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This Issue in the Journal

New Zealand Rural General Practitioners 1999 Survey—Part 2: gender issues
R Janes, R Elley, A Dowell

The percentage of women in the medical workforce is increasing, while female general practitioners (GPs) are still under-represented in rural areas. Rural general practices will have to consider the special needs of female GPs if they hope to recruit them. Issues for female rural GPs included security when on-call, completing accreditation, longer consultations, and combining rural general practice with family life. A more attractive working environment for female GPs may also assist with recruiting new male graduates as well.

New Zealand Rural General Practitioners 1999 Survey—Part 3: rural general practitioners speak out
R Janes, A Dowell

The rural workforce shortage has received a great deal of publicity, while the positive aspects of working as a rural general practitioner (GP) have received relatively little. Many rural GPs are contented and fulfilled by their work and would not consider any other job. Using quotes from rural GPs, the authors of this study discuss the positive (and negative) aspects of rural general practice, and highlight the solutions the rural workforce feels are needed to improve working conditions.

Linking primary and secondary healthcare databases in New Zealand
A Tomlin, J Hall

In New Zealand, general practice patient records and hospital patient records may be linked using an encrypted National Health Index number assigned to individual patients. We compared patient details from 106 general practices to linked hospital inpatient and day case data to determine the accuracy and integrity of the data recorded. There is close agreement in the demographic data recorded in the two systems, and the range of hospital diagnoses recorded for general practice patients is representative of all hospital patients.

Antimicrobial susceptibility among Neisseria gonorrhoeae in New Zealand in 2002
H Heffernan, M Brokenshire, R Woodhouse, A MacCarthy, T Blackmore

A national survey of antimicrobial resistance among Neisseria gonorrhoeae in 2002 found 6.7% resistance to ciprofloxacin and 9.0% resistance to penicillin. As a consequence, ciprofloxacin is no longer the most appropriate first-line treatment for gonorrhoea in New Zealand. There was no resistance to ceftriaxone, which should
now be considered the most reliable option for the treatment and control of
gonorrhoea, especially in the Auckland/Northland area.

Pregnancy loss rate following routine genetic amniocentesis at Wellington Hospital
M Sangalli, F Langdana, C Thurlow

Routine second-trimester genetic amniocentesis is a common procedure, which can be
complicated by miscarriage or amniocyte culture failure. Data from 293 consecutive
women who had routine genetic amniocentesis at Wellington Hospital in 2001 were
analysed. The pregnancy loss rate from amniocentesis, and the culture failure rate in
Wellington Hospital (using modern techniques), are similar to rates found in recently
published studies.
The future of rural general practice in New Zealand

Martin London

Rural practice has been emphatically on the political agenda over the past couple of years culminating in the report to the Ministry of Health entitled *Implementing the Primary Health Care Strategy in Rural New Zealand*.1 This document is a rural health plan of action, developed through collaboration between the Ministry of Health and the rural sector. It seems to have met widespread approval and has been complemented by a significant funding commitment to establishing reasonable on-call rosters for rural GPs and to promote retention of the existing rural workforce.

We are now entering the crucial stage of converting good intentions into action, so it is timely that the excellent articles on rural workforce issues by Ron Janes, Raina Elley, and Anthony Dowell appear in this journal to keep us all focused on the process of making sure that change actually happens.2,3

It is possible to regard the articles as just further confirmation of what has been talked about for years. Indeed, when I asked 4th and 5th year medical students what they knew about rural practice, they spontaneously reeled off the same trials and tribulations as identified in the aforementioned articles. The articles are especially strong, however, in highlighting some of the answers to this next question posed to those students: ‘So why do you think there are rural GPs out there doing it’? The answer for many rural GPs appears to be: ‘Because, in spite of the difficulties, I love it’.

It does not take much time for the students to come up with an even longer list outlining the joys of rural practice. Such positive aspects are also confirmed by these articles, along with solutions that could work towards resolving many of the difficulties. Of those proposed solutions, in addition to the retention and reasonable roster funding, steps have been taken to ease the process of registration with the Medical Council for overseas-trained doctors, to create salaried medical positions within rural trusts, and to improve access to continuing professional development.

The most challenging of the proposals is the creation of a career pathway for rural practitioners. This proposal implies the recognition of seniority in rural primary care, with increasing experience being tied to educational, supervisory, and advisory roles and reflected in a rising scale of income similar to that of hospital-based specialties. Here lies an opportunity to apply pay scales to rural practice contracts, thus putting a value on extended years of service. Such financial incentives have already been mooted in the form of progressively rising ‘educational-loan-forgiveness’ for young doctors entering rural practice.1 However it does rankle with those older doctors who have ‘held the fort’ for years (or even decades) that their experience is not also given similar recognition.

A more important driver for creating rural career pathways is the movement of clinical education at all levels into the rural practice setting. The advantages of this initiative for students and recruitment, in creating a professionally supportive environment for rural primary healthcare teams and ultimately for the healthcare
delivered to rural communities, has been repeatedly identified.\textsuperscript{4,5} Indeed, it has also received new impetus in the form of funding for more medical students, with an emphasis on rural training at both medical schools plus 12 weeks of rural exposure for all students. While this sounds fine, Janes and his colleagues allude to the lack of a focused plan for increasing the capacity of already over-stretched rural practices to host this expanding role.

By implication, therefore, it should involve getting extra practitioners (both doctors and rural nurses) out to these growing centres of learning. These practitioners would be doing less full-time clinical work, thus sharing the on-call roles and using the extra daytime capacity to take on funded academic roles that represent career advancement. The additional practitioners would relieve many of the other difficulties and therefore contribute a further vital ingredient for both education and recruitment: that students get to work with happy mentors and vibrant rural teams.

Capacity building, therefore, will need to involve realistic incomes for these extra staff; expanded premises, information technology and accommodation for hosting students; and academic support for rural educators. This is where the focus must now be to see rural practice come into its own. It covers the essential ingredients of rural workforce retention—an adequate income for the work done, sustainable on-call commitments that allow practitioners their personal and family life, and a supportive professional environment. The resources to achieve these goals lie in the collaboration of Schools of Medicine, District Health Boards (DHBs), rural Primary Health Organisations (PHOs); and the rural communities themselves together contributing whatever it takes to see the process through.

Janes and Elley\textsuperscript{2} observe that women are less inclined than men to regard their locality as being under-doctored. This may, in part, be due to their very presence being part of the workforce solution leading to more part-timers sharing the different aspects of workload. So attending to the requirements that women in the study identify for sustainable practice will be another important ingredient for creating the rural teaching practices of the future.

If we can get this next implementation phase right, notwithstanding the international shortage of general practitioners, our future 4\textsuperscript{th} and 5\textsuperscript{th} year students will far more likely to first identify the joys of rural experience—and we may yet see newly qualified doctors asking the question: ‘where is my rural practice?’ With attention to the safety, continuing education, and family issues identified in these papers, many of these new doctors may be women.

Studies such as those by Janes and his colleagues depend upon the creation of a database of rural practitioners. In fact, much work has been done since 1999 to maintain and increase the accuracy of statistics on the rural workforce. Specifically, the most recent local study after 2002 has shown that the numbers of rural GPs since 1999 are static or declining, with an estimated deficit of at least 80 full-time equivalents (FTEs).\textsuperscript{6} It is therefore of great concern that the process of annual surveys has currently been put on hold and, as time slips by, we are in danger of losing the institutional memory in the rural practices, which feeds workforce monitoring. Considering that, since 2002, creative solutions, political will, and significant funding have all emerged, which could see a positive reversal of these numbers, it is highly desirable that workforce monitoring is resumed as soon as possible.
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References:


Primary healthcare in New Zealand—the measuring of health

James Reid

Outcome measures in all aspects of healthcare must be one of the primary indicators for continuing expenditure in that particular area. Therefore, a negative or neutral outcome must surely raise questions about the maintenance of funding in that particular area of care. Not only are there are problems in the measurement of health outcome, but there are problems in determining the reason for any particular result from a specific health input.

In this issue of the New Zealand Medical Journal, Tomlin and Hall demonstrate the possibility of linking primary care input by linking the national health index (NHI) number with the national minimum data set (NMDS). To preserve confidentiality, there was encryption of the NHI numbers.

The data set held by the RNZCGP Research Unit at Dunedin School of Medicine’s Department of General Practice was utilised for linking of an encrypted national health index (ENHI) number, and the NMDS which contains information on inpatients and day patients discharged from publicly funded hospitals. This process at last provides a tool for realistic measurement of particular health strategies, of referral rates, and for the measurement of intermediate health outcomes as a result of these strategies. Furthermore, this tool will provide a valuable interface between primary and secondary healthcare databases. Indeed, if extended to reflect a significant proportion of New Zealand general practices, it could have wide-reaching implications. For example, New Zealand is currently embroiled in controversy with respect to review and audit of its cervical and breast screening programmes.

There is concern about the ethics of confidentiality from both practitioners and patients. If the system as described by Tomlin and Hall were to be utilised, anonymity is preserved and many (but not all) of the concerns of the promoters and opponents of the audit process could be met. But health outcomes are multifactorial, and quality and appropriateness of input is a major determinant. Again, in this issue, Crampton and colleagues address the methodology of determining performance indicators with special reference to primary care. An enormous volume of literature exists in performance quality in general practice, but relatively little has direct application to New Zealand.

Two recent New Zealand publications suggest methodology of achieving performance improvement in general practice—but, as Crampton and colleagues discuss, ‘the increasing complexity of primary care suggests that performance indicators are now required to reflect a number of different perspectives’. It is no longer sufficient or appropriate to measure the levels of immunisation, cervical smearing, and recording of blood pressure in a general practice—however a much broader approach to the evaluation of ‘quality’ is necessary. In fact, what is ‘quality’ with reference to medical practice or to general medical practice?
New Zealand, as does every country, has a uniquely funded health system with accident compensation, general medical services benefit, capitalisation, immunisation benefit, and fee for service all rolled into one. This has spin-offs into the mode of provision of practice.

