALAND MEDICAL JOURNAL
Journal of the New Zealand Medical Association

University of Otago Faculty of Medicine Freemasons Postgraduate Fellowships in Paediatrics and Child Health for 2011

The above Fellowships or Scholarships are open to University graduates who intend long term to pursue work in Paediatrics or Child Health within New Zealand. The Fellowships include full-time salary for 1 year with provision for a further year.

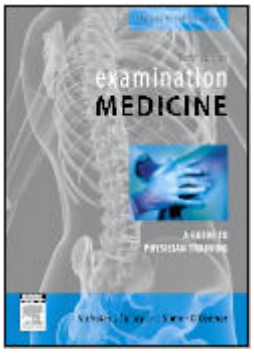
Applications close on **16 July 2010** with the Department Manager, Department of Women's & Children's Health, Dunedin School of Medicine, PO Box 913, Dunedin 9054, from whom further details may be obtained (wch.admin@otago.ac.nz)

THE NEW ZEALAND MEDICAL JOURNAL
Journal of the New Zealand Medical Association

Examination Medicine: a guide to physician training (6th edition)

Nicholas J Talley, Simon O'Connor. Published by Churchill Livingstone (distributed by Elsevier Australia), 2010. ISBN 9780729539111. Contains 406 pages. Price AU$71.96 (online)

Examination Medicine starts by explaining additional requirements for basic physician training in Australasia, including illuminating acronyms like LNA (Learning Needs Analysis), SIAT (Significant Incident Analysis Tool), MSF (Multi-Source Feedback) and mini-CEX (mini – Clinical Evaluation Exercise).



The authors give authoritative and robust advice on preparation for the written and clinical examinations, as well as a detailed description of the examination. The only statement we disagree with is that "50 formal (practice) long cases… is the bare minimum requirement for preparation."

If you are facing the clinical examination and your heart sinks reading this, be reassured: long case practice is definitely important; however the quality is more important than the quantity.

Over the next chapters the authors get down to the nuts and bolts of history taking and examination for long cases. They outline what you need to know for 52 common long case problems, from Acromegaly to Tuberculosis. This includes tips for condition-specific history-taking, and findings not to be missed on examination. They discuss investigations and the rationale for each, then management options. Appropriately brief summaries of the basic sciences are included where relevant. Handy tables summarise key points, such as the RCT evidence for treatment of sleep apnoea in 10 bullet points.

The next chapters provide enough information to tackle most short cases. The authors list differential diagnoses for clinical signs, and guide you to your next examination step. Ancillary information such as investigations or categorisation of severity is given. If this is used thoughtfully you should be able to impress most examiners.

The number of tables has increased in this edition highlighting the most important points. The content is only marginally updated since the 5th edition. This book has become a classic; it is inconceivable attempting the clinical examination without this handy guide.

Christina McLachlan
Advanced Trainee, Respiratory Medicine
Christchurch

Lutz Beckert
Respiratory Physician, Respiratory Medicine
Christchurch)