The papers by Tomlin and Hall, and Crampton and colleagues, are complementary, and show that the means of measuring at least intermediate outcome (by being able to follow a patient from primary into secondary care) will have far-reaching effects on the measurement of performance in general practice. As the primary health organisation (PHO) is required to have ‘clean’ NHI, ethnicity, and gender data, the quality of available data will improve—and will improve matching of the databases and thus improve data for development of reliable performance indicators in general practice.

The next hurdle is to look at things in reverse—the development of performance indicators for secondary and tertiary care. That will also be an interesting exercise, and could produce more questions than answers in our current health and economic environment.

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New Zealand Rural General Practitioners 1999 Survey—Part 2: gender issues

Ron Janes, Raina Elley, and Anthony Dowell

**Aims** To compare and contrast the demographic and working characteristics of female and male rural general practitioners (GPs) in New Zealand, and to highlight issues specific to female rural GPs.

**Methods** Anonymous postal questionnaires were sent to 559 rural GPs in November 1999.

**Results** Completed questionnaires were returned by 417 rural GPs (75%). Of the 338 rural GPs who fulfilled the inclusion criteria, 93 (28%) were female. Eighty percent of female rural GPs were younger than 45 years of age compared with 53% of male rural GPs ($p <0.01$). Women were less likely to be in full-time practice (45% vs 90%) or own their own practice (63% vs 83%) ($p <0.01$). Concerns about locum scarcities, overwork, excessive on-call, bureaucratic demands, and GP shortages were equally important to both genders—while issues of security, accreditation, and combining work and family were mentioned by female GPs.

**Conclusions** Most of the quantitative gender differences could be explained by the female rural GPs being younger (80% in their child-bearing years). Recognising and addressing the specific difficulties faced by part-time female rural GPs, such as by providing more flexible work options, would create a more favourable environment, likely to retain and recruit more women.

The present critical workforce shortage in New Zealand rural general practice mirrors the situation in many other countries. Historically, rural general practice has been an almost exclusively male occupation that has been unattractive to female general practitioners (GPs). With women now making up nearly half of the graduating doctors in New Zealand, it is imperative that rural medical practice restructures to attract women into the profession.

The ‘Calgary Commitment to women in rural family medical practice’, adopted at the 4th WONCA World Rural Health Conference, stated as one of its principles, ‘Rural medical practice must be structured to reflect the way women experience their lives’. The conference also committed ‘to continue the essential work of restructuring rural practice to attract women’. Indeed, the current workforce crisis would suggest that even male graduates are avoiding certain areas such as rural general practice. Restructuring rural practice to attract more female GPs may also attract more male GPs.

The New Zealand Rural General Practitioners 1999 Survey is the first national survey of rural GPs since 1986. Although the percentage of female rural GPs has increased from 16.8% to 27.8% over that time, this is still well below the percentage of total female GPs in New Zealand (36%). Shortages of rural female GPs have been documented internationally. Surveys of rural communities, patients, and GPs, from Australia and the United States, have found that one priority for improving
quality of rural health delivery is to have more female rural practitioners. Countries such as Australia have conducted surveys that describe the working characteristics and needs of the female rural GP workforce to inform future planning. An essential finding is that women and men have different experiences during their medical careers. Women often have cyclical and interrupted careers, which reflect their other roles, especially as mothers, and they often see a different profile of patients and problems.

The New Zealand Rural GPs 1999 Survey was carried out to obtain accurate information about the rural workforce, including an analysis of sub-groups within the workforce. The aim of this paper is to compare and contrast the demographic and working characteristics of female and male rural GPs, and to highlight issues specific to female rural GPs. It is hoped that this information will guide the restructuring of rural general practice in New Zealand, so that it retains and recruits adequate numbers of female rural GPs to meet the needs of rural communities.

Methods

Anonymous postal questionnaires were mailed out in November 1999 to 559 GPs identified as rural or semi-rural from a database compiled by one of the authors. Non-responders were initially posted a reminder card in December, a reminder questionnaire in January 2000, and a further reminder, by telephone or facsimile, a month later. Inclusion criteria comprised a ‘rural ranking score (RRS) of equal or greater than 35 points’ and ‘currently working as a GP in New Zealand’. A detailed description of methods is presented elsewhere.

Quantitative data was entered into an Access database. Epi Info software was used for analysis. Chi-square tests were carried out to detect statistically significant differences in demographic and practising characteristics between male and female rural GPs.

Written comments were obtained from responses to an open-ended question that asked rural GPs ‘for any further comments or suggestions about rural general practice’. These written responses were read multiple times (to detect common themes) by two of the authors, independently. Issues specific to female rural GPs were identified from the written comments and disagreements in interpretation between authors were resolved by discussion.

Results

Of the 559 rural and semi-rural GPs, 417 returned completed questionnaires (75%). Seventy-four GPs had a RRS of less than 35 and five had not completed the RRS, leaving 338 valid questionnaires. Of these 338 questionnaires, 93 were from women, 242 were from men, and 3 GPs did not answer the question on gender. As the original address database did not contain information about gender, the response rate for women could not be compared with that for men.

Quantitative data Table 1 shows the demographic and working characteristics of the female and male rural GPs, with the respondents for each question used as the denominator. Women were significantly younger and more likely to be working part-time. In fact, 33% of women worked five tenths or less compared with only 4% of men (p <0.001). Women were more likely to use computers in the surgery and to consider there were sufficient GPs in their area. They were less likely to own a practice and have access to email at home.

Rural GPs were asked to rate the importance of various problems affecting rural practice (not important, important, very important). Table 2 lists the problems and the percentage of female and male rural GPs who considered them as ‘very important’. At least 30% of both women and men agreed that ‘lack of locum relief for CME’ and
‘holidays’, ‘on-call workload is too great’, and ‘shortage of rural doctors’ were all “very important” problems. Women were significantly more likely to list ‘difficulties with accreditation’ as a ‘very important’ issue.

Table 1. Characteristics of the NZ rural GP workforce (by gender)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Female: n (%)</th>
<th>Male: n (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Under 45 years of age)</td>
<td>74/93 (80)</td>
<td>127/241 (53)</td>
<td>0.000†</td>
</tr>
<tr>
<td>Ethnicity:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- European</td>
<td>76/89 (82)</td>
<td>199/232 (86)</td>
<td>0.3</td>
</tr>
<tr>
<td>- Maori</td>
<td>1/89 (1.1)</td>
<td>3/232 (1.3)</td>
<td></td>
</tr>
<tr>
<td>- Pacific</td>
<td>2/89 (2.1)</td>
<td>7/232 (3.0)</td>
<td></td>
</tr>
<tr>
<td>- Asian</td>
<td>10/89 (10.8)</td>
<td>21/232 (9.1)</td>
<td></td>
</tr>
<tr>
<td>- Other</td>
<td>0</td>
<td>2/232 (0.9)</td>
<td></td>
</tr>
<tr>
<td>Practising in North Island</td>
<td>46/91 (51)</td>
<td>146/239 (62)</td>
<td>0.10</td>
</tr>
<tr>
<td>Consider number of GPs in area is insufficient</td>
<td>20/87 (23)</td>
<td>88/231 (38)</td>
<td>0.02*</td>
</tr>
<tr>
<td>NZ graduate</td>
<td>49/93 (53)</td>
<td>109/241 (45)</td>
<td>0.3</td>
</tr>
<tr>
<td>GP vocationally trained</td>
<td>57/90 (63)</td>
<td>139/239 (58)</td>
<td>0.5</td>
</tr>
<tr>
<td>Full-time practice</td>
<td>38/89 (43)</td>
<td>214/238 (90)</td>
<td>0.000†</td>
</tr>
<tr>
<td>Rural hospital duties</td>
<td>33/88 (38)</td>
<td>98/238 (41)</td>
<td>0.6</td>
</tr>
<tr>
<td>Intra-partum obstetrics</td>
<td>13/91 (14)</td>
<td>58/235 (25)</td>
<td>0.06</td>
</tr>
<tr>
<td>Own their practice</td>
<td>58/92 (63)</td>
<td>200/240 (83)</td>
<td>0.000†</td>
</tr>
<tr>
<td>Medical Council of NZ status:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Oversight and probationary registration</td>
<td>1/92 (1.1)</td>
<td>7/235 (2.9)</td>
<td>0.07</td>
</tr>
<tr>
<td>- Oversight and general registration</td>
<td>21/92 (23)</td>
<td>35/235 (15)</td>
<td></td>
</tr>
<tr>
<td>- Independent, no vocational registration</td>
<td>27 (29)</td>
<td>48/235 (20)</td>
<td></td>
</tr>
<tr>
<td>- Independent and vocational registration</td>
<td>43 (47)</td>
<td>143/235 (61)</td>
<td></td>
</tr>
<tr>
<td>- Independent and temporary registration</td>
<td>0</td>
<td>2/235 (0.9)</td>
<td></td>
</tr>
<tr>
<td>Royal NZ College of GPs status:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Not a member</td>
<td>13/91 (14)</td>
<td>52/238 (22)</td>
<td>0.001†</td>
</tr>
<tr>
<td>- Participating in accreditation</td>
<td>39/91 (43)</td>
<td>48/238 (20)</td>
<td></td>
</tr>
<tr>
<td>- Participating in MOPS§</td>
<td>33/91 (36)</td>
<td>115/238 (48)</td>
<td></td>
</tr>
<tr>
<td>- Member but not participating in accreditation or MOPS</td>
<td>6/91 (6.6)</td>
<td>23 (9.7)</td>
<td></td>
</tr>
<tr>
<td>Rural GP Network membership</td>
<td>42/91 (46)</td>
<td>118/230 (51)</td>
<td>0.5</td>
</tr>
<tr>
<td>NZ Medical Association membership</td>
<td>45/92 (49)</td>
<td>143/233 (61)</td>
<td>0.05</td>
</tr>
<tr>
<td>IPA# membership or other collective</td>
<td>71/91 (78)</td>
<td>173/234 (74)</td>
<td>0.5</td>
</tr>
<tr>
<td>Email access at home</td>
<td>58/93 (62)</td>
<td>182/240 (76)</td>
<td>0.02*</td>
</tr>
<tr>
<td>Email access at surgery</td>
<td>38/92 (41)</td>
<td>116/239 (49)</td>
<td>0.3</td>
</tr>
<tr>
<td>Computerised appointments</td>
<td>70/93 (75)</td>
<td>148/242 (61)</td>
<td>0.02*</td>
</tr>
<tr>
<td>Computerised consultation (at least some part)</td>
<td>46/93 (49)</td>
<td>77/242 (32)</td>
<td>0.004†</td>
</tr>
<tr>
<td>Expecting to still be in their current practice in 1 year’s time</td>
<td>83/92 (90)</td>
<td>209/237 (88)</td>
<td>0.4</td>
</tr>
<tr>
<td>Expecting to still be in their current practice in 3 year’s time</td>
<td>68/90 (76)</td>
<td>165/226 (73)</td>
<td>0.2</td>
</tr>
<tr>
<td>Expecting to still be in their current practice in 5 year’s time</td>
<td>43/90 (48)</td>
<td>118/219 (54)</td>
<td>0.5</td>
</tr>
</tbody>
</table>

*Significant at a p <0.05 level; †Significant at a p <0.01 level; ‡RRS refers to Rural Ranking Scale; §MOPS refers to Maintenance of Professional Standards; IPA refers to Independent Practitioners’ Association.
Table 2. Percentage of female and male rural GPs who ranked the current problems affecting rural GPs as ‘very important’ to them

<table>
<thead>
<tr>
<th>Current problems affecting rural GPs</th>
<th>Female GPs n (%)</th>
<th>Male GPs n (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of locum relief for holidays</td>
<td>51/91 (56)</td>
<td>147/236 (62)</td>
<td>0.3</td>
</tr>
<tr>
<td>Shortage of rural doctors</td>
<td>35/91 (38)</td>
<td>90/235 (38)</td>
<td>0.9</td>
</tr>
<tr>
<td>Lack of locum relief for CME*</td>
<td>32/89 (36)</td>
<td>99/235 (42)</td>
<td>0.2</td>
</tr>
<tr>
<td>Difficulties with accreditation</td>
<td>31/86 (36)</td>
<td>47/216 (22)</td>
<td>0.005†</td>
</tr>
<tr>
<td>Lack of quality rural CME</td>
<td>29/91 (31)</td>
<td>56/233 (24)</td>
<td>0.2</td>
</tr>
<tr>
<td>On-call workload is too great</td>
<td>27/89 (30)</td>
<td>90/235 (38)</td>
<td>0.2</td>
</tr>
<tr>
<td>Need for upskilling in trauma/ emergency care</td>
<td>25/92 (27)</td>
<td>36/233 (15)</td>
<td>0.06</td>
</tr>
<tr>
<td>Difficulties with MOPS† (reaccreditation)</td>
<td>13/78 (16)</td>
<td>32/204 (16)</td>
<td>0.3</td>
</tr>
<tr>
<td>Need for upskilling in rural hospital work</td>
<td>11/90 (12)</td>
<td>24/229 (10)</td>
<td>0.7</td>
</tr>
<tr>
<td>Daytime workload is too great</td>
<td>10/87 (11)</td>
<td>32/236 (14)</td>
<td>0.5</td>
</tr>
<tr>
<td>Difficulties with being supervised</td>
<td>5/86 (5.8)</td>
<td>10/225 (4.4)</td>
<td>0.5</td>
</tr>
<tr>
<td>Increased workload from supervising others</td>
<td>2/85 (2.4)</td>
<td>5/223 (2.2)</td>
<td>0.2</td>
</tr>
</tbody>
</table>

*CME refers to Continuing Medical Education; †MOPS refers to Maintenance of Professional Standards; ‡Significant at a p <0.05.

Written comments
Forty-one women (44%) and 96 men (40%) provided written comments to the open-ended question asking for ‘comments or suggestions about rural general practice’. The positive and negative themes from these written comments, as well as the suggested solutions for rural general practice, have been analysed for a separate paper in this issue. Reading the written comments for similarities and differences between genders, showed that both female and male rural GPs identify many similar concerns. The excessive workload, including frequent on-call (duty), large patient lists, excessive paperwork, and lack of locums, were all identified by both genders as being of significant concern.

There were a few issues that appeared to be unique or of greater concern to female rural GPs, although the number of comments were few. These issues were completing accreditation, security when on-call, seeing a different range of patient problems, and the impact that being a rural GP has on their families (especially when both spouses were GPs). Five women (12%) wrote long detailed comments on the effects of their workload on their families. These issues are illustrated by the quotations below, with any identifying items (e.g. town names) removed.

Security:
‘Problems for me being female, on-call and covering a large area. Security worries me. I do not want to do house or surgery visits on my own after dark’

Accreditation:
‘Commitment to Accreditation etc is frustrating – time that I don’t feel I have – not gaining anything for me’

Different range of patient problems:
‘Other problems related to being a female GP: (not necessarily a rural problem but fewer outside resources aggravate it)...more patients with lists, more patients needing nurturing type consultations. In a fee for service environment, this penalises us’

Family:
‘On a bad day I feel trapped by a very heavy workload, disruption to family life… I feel my family suffers’

‘For women, they are usually married to professional men and the job opportunities for them are few in rural areas making it difficult to attract women to rural areas—schooling in (this area) is poor’

Families with two GPs:

‘Job sharing does reduce the practice workload and therefore allows women to work in rural practice when as mothers they otherwise might not’

‘We have found major problems in both completing CME. It causes twice as much disruption of the family as we both have to attend separately. (On a 1:3 roster, this does not give us much time together.) If we both attend a one-day conference, the travelling time involved (2 hours) each way means finding a baby sitter for nearly 12 hours and one who is prepared to start at 7am, not a practical option’

‘Biggest stress factor is ‘on-call’. 1 in 2 practice but partner is also my husband so effectively 1 in 1 so lots of problems associated with this’

(Not one male GP commented on the difficulties of having a spouse who was also a GP.)

Discussion

This is only the second national survey of New Zealand rural GPs, and the first to analyse gender differences. While the survey results were collected 4 years ago (December 1999 to March 2000), the stability of rural health care continues to be fragile with workforce shortages still common in many localities.

Female rural GPs were significantly younger, with 80% under 45 years of age, compared with 53% of male rural GPs. There were a number of other significant gender differences that the younger age of women would seem to explain: women were more likely to be undertaking accreditation, which requires RNZCGP membership, and were less likely to be working full time. In fact, 33% of women worked five tenths or less compared with only 4% of male rural GPs. Women were also less likely to own their own practice, had less access to email at home, but were more likely to use computers at the surgery for appointments and clinical notes. The younger age of the women presumably meant they were more likely to have young families and fewer financial resources.

Being younger may have meant they were more comfortable with information technology, when compared with the male GPs. Women were also less likely to state that more GPs were needed in their area, suggesting that either women are attracted to areas without workforce shortages or certain areas are better able to attract female GPs thereby preventing shortages. Over 50% of both male and female GPs rated ‘lack of locum relief for holidays’ as ‘very important’, the highest percentage for any of the problems. Significantly, more female GPs rated ‘difficulties with accreditation’ as a ‘very important’ problem, compared with male GPs.

Quantitative surveys, however, often miss significant gender differences. When the answers to open-ended questions are examined, other differences are frequently revealed. This was possibly true in this study, as more female GPs expressed concern about the impact their job was having on the family, and their comments
were much more detailed. Additional related issues such as childcare, children’s education, opportunities for spouses, juggling on-call duty with family responsibilities, and being able to spend holidays with family were only mentioned by women. It is possible that men share these concerns to the same degree as women, but were reluctant to express themselves in writing. Alternatively, the men were older and as such their children were more likely to have left home. As this was a small sample, further research is needed.

According to the literature, family issues are a common source of stress for female GPs. A study of 1800 GPs in England found that the most significant predictor of female GPs’ mental health was the stress of the job interfering with family life, which was the least important predictor for male general practitioners. This issue is magnified in rural practice where female GPs also juggle the demands of long hours, on-call duty, and lack of locum relief for holidays or study breaks. Similar findings have been found in other studies of female rural general practitioners. This unique gender difference of female GPs, in having cyclical and interrupted careers due to their other roles, especially as mothers, needs to be acknowledged and valued.

The ‘difficulties with accreditation’ found in the quantitative results were reiterated by written comments from a few female GPs. Again, these concerns may reflect the younger age of women and the slightly higher proportion of women still undergoing accreditation, compared with the men. However, they also expressed that the accreditation obligations were more disruptive, which may be due to women working part-time with significant family responsibilities.

A few women in the present study were also concerned about the demands placed on female GPs within consultations. They talked about the greater emotional load with its consequent added time pressure and adverse affect on income within the fee for service system. International research has found that female doctors attract more patients with time-consuming psychosocial problems, yet have the same number of complex medical patients as male doctors, resulting in lower incomes. Other research found that when ‘medical problem’ was controlled for, or patients were randomly assigned, female GPs spent no more time with patients than their male counterparts. These findings suggest the gender differences in consultation patterns are at least partly due to the type of patient that chooses to see a female GP, rather than a style of consulting.

To address the concerns of female rural GPs, there may be a need for greater flexibility in work conditions, such as more salaried positions (full and part-time), more use of distance education, and providing additional payment for longer mental-health related consultations. In addition, GPs in part-time practice need proportional on-call and more flexible GP training (including both registrar and accreditation years). Expanding the present Rural GP Network locum scheme, providing payment for time on-call, and making a concerted effort to reduce the bureaucratic burdens of general practice would improve working conditions for all rural GPs.

In conclusion, the results of this survey, the first to examine gender differences in New Zealand rural general practice, have confirmed the international literature: women are under-represented in rural general practice, and those present are, on average, younger than the men. The written comments did suggest there are some specific issues for female rural GPs: security when on-call, completing accreditation,
longer consultations, and combining rural general practice with family life. These differences, especially related to the family, reflect both women’s and society’s expectations, priorities, and values—and should not only be acknowledged and respected, but also valued.

These New Zealand results add strength to the WONCA recommendations stating that rural practice needs to be restructured now to meet the particular needs of female GPs (if we want to retain and recruit more of them). In so doing, we are also likely to create a more attractive environment for male new graduates as well. Indeed, the viability of medical services in rural New Zealand and the mental health of the current rural GP workforce may well depend on these improvements.

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New Zealand Rural General Practitioners 1999 Survey—Part 3: rural general practitioners speak out

Ron Janes and Anthony Dowell

Abstract

Aims To describe themes about rural general practice from the written responses in the ‘New Zealand Rural GPs 1999 Survey’.

Methods A postal questionnaire surveyed all rural general practitioners (GPs) in New Zealand (NZ), who were asked for comments or suggestions about rural general practice. These responses were explored for themes about rural practice.

Results Of 338 completed questionnaires (response rate – 75%), 138 contained written responses. The positive themes of rural general practice included: forming strong relationships with patients and the community, and practising the full spectrum of general practice, including emergency medicine. The negative themes included: heavy workloads, frequent on-call, inability to get time off, and feeling undervalued and underpaid by funders. Retention solutions included: better pay to adequately reflect the skills and workload, more salaried positions with guaranteed working conditions, and better rural continuing education. Recruitment solutions included: reducing barriers for foreign doctors to enter NZ, establishing a rural GP career pathway, and increasing the number of rural registrars.

Conclusions This study highlights both the positive and negative features of NZ rural general practice, and makes it clear that further concerted and sustained action is required to improve retention and recruitment. The GPs’ written comments provide detail on the challenges facing rural general practice, as well as informed comment about potential solutions.

Rural general practice in NZ is facing increasing difficulties with retention and recruitment, and the rural GPs in the current workforce are stressed. The key issue, identified by the rural GPs themselves, is a significant workforce shortage which in turn leads to heavy workloads, frequent on-call duty, and lack of rural locums to enable time off for professional development and holidays. The workforce shortage was also an important issue in 1986, when the last national survey of rural GPs was done. In November 1999 the Health Funding Authority (HFA) adopted the Rural GP Network’s Rural Ranking Scale (RRS) for defining ‘rural’ GPs entitled to claim a rural bonus payment. Only GPs scoring 35 points or greater (maximum 100 points) were considered ‘rural’ and entitled to apply for a ‘rural bonus’ payment. With a clear definition of a ‘rural GP’, and the availability of a database of NZ rural GPs compiled by one of the authors (RJ; unpublished data), the opportunity existed to directly survey the entire rural GP workforce and ask them to comment on the state of NZ rural general practice. Initial quantitative data from this survey have been published.
This paper provides further information to inform policy makers about the scale and depth of current difficulties, and details the solutions suggested by the rural GPs themselves.

**Methods**

An anonymous postal questionnaire was used to collect information from rural GPs. Our previous paper describes the methods used (questionnaire development, distribution and data analysis), and presents initial quantitative data on the rural GP respondents. The participant information sheet stated:

‘Basic information about rural general practice and rural GPs in New Zealand is desperately needed to assist with lobbying for improved working conditions (training, locums, CME, etc). The attached questionnaire is designed to collect that information’

The questionnaire included an open-ended question that asked rural GPs ‘for any further comments or suggestions about rural general practice’. The database for this paper consisted of the transcripts of the written responses, which were read multiple times by one author (RJ), and then purposefully analysed for themes about rural general practice. The analysis consisted of intentional collation of raw data into common themes and sub-themes in a systematic manner. After this analysis, key concepts were further refined.

**Results**

**Response rate**

Questionnaires were sent to 559 rural and semi-rural GPs—417 were returned completed (an overall response rate of 75%). Of the 417 completed questionnaires, 74 had RRS scores of less than 35 points, and 5 had not completed the RRS. This provided 338 appropriately completed questionnaires, of which 138 contained written responses to the open-ended question asking ‘for any further comments or suggestions about rural general practice’. The demographic data of the 138 rural GPs providing written responses were similar to those of the 338 rural GP respondents.

**Qualitative data**

The following are outlines of the three main themes that were read from the data

- **Positive aspects of rural general practice**
- **Negative aspects of rural general practice**
- **Suggested solutions**

The three key sub-themes identified for each category above were:

- The job
- Support for the job
- Unique factors about the job

(Supportive quotes from the rural GPs are cited in the text.)

**Positive aspects of rural general practice**

**The job**

The core work of rural general practice was described as interesting and rewarding by many rural GPs. There was the challenge of providing the full spectrum of care from birth to death, and of using emergency skills with critically ill patients. Furthermore,
they reported that patient continuity of care was greater in rural areas, and there was
the opportunity to get to know the person and their family. As well, in rural areas,
they felt they were valued and respected members of the community. All of this
contributed to a high degree of job satisfaction.

‘The practice population and the medical challenges are both interesting and
rewarding and I would recommend rural health care to anyone’

Support for the job

There were several comments from rural GPs that mentioned local continuing
education initiatives, which made keeping up-to-date with health information easier.
Other GPs mentioned support they received from specific organisations, such as their
local Independent Practitioners Association, the Rural GP Network, the Goodfellow
Unit, or the Northern Rural GP consortium. The assistance from part-time GPs
(mainly female or older semi-retired GPs) was especially valued by those GPs
fortunate enough to enjoy their support.

‘I am very lucky to have a long-term locum who does a fairly regular 4/10, and full-
time for my holiday (I cover her for her holidays)’

(No respondent stated that income was a positive factor in their work as a rural GP.)

Unique factors about the job

Positive comments acknowledged that each rural area is unique—and that some rural
areas, where it was more attractive to live, had no rural GP workforce shortages.

‘(Town) is a slight enigma as far as rural health goes, in the fact that there is always
a plentiful supply of doctors wishing to work part-time or full-time here’

Negative aspects of rural general practice

The job

While the core work of rural general practice was described positively, rural GPs were
almost unanimous in condemning their excessive workload. Specifically, they
described the ‘double jeopardy’ of a heavy daytime workload followed by a night or
weekend on-call. Indeed, doctors were planning to leave their practice because of its
effect on them and/or their family.

Part-time doctors were reluctant to work full-time because of the concern of the
effects of overwork. They clearly identified the following components of their
excessive workload, which were further aggravated by the general shortage of rural
GPs:

- Large patient lists during daytime clinics.
- Increased amounts of unpaid paperwork and administration.
- Frequent on-call duty.
- Lack of locum-relief for holidays and study leave:

‘On a bad day, I feel trapped by a very heavy workload, disruption to family life and
the need to spend a lot of time after work doing letters and chasing up things for
patients’
‘I have commenced in rural general practice relatively recently. As a consequence of the demands my work places on me, my family and I do not enjoy the quality of life I once aspired to. I intend working very hard over the next 6–12 months to reverse this situation. If I am not successful in improving our quality of life, I firmly intend to leave rural general practice’

‘(I) feel overloaded with red tape (ACC/AITC, etc) computers, on-call, college demands (MOPS) and increasing patient expectations. At the same time, the financial incentives are falling year by year as expenses rise. Audit for MOPS is always difficult’

‘After 14 years of 1:1 and 1:2 call it is time to change—for the sake of myself and my family’

‘Biggest problem is lack of locums to get holidays, etc. Other problem include increased paperwork and other non-paid administration. Decreasing income doesn’t help’

‘We need help with locums! Locums don’t want to do call! Rural general practice would be OK, except for the call’

‘Lack of GPs in surrounding areas, which means we have to cover, no locums available’

Support for the job

Overwhelmingly, rural GPs felt they were unsupported: their role was undervalued, their work poorly paid, and their specialty lacked a defined career pathway. All of these factors were felt to be directly contributing to the workforce crisis and causing practice ownership to be more of a trap, than an asset.

‘So far, the message is that we are moderately useless, worthless, and doing a job that is not appreciated because we are working 24 hours a day and are not supplying as good a service as the towns do with their efficient city surgeries and after hours clinics. There is no-one speaking strongly in support of the experienced rural doctors’

‘Central bureaucracy appears to have objective of denigrating general practice/family medicine = problems with Obst./changes to ACC Provider Certification/prospect of nurse prescribing/ encouragement of alternative medicine’

‘I earn as much here full time as I did in an affluent city practice working 3 days a week and part time hospice work and practically no on call. There are nights on call I don’t even earn enough to cover the rent I pay to stay here’

‘Unfortunately our incomes are falling and overheads increasing, making the long-term outlook bleak’

‘My investment in my practice has been reduced to a worthless asset/liability as it is impossible to attract anyone to the area’

‘Investing my money for needed IT developments in a business, which may be unsaleable, would be unwise’

Unique factors of the job

This sub-theme highlighted that some difficulties were unique to either certain individuals or certain localities. Individuals with specific problems included: older
and retiring doctors, foreign-trained doctors, female GPs, and GP couples. Older and retiring doctors reported having to work beyond when they would have preferred to reduce or stop practising, because of the inability to find a replacement. They also lamented that their practice had almost no value. Some reported just wanting to find someone to care for their patients.

‘I am retiring in 6 weeks whether or not I get a replacement. I have been trying for two years to try to sell or give my practice away - I have a tentative long-term locum arriving who may or may not stay. He is offered entry at NO COST’

Foreign-trained doctors reported a number of difficulties, mainly to do with the registration process.

‘Problems with initial registration - Having to travel to (large urban centre) costing $450 airfare for interview which lasted 5 minutes. Leaving family only 2 days after arriving in New Zealand. Could these documents not be sighted by someone more locally’

Female GPs described a number of unique difficulties, which were further aggravated if their partner was a GP. (These problems unique to female GPs are dealt with in a separate paper on gender differences in NZ rural general practice in this issue.)

Locality-specific problems related to either the financial disincentive of working in some low socioeconomic areas or how the rural ranking scale has negatively impacted on some rural localities.

‘Huge unpaid debt. It is not unusual to get up in the middle of the night to someone with $200–$300 debt who has no intention of paying. This is demoralising’

‘There are many truly rural doctors who have very responsible onerous on-call work but, because of the 'remote orientated' questions of the rural ranking scale, miss out. They are still stressed with rural doctor stresses, have no access to after hours clinics etc but are largely ignored by 'remote' rural doctors and urban doctors alike. The rural GP network is dominated by remote GPs. The ranking scale is secretive and inappropriate, and does not cover the scope of rural practice stresses’

Suggested Solutions for Rural General Practice:

The rural GP respondents suggested a range of solutions to improve working conditions.

The Job

Solutions to make the workload manageable included:

- On-call: Fixing the ‘on-call problem’, or at least shifting it so that it is someone else’s problem, was the most important issue for most rural GPs.

The two key suggestions were to:

- Remove the requirement for GPs to provide 24-hour service, and make it the responsibility of District Health Boards, who might then have to pay for additional doctors to assist with on-call coverage (e.g. weekends) to make rosters reasonable.
- Provide adequate payment for providing on-call services in rural areas.

**Workforce shortage:** After on-call, the shortage of rural GPs was the second-most-important issue to solve.

Solutions here included:

- Encourage more part-time GPs: Make rural general practice more attractive to, and accepting of, part-time doctors. This, of course, requires onerous on-call schedules to be addressed (see above), as well as addressing female GP issues (e.g. spouse’s career). If on-call was not an issue, older rural doctors might even consider deferring retirement to work in a part-time capacity.

- Provide more rural locums: It was suggested that the RGPN Rural Locum Support Scheme be expanded from 2 weeks (up to 4 or even 6 weeks) so that adequate time off for holidays and education was guaranteed.

- Train more NZ rural GPs: The lack of a rural career pathway was seen as an issue needing urgent attention. Selection of rural students to medical school, greater exposure to rural health and rural areas during medical school and house surgeon years, a dedicated rural GP training programme, and better postgraduate educational opportunities tailored to rural practice were all suggested to increase the number of doctors with the skills and desire to work rurally.

**Support for the job**

Solutions to support rural GPs included:

- Improve the income: Rural GPs felt they were underpaid for the job they were doing. In comparison to their urban colleagues, they thought the demands of their job, with greater involvement with on-call and emergency care coupled with larger patient loads, should be rewarded with a higher income. Many felt this should be in the form of an adequate salary, with guaranteed time-off for holidays and education, which would then avoid all the practice ownership and patient debt issues as well. While others simply suggested the income should be adequate ‘to allow a good lifestyle as a part-time GP’.

- More support from the RNZCGP: One rural GP commented:

  ‘I seem to need an RNZCGP ‘case worker’ to work more closely with me to achieve accreditation’

  *(This comment is included specifically, to acknowledge that the College has since started just such a programme to assist members complete their accreditation.)*

**Unique factors about the job**

Suggested solutions here included:

- Make solo doctor localities survivable: ‘On-call duty every night’ should not be tolerated except in exceptional circumstances (e.g. Chatham Islands). It was stated that there should be a minimum of two rural GPs, on salary if necessary, to provide safe services (for the patients and the doctor). Upskilling rural nurses to share the on-call duty was another solution.
Discussion

This is the first NZ study to directly survey all active rural GPs for their opinions on the state of rural practice. The results support the previously published quantitative data from this questionnaire study, and expand upon them. While the survey results were collected 4 years ago (December 1999 to March 2000), the stability of rural healthcare continues to be fragile, with workforce shortages still common in many localities.

The positive aspects of NZ rural general practice, which were not evident from the quantitative data, emerged clearly from the written comments: continuity of care, practising the full spectrum of medicine (birth to death, emergency care), knowing the person and their family, and being valued by the patients and the community. These positive factors are the reasons GPs stay in rural areas. These positive factors have been cited by GPs in other countries as well, and confirm that rural general practice is an interesting, challenging, and highly rewarding profession.

Counterbalancing the positive aspects of the job are a number of negative aspects, chiefly to do with overwork and feeling undervalued, especially by the funder. Overwork consisted of too much on-call duty and too many patients needing care. These factors, and especially the stress of on-call duty, have been catalogued by rural GPs in NZ and other countries as have the solutions.

There has been a rural GP workforce shortage in NZ since at least 1986, however rural GPs in this study clearly felt it was getting worse. These GPs highlight the urgent need to improve the working conditions of the existing workforce, in addition to promoting recruitment. Indeed, if recruitment is to ever stand a chance, retention is critical.

Regarding retention initiatives, the RNZCGP is providing extra assistance to GPs struggling to complete accreditation. The government-funded Rural Locum Support Scheme has started supplying rural GPs with 2 weeks per year of locum relief, and other funding has been made available to District Health Boards specifically for retaining rural GPs and improving onerous on-call rosters. A topic that needs wider discussion and debate is that of rural GP salaries; suggested by many respondents as one of the potential solutions to the workforce problem. A contract could guarantee adequate pay, time-off (holidays and education), and reasonable rosters— with no worries about debts, arranging locums, or selling practices. This was an option many rural GPs seemed ready to discuss.

Regarding recruitment initiatives, although designed to supply short-term locums, the Rural Locum Support Scheme, by internationally advertising NZ’s attractiveness as a place to work, may assist with foreign doctor recruitment to permanent posts. Just recently, the NZ Rural General Practice Network has been awarded the contract to assist with the recruitment of long-term rural locums. The RNZCGP is working with both universities and others to develop a career pathway for rural general practice.

The NZ government has increased the medical school intake (by 20 places) at the universities in both Otago and Auckland, with preferential admission of rural-origin students to these places. Moreover, these two universities submitted a joint funding proposal in September 2003 for a 12-week rural multidisciplinary training experience for all medical students, which will also include nurses and other health professionals.
If approved, this will be an encouraging development; demonstrating that the NZ government and universities have recognised their social responsibility to train doctors and other health professionals, specifically to meet the needs of the NZ population.

The results of this study detail the positive factors that are retaining NZ rural GPs, and these factors should be clearly highlighted in educational initiatives with medical and other health students. Continuity of care, knowing the person and their family, and being valued by patients and communities are more fully appreciated by a prolonged immersion in a rural training environment. Other advantages of a significant immersion in a rural setting would include experiencing a balanced alternative to the present emphasis on urban tertiary hospital placements. Teaching medical students in rural areas provides a sound generalist educational experience, and ‘in rural communities, the social forces impinging on healthcare can be more readily defined, while opportunities for intervention are more accessible to the students’. This type of rural community-based medical education has been trialled successfully in Australia. Of real concern in NZ, however, is whether the depleted rural medical workforce has the capacity to take on the additional challenge of becoming teachers, supervisors, and mentors to these students.

In conclusion, this study is the first to describe what rural GPs think about the state of NZ rural practice, and what needs to be done to improve it. Initiatives that will address their identified concerns have begun. Restructuring of medical school training, and rural general practice itself, is essential if young doctors with the appropriate skills and attitudes are to be attracted in sufficient numbers to live and work in rural areas. Without these changes, more and more rural areas will be without GPs, and rural people will have to rely on other options for their medical care.

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Linking primary and secondary healthcare databases in New Zealand

Andrew Tomlin and Jason Hall

Abstract

Aim To investigate the effectiveness of linking primary and secondary care data using an encrypted national health index (ENHI).

Methods Primary care patient registers from 106 practices collected by the Dunedin Research Unit of the Royal New Zealand College of General Practitioners (RNZCGP) for the year 2001 were linked to the entire National Minimum Data Set (NMDS) for 2001 using an ENHI. The success of matching using the ENHI was measured, and primary and secondary care populations were compared in terms of hospital utilisation (number of discharges, length of stay, major diagnostic category [MDC]).

Results 86,608 unique general practice ENHIs were successfully linked to the NMDS for the study period. Date of birth was matched on ENHIs (96.6%), sex (99.1%), and ethnicity (84.0%). Hospital morbidity and hospital utilisation (in terms of number of discharges and length of stay) were similar for general practice patient admissions and the entire NMDS admission data set.

Conclusions Data collected in general practice linked well to secondary care data using the ENHI. Linked primary and secondary care data sets will provide a sound basis for research into publicly funded healthcare.

In New Zealand and overseas, the development of systems which enable the integration of health information from related clinical and health services databases is of major importance in creating health information systems for population-based health research, and for monitoring the health services utilisation of defined populations.

Linking information from different sources has long been accepted as a way to conduct population-based health research.1 Of key importance is the establishment of an interface between primary and secondary care healthcare databases. Overseas, the integration of these two data sources has been limited—either due to a lack of available data for routine linkage, or the lack of a specific and unique patient identifier common to the two data sources.2,3

In New Zealand, linking of primary and secondary care data is possible due to the adoption of the National Health Index (NHI) as a unique identifier allocated to all patients coming into contact with the healthcare system. The NHI is recorded both on general practice patient administration systems and in the National Minimum Data Set (NMDS) which contains information on inpatients and daypatients discharged from publicly funded hospitals. The secondary care data is supplied directly to the NMDS by hospital-based computer systems. Previous research involving the integration of primary and secondary care data in this country has largely focused on the primary and secondary health services utilisation of a single practice’s population,4,5 but these
studies have also demonstrated the importance of primary care factors in the utilisation of secondary care.\textsuperscript{6}

This study investigated data issues relating to the linking of general practice data from multiple general practices to hospital inpatient and day care records contained in the NMDS. The data integrity of the linked data sets was examined by determining the level of recorded and matching data in both data sets, and the representativeness of the primary care patient population hospitalised during the study period. Secondary care utilisation and morbidity were examined with respect to primary care variables including age, sex, community services card (CSC) status, and high-user health card (HUHC) status.

We also discuss ethical issues concerning the linking of primary and secondary care records. The use of patient records by interested parties other than the primary care provider is a sensitive subject, and research utilising electronic medical records must be bound by ethical principles.

\textbf{Methods}

The primary care patient data set included patient demographic information extracted from the patient registers of 106 New Zealand general practices for the year 2001. 21.1\% of the patients were from the Central region, 23.5\% from Midland, 20.9\% from Northern, and 34.5\% from the Southern region. All practices are members of the Dunedin RNZCGP Computer Research Network, and regularly contribute patient register information (and other clinical data) by running extraction programs from their practice management software. The patient registers were downloaded from different software versions of three practice management systems (Medtech, Good Practice, and Houston Medical). All patient-identifying information is removed prior to extraction and, if recorded, the NHI of each patient is encrypted as part of the extraction process. For each patient, the encrypted NHI (ENHI), date of birth, sex, ethnicity, CSC status, and HUHC status were determined.

Secondary care inpatient and day care event records were provided by the New Zealand Health Information Service (NZHIS) and included all discharges from publicly funded hospitals in the year 2001. Records relating to patients receiving privately-funded secondary care were not included in the analysis as the level of recording for this data set is incomplete. For each hospital discharge, the secondary care data set included the ENHI, date of birth, sex, and ethnicity of the patient, the admission and discharge dates, the hospital event type, and the diagnosis and operation codes for each event. The length of stay for each event was calculated as the number of days from the admission date to the discharge date. The age of each patient in both the primary and secondary care data sets was calculated as at 31 December 2001.

Primary and secondary care patient data sets were reviewed to determine whether more than one patient had been assigned a single ENHI, or whether multiple ENHIs had been allocated to a single patient. The integrity of patient demographic data in the linked data sets was examined by matching date of birth, sex, and ethnicity codes in the two data sets.

To examine the degree to which general practice patients from the Dunedin RNZCGP data set admitted to the hospital system are representative of all patients hospitalised, we compared the number of discharges per patient, the average length of stay, and the distribution of hospital diagnoses for each patient group. Secondary care morbidity was grouped by major diagnostic category (MDC), which is made up of 24 mutually exclusive principal diagnosis categories that correspond to a single organ system or aetiology (generally based on a medical classification that is associated with a particular medical specialty).

Ethics approval for linking primary care medical records to the NMDS using an ENHI was granted by the Otago Ethics Committee.

\textbf{Results}

Practice registers ranged in size from 1,488 to 92,920 patients (mean – 14,978; SD – 14,244). Many of these practices retained records of casual and visiting patients who
had not consulted at the practice within the last 3 years. There were 1,587,712 patients recorded on the patient registers of the 106 practices, and 913,176 (57.5%) of these patients had a recorded ENHI. A valid ENHI was recorded for 88% of registered patients but only 40 percent of unregistered casual patients. Of the patients with a recorded ENHI; 85,057 (9.3%) were listed on the patient registers of more than one of the practices, 11,724 (1.3%) were listed at more than two practices, and 1,888 patients were listed on the patient registers of four or more practices. Assuming that the ENHI was correctly recorded at each practice, there were, in total, 794,357 ‘unique’ patients.

Demographic data, in the form of the date of birth and gender of the patient, was not in agreement across multiple practices for 7,962 (1.0%) of the 794,357 unique patients. As it is not easy to ascertain which practice has correctly recorded demographic details for these patients, this analysis focused on the remaining 786,395 general practice patients for whom there was a unique ENHI, date of birth, and sex.

The NMDS for the year 2001 contains 808,605 patient discharge records. This represents all hospital discharges by New Zealanders from publicly funded hospitals during that year. The records relate to 511,134 individual patient ENHIs, of which 509,600 (99.7%) have unique date of birth and gender details. Demographic data relating to 1,534 ENHIs were not unique as either the date of birth or sex of the patient was different on separate records relating to the same ENHI. These patients were not included in the subsequent analysis.

In total, 86,608 general practice patient ENHIs (with unique date of birth and gender) linked to hospital discharge records in the 2001 NMDS. This constituted 11% of the 786,395 general practice patients with a unique ENHI. The date of birth and sex of these patients was in good agreement with the corresponding patient details recorded in the NMDS. Date of birth matched for 96.6% of patients, and sex for 99.1% of patients.

Of the 763 (0.9%) patients with a sex mismatch, 375 were due to the fact that the sex of the patient was recorded as ‘U’ (i.e. unknown) in the general practice data. The known sex of the patient was recorded, however, in the NMDS. The majority of the date of birth mismatches were most likely due to typographical data input errors either in the general practice data or the NMDS; in most cases, only one character of the dd/mm/yyyy date format was different.

Of the 511,134 individual patient ENHIs in the NMDS, 501,265 (98.1%) had a unique ethnicity code. The remaining 9,870 patients were recorded as having a different ethnicity code on separate records. Three or more ethnicity codes were recorded for 195 patients. Ethnicity was recorded in the general practice records of 28,493 (33%) of the 86,608 patients with ENHIs linked to a hospital discharge record in the NMDS. Approximately 84% of these general practice ethnicity codes were in agreement with the ethnicity codes recorded in the NMDS.

Table 1 shows the age/sex distributions of linked general practice patients admitted to hospital, and all patients with a hospital admission in 2001 together with the number of hospital inpatient events and average length of hospital stay per patient. General practice-linked patients contained significantly less of the very young and of the very old when compared with NMDS patients, with a higher proportion of general practice patients in the 15–34 year age group for both males and females. Discharge rates and mean length of stay were comparable for both groups. The proportion of admissions
by major diagnostic category (MDC) for general practice patients and all hospital patients is shown in Table 2. The major difference in morbidity between the primary care-linked ENHIs and the entire NMDS is for MDC categories relating to newborn babies. We may expect a higher proportion of admissions for newborns and neonates for all NMDS patients, since a hospital discharge record is created for each newborn baby in which the date of birth is equal to the date of admission.
Table 1. General practice linked data compared to NMDS data for New Zealand (2001)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>GP linked</th>
<th>NMDS</th>
<th>GP linked</th>
<th>NMDS</th>
<th>GP Linked</th>
<th>NMDS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>(%)</td>
<td>n</td>
<td>(%)</td>
<td>Number of discharges</td>
<td>Average length of stay</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(per patient)</td>
<td>(days)</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4</td>
<td>3833</td>
<td>(7.4)</td>
<td>22653</td>
<td>(8.4)*</td>
<td>5166 (1.3)</td>
<td>1.1</td>
</tr>
<tr>
<td>5-14</td>
<td>2627</td>
<td>(5.1)</td>
<td>15790</td>
<td>(5.8)*</td>
<td>3463 (1.3)</td>
<td>1.5</td>
</tr>
<tr>
<td>15-24</td>
<td>8390</td>
<td>(16.2)</td>
<td>34721</td>
<td>(12.8)*</td>
<td>12769 (1.5)</td>
<td>2.2</td>
</tr>
<tr>
<td>25-34</td>
<td>12508</td>
<td>(24.1)</td>
<td>56386</td>
<td>(20.8)*</td>
<td>19011 (1.5)</td>
<td>2.5</td>
</tr>
<tr>
<td>35-44</td>
<td>6840</td>
<td>(13.2)</td>
<td>36197</td>
<td>(13.4)*</td>
<td>10159 (1.5)</td>
<td>3.1</td>
</tr>
<tr>
<td>45-54</td>
<td>4013</td>
<td>(7.7)</td>
<td>22634</td>
<td>(8.4)*</td>
<td>6667 (1.7)</td>
<td>3.7</td>
</tr>
<tr>
<td>55-64</td>
<td>3461</td>
<td>(6.7)</td>
<td>20258</td>
<td>(7.5)*</td>
<td>6283 (1.8)</td>
<td>3.9</td>
</tr>
<tr>
<td>65-74</td>
<td>3856</td>
<td>(7.4)</td>
<td>23189</td>
<td>(8.6)*</td>
<td>7234 (1.9)</td>
<td>6.2</td>
</tr>
<tr>
<td>75-84</td>
<td>4228</td>
<td>(8.2)</td>
<td>25720</td>
<td>(9.5)*</td>
<td>8517 (2.0)</td>
<td>12.5</td>
</tr>
<tr>
<td>85+</td>
<td>2081</td>
<td>(4.0)</td>
<td>13070</td>
<td>(4.8)*</td>
<td>3944 (1.9)</td>
<td>40.0</td>
</tr>
<tr>
<td>Total</td>
<td>51837</td>
<td>(100.0)</td>
<td>270618</td>
<td>(100.0)</td>
<td>83213 (1.6)</td>
<td>5.7</td>
</tr>
</tbody>
</table>

Males

<table>
<thead>
<tr>
<th>Age Group</th>
<th>GP linked</th>
<th>NMDS</th>
<th>GP linked</th>
<th>NMDS</th>
<th>GP Linked</th>
<th>NMDS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>(%)</td>
<td>n</td>
<td>(%)</td>
<td>Number of discharges</td>
<td>Average length of stay</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(per patient)</td>
<td>(days)</td>
</tr>
<tr>
<td>0-4</td>
<td>4800</td>
<td>(13.8)</td>
<td>28524</td>
<td>(14.2)*</td>
<td>6543 (1.4)</td>
<td>1.2</td>
</tr>
<tr>
<td>5-14</td>
<td>3408</td>
<td>(9.8)</td>
<td>20492</td>
<td>(10.2)*</td>
<td>4429 (1.3)</td>
<td>1.9</td>
</tr>
<tr>
<td>15-24</td>
<td>3548</td>
<td>(10.2)</td>
<td>18019</td>
<td>(9.0)*</td>
<td>4618 (1.3)</td>
<td>3.2</td>
</tr>
<tr>
<td>25-34</td>
<td>3729</td>
<td>(10.7)</td>
<td>18077</td>
<td>(9.0)*</td>
<td>5464 (1.5)</td>
<td>3.4</td>
</tr>
<tr>
<td>Age Group</td>
<td>Discharges</td>
<td>Cumulative</td>
<td>Rate 1</td>
<td>Rate 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>------------</td>
<td>--------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-44</td>
<td>3707 (10.7)</td>
<td>20098 (10.0)</td>
<td>5982 (1.6)</td>
<td>29774 (1.5)</td>
<td>3.5</td>
<td>3.0</td>
</tr>
<tr>
<td>45-54</td>
<td>3531 (10.2)</td>
<td>20899 (10.4)</td>
<td>6399 (1.8)</td>
<td>34499 (1.7)</td>
<td>2.9</td>
<td>3.1</td>
</tr>
<tr>
<td>55-64</td>
<td>3595 (10.3)</td>
<td>21277 (10.6)</td>
<td>6954 (1.9)</td>
<td>38603 (1.8)</td>
<td>4.2</td>
<td>4.1</td>
</tr>
<tr>
<td>65-74</td>
<td>4210 (12.1)</td>
<td>25761 (12.8)</td>
<td>8469 (2.0)</td>
<td>50836 (2.0)</td>
<td>7.4</td>
<td>5.8</td>
</tr>
<tr>
<td>75-84</td>
<td>3248 (9.3)</td>
<td>21054 (10.5)</td>
<td>6735 (2.1)</td>
<td>42794 (2.0)</td>
<td>11.4</td>
<td>9.9</td>
</tr>
<tr>
<td>85+</td>
<td>995 (2.9)</td>
<td>6549 (3.3)</td>
<td>2093 (2.1)</td>
<td>13470 (2.1)</td>
<td>22.5</td>
<td>21.5</td>
</tr>
<tr>
<td>Total</td>
<td>34771 (100.0)</td>
<td>200750 (100.0)</td>
<td>57686 (1.7)</td>
<td>333720 (1.7)</td>
<td>5.3</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Note: The 0-4 year age groups for the NMDS patient population do not include 24,835 hospital discharges relating to birth events. There were no other hospital discharge records in 2001 for these newborns; *p < 0.01.
Table 2. Proportion of discharges 2001 by Major Diagnostic Classification (MDC) - general practice linked data vs NMDS

<table>
<thead>
<tr>
<th>Major diagnostic category</th>
<th>NMDS data</th>
<th>GP linked data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy, childbirth and the pueperium</td>
<td>12.0%</td>
<td>14.7%</td>
</tr>
<tr>
<td>Diseases and disorders of the circulatory system</td>
<td>10.1%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Diseases and disorders of the digestive system</td>
<td>9.8%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Diseases and disorders of the musculoskeletal system and connective tissue</td>
<td>9.5%</td>
<td>9.4%</td>
</tr>
<tr>
<td>Newborn and other neonates</td>
<td>8.4%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Diseases and disorders of the respiratory system</td>
<td>7.1%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Diseases and disorders of the nervous system</td>
<td>5.7%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Diseases and disorders of the ear, nose, mouth and throat</td>
<td>5.5%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Diseases and disorders of the skin, subcutaneous tissue and breast</td>
<td>4.9%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Diseases and disorders of the kidney and urinary tract</td>
<td>4.7%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Factors influencing health status and other contacts with health services</td>
<td>4.5%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Diseases and disorders of the female reproductive system</td>
<td>3.0%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Injuries, poisoning and toxic effects of drugs</td>
<td>2.7%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Diseases and disorders of the eye</td>
<td>2.0%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Neoplastic disorders (haematological and solid neoplasms)</td>
<td>1.8%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Infectious and parasitic diseases (systemic or unspecified sites)</td>
<td>1.7%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Diseases and disorders of the heptobiliary system and pancreas</td>
<td>1.6%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Mental diseases and disorders</td>
<td>1.1%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Diseases &amp; disorders of blood, blood-forming organs &amp; immunological disorder</td>
<td>1.0%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Diseases and disorders of the male reproductive system</td>
<td>1.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Endocrine, nutritional and metabolic diseases and disorders</td>
<td>1.0%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Alcohol/drug use and alcohol/drug-induced organic mental conditions</td>
<td>0.3%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Burns</td>
<td>0.2%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Ungroupable</td>
<td>0.5%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Discussion

Primary and secondary data can be linked effectively (in database terms) using the ENHI and the high matching rates of patient date of birth, sex, and ethnicity between primary and secondary care records indicates that there is, in general, a high standard of data integrity. There is always potential for increasing current levels of data integrity, and this applies to NMDS records—at least in terms of correcting inconsistent recording of date of birth, sex and ethnicity across multiple records for a single ENHI, as well as general practice records in primary care.

This study found ethnicity recorded in 33% of general practice records compared with 98% of the NMDS. Previous studies also found ethnicity not well recorded in general practice. For a group of registered patients, one Dunedin RNZCGP Research Unit study has found that only 34.9% of all patients had an ethnicity code recorded in general practice patient registers. Many practices use ethnicity coding systems invented by themselves, and many are not even recording ethnicity in a standardised format within their own practice. Some practices, however, have adopted the policy of recording ethnicity using the NMDS ethnic group codes, and from a data standardisation viewpoint this is expedient. The NMDS ethnicity codes relate to the options for stating ethnicity in the New Zealand Census of Population and Dwellings.
These codes are incorporated into some practice management software systems but even in these systems, free text entry of a primary care patient’s ethnicity is still possible. Free text recording of ethnicity is, however, still required, since some practices record ethnicity more specifically than allowed by the NMDS ethnic group codes. For example, Sri Lankan patients may be recorded as either ‘Other Asian’ (code 44), or ‘Other’ (code 54), with loss of information. The level of recording and standardisation of general practice ethnicity data is likely to improve as consistent and accurate data on ethnic origin must now be collected by Primary Health Organisations (PHOs) as part of their enrolment requirements.

There was a high rate of matching of recorded ethnicity between general practice systems and the NMDS. However, since many practices have their own coding system for ethnicity, the matching process with secondary care ethnicity is subject to a small error. Patients of European descent, for example, are coded as 10, 11, or 12 in the NMDS. Moreover, in the general practice records, this may be recorded as ‘European’, ‘E’, ‘Caucasian’, ‘CA’, 10, 11, 12, ‘Dutch’, ‘American’, ‘Polish’, etc.

One of the benefits of linking primary and secondary care data is that patient demographic data may be easily migrated between the primary and secondary care components of an integrated healthcare data set to update data items with missing or erroneous values. Ethnicity codes, date of birth, or gender information for patients in the NMDS, for example, may be assigned to the corresponding patient records in the general practice data set where this information has not been recorded. Potentially, this information could be passed on to general practitioners to update their patient management systems.

The new enrolment requirements for capitation funding of PHOs should encourage member practices to maintain more accurate patient registers, and it seems likely that the level of recording of the NHI and ethnicity of primary care patients has improved since the data was provided for this study. PHO members must include up-to-date and accurate information for each patient on the enrolment register in accordance with agreed data specifications. In conjunction with improvements to information systems for collecting data from constituent members, these improvements should result in more timely and comprehensive general practice data sets for research and health services monitoring and audit.

This study indicates that, in general, the overall secondary care utilisation of primary care patients for whom an ENHI has been recorded is not significantly different from that of all secondary care patients. Hospital diagnoses and procedures for the two groups of patients are comparable with much of the difference in hospital utilisation between the two populations due to childbirth and neonatal care.

Our data also provided additional evidence demonstrating the higher levels of secondary health services utilisation for CSC and HUHC holders. Forty-eight percent of all general practice patients were recorded as holding a CSC, a very similar rate to that found in the 1996/97 Health Survey. Hospital utilisation for general practice patients holding a CSC was significantly higher than for patients with no CSC. There were 1.8 discharges per patient for patients holding a CSC and 1.5 for patients without a card. Average length of stay was 6.7 days for cardholders and 4.4 days for non-cardholders. The ratio of discharges per patient for HUHC holders to patients not holding a card was 2.3 to 1.6. Average length of stay was almost twice as long for
cardholders. The higher hospital utilisation rates of CSC and HUHC holders support
the findings of the Christchurch South Health Centre study integrating primary and
secondary healthcare for a general practice population.  

Primary care data may be integrated with a number of other data sources using the
encrypted NHI. In addition to the hospital inpatient and ethnicity data described in
this paper, accident and emergency and outpatient data may also be included in
integrated data sets to provide a more complete picture of secondary care utilisation
and morbidity. The mortality collection and cancer registry, both maintained by the
NZHIS, may also be linked. Complete data sets are currently only available for deaths
and cancer registrations prior to 2000, although provisional mortality data is now
available for 2000.

The New Zealand Deprivation Index (NZDep), now available for the 2001 census,
can also be linked to general practice and secondary care data. This is a small area
measure of socioeconomic deprivation developed by the Health Services Research
Centre at the Wellington School of Medicine. NZDep is used for funding formulae
and resource allocation, community-based advocacy, targeting of policy/interventions,
and research and analysis. NZDep can be linked to general practice data through
gEocoding NHI address data held by the NZHIS. A study using data from the
Wellington Independent Practice Association (WIPA) achieved an 83.3% success rate
goEocoding NHIs. This rate of matching may be further improved using a manual
matching process in addition to automated matching by the NZHIS, although manual
matching would create an additional cost to what is a relatively inexpensive exercise.

In order to conduct research with linked healthcare records, privacy is of paramount
importance. One of the key standards of ethical collection of general practice data is
whether the individual patient is identifiable. No information relating to the name,
address, or occupation of patients is extracted from contributing practices. An alpha-
numeric code assigned by the practice management system (PMS) software at each
practice may be used to link patient demographic information to the clinical records
of each patient.

The NHI (National Health Index) number is encrypted before storage on the network.
Only aggregated data leaves the Dunedin RNZCGP Research Unit. After-hours access
is by swipe card only and all staff sign confidentiality agreements. It is only by
maintaining standards for safeguarding patient confidentiality that public confidence
may be gained for accessing individualised patient records, and demands for
restrictive practices concerning access to health information databases reduced.

Issues of potential bias in data collections held by the Dunedin RNZCGP Research
Unit have to be taken into consideration. The magnitude and direction of this bias was
the subject of a previous investigation, which found the database provided data that
reflected similar morbidity and services to that of practices not contributing data to
the network. Another factor which must be taken into consideration when
interpreting primary care patient register data is registration status. Unpublished data
indicates that 20% of patients listed on practice registers have not attended their
practice within the last 3 years, and indicates a large number of casual patients for
whom the recording of the NHI is very low. This may introduce a level of bias as
patients without recorded ENHIs cannot be linked to secondary care data. Patients
from the general practice data set are geographically distributed, but there is a greater
proportion from the southern region. Sampling and standardisation methodologies could be used in the future to create representative data sets.

The linking of primary and secondary care data gives us the opportunity to study a wide range of risk factors for hospitalisation and hospital procedures. Community services card status is one indicator of risk highlighted in this study but longitudinal-linked data sets will provide much of the information required to investigate multiple morbidity and demographic risk variables. This study provides much needed data on the ability to successfully link primary and secondary care data using an encrypted NHI.

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References:


Antimicrobial susceptibility among *Neisseria gonorrhoeae* in New Zealand in 2002

Helen Heffernan, Mike Brokenshire, Rosemary Woodhouse, Anne MacCarthy, and Tim Blackmore

**Abstract**

**Aim** To estimate the prevalence of antimicrobial resistance among *Neisseria gonorrhoeae*, and to determine whether the increase in ciprofloxacin resistance observed in Auckland in 2001 had occurred in other parts of the country.

**Methods** The antimicrobial susceptibility of *N. gonorrhoeae* (isolated in New Zealand over a 4-month period between April and August 2002) was tested at either LabPlus, Auckland District Health Board, or at ESR, using the same agar dilution method.

**Results** The prevalence of resistance to the antimicrobials tested was: ceftriaxone, 0%; ciprofloxacin, 6.8%; penicillin, 9.0%; spectinomycin, 0%; and tetracycline, 27.8%. There were few statistically significant geographical differences in resistance within New Zealand. Gonococcal infections acquired in Asia were more likely to be ciprofloxacin and penicillin resistant than infections acquired in New Zealand.

**Conclusions** Ciprofloxacin resistance among *N. gonorrhoeae* in New Zealand has reached a level where this antibiotic is no longer the most appropriate first-line treatment. In fact, ceftriaxone should now be considered the most reliable option for the treatment and control of gonorrhoea in New Zealand, particularly in the Northland/Auckland region.

After chlamydia, gonorrhoea is the second-most common bacterial sexually transmitted infection among attendees at sexual health clinics in New Zealand. The number of cases of gonorrhoea diagnosed at sexual health clinics has increased each year since 1996, with an overall increase of 94% between 1996 and 2002.\(^1\) In recent years, the incidence of gonorrhoea has also increased in other developed countries, with the highest rates in certain socially and economically deprived subpopulations, and in men who have sex with men.\(^2\)\(^-\)\(^5\)

Increasing antimicrobial resistance, especially to penicillin and the fluoroquinolones, is compromising the effective treatment of gonorrhoea. Since penicillin resistance emerged in the late 1970s, it has spread to most parts of the world. Ciprofloxacin resistance first emerged (and then become particularly common) in South East Asia and the Western Pacific.\(^6\)\(^,\)\(^7\) Based on data available from LabPlus, Auckland District Health Board, there was a large increase in ciprofloxacin resistance in the Auckland region during 2001, with a four-fold rise in resistance that year to a rate of 10.1%.\(^7\)\(^,\)\(^8\)

This survey was undertaken to estimate the prevalence of antimicrobial resistance among *Neisseria gonorrhoeae* in New Zealand and to determine whether the increase in ciprofloxacin resistance observed in the Auckland region in 2001 had occurred in other parts of the country. Data on the national and regional incidence of culture-
positive gonorrhoea, and the age/sex distribution of patients, are also presented in the results.

Methods

Community and hospital laboratories throughout New Zealand were requested to refer all \( N.\) \( \text{gonorrhoeae} \) isolated between 17 April and 16 August 2002 to either LabPlus or the Institute of Environmental Science and Research (ESR). The data collected with each isolate included patient date of birth or age, sex, anatomical site, and place (New Zealand versus an overseas country) where the infection was acquired. Repeat isolates were excluded. Ceftriaxone, ciprofloxacin, penicillin, spectinomycin, and tetracycline minimum inhibitory concentrations (MICs) were determined by agar dilution using the method of the Australian Gonococcal Surveillance Programme.\(^9\) MICs were interpreted as follows: ceftriaxone \( \text{MIC} \leq 0.03\, \text{mg/L} = \text{susceptible (S)}, \text{MIC} 0.06-0.25\, \text{mg/L} = \text{reduced susceptibility or less susceptible (I)}; \) ciprofloxacin \( \text{MIC} \leq 0.03\, \text{mg/L} = \text{S}, \text{MIC} 0.06-0.5\, \text{mg/L} = \text{I}, \text{MIC} \geq 1\, \text{mg/L} = \text{R}; \) spectinomycin \( \text{MIC} \leq 64\, \text{mg/L} = \text{S}, \text{MIC} \geq 128\, \text{mg/L} = \text{R}; \) and tetracycline \( \text{MIC} \leq 0.5\, \text{mg/L} = \text{S}, \text{MIC} \geq 1\, \text{mg/L} = \text{R}. \) Beta-lactamase production was determined with the chromogenic cephalosporin, nitrocefin (Glaxo, Greenford, England).

Isolates were identified as originating from the health district in which the referring laboratory was located. For the geographic distribution analysis, health districts were aggregated as follows: the Northland/Auckland region included Northland, North West Auckland, Central Auckland and South Auckland Health Districts; the Waikato region included Waikato Health District; the Bay of Plenty region included Tauranga, Eastern Bay of Plenty and Rotorua Health Districts; the Gisborne/Hawkes Bay region included Gisborne and Hawkes Bay Health Districts; the Taranaki/Wanganui/Manawatu region included Taranaki, Wanganui and Manawatu Health Districts; the Wellington region included Wairarapa, Hutt and Wellington Health Districts; and the South Island region included all health districts in the South Island. Annualised incidence rates were based on 2001 census population.

Results

A total of 413 \( N.\) \( \text{gonorrhoeae} \) isolates from 26 laboratories were included in the survey. As the survey aimed to include all \( N.\) \( \text{gonorrhoeae} \) isolated during a 4-month period in New Zealand, this number of isolates equates to an annualised national incidence of culture-positive gonorrhoea of 33.2 cases per 100 000 population. Both age and sex were reported for 400 (96.9%) of the 413 patients. The age and sex distribution of these patients is shown in Figure 1.
**Antimicrobial susceptibility** The MIC range, MIC$_{50}$, MIC$_{90}$, and prevalence of reduced susceptibility and resistance to each antimicrobial among the 413 isolates tested is shown in Table 1. Penicillin resistance may be due to either plasmid-mediated production of beta-lactamase (penicillinase-producing *N. gonorrhoeae*, PPNG) or chromosomally mediated mechanisms (CMRNG). Among the 9.0% of isolates that were penicillin resistant, 3.9% were PPNGs and 5.1% were CMRNG. Tetracycline resistance may also be either plasmid or chromosomally mediated. Among the 27.8% of isolates that were tetracycline resistant, 6.5% had high-level, plasmid-mediated resistance (MIC $\geq$16 mg/L) and 21.3% had low-level, chromosomally mediated resistance (MIC 1-8 mg/L).

**Table 1. MIC range, MIC$_{50}$, MIC$_{90}$, and resistance among *Neisseria gonorrhoeae*, 2002**

<table>
<thead>
<tr>
<th>Antimicrobial</th>
<th>MIC (mg/L)</th>
<th>Percent reduced susceptibility / less susceptible*</th>
<th>Percent resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>MIC$_{50}$</td>
<td>MIC$_{90}$</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>0.004–0.03</td>
<td>0.004</td>
<td>0.016</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>0.004–4</td>
<td>0.004</td>
<td>0.06</td>
</tr>
<tr>
<td>Penicillin</td>
<td>0.008–4</td>
<td>0.12</td>
<td>0.5</td>
</tr>
<tr>
<td>Spectinomycin</td>
<td>2–16</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>0.06–16</td>
<td>0.5</td>
<td>2</td>
</tr>
</tbody>
</table>

*There is no reduced susceptibility/less susceptible category for spectinomycin or tetracycline.

Over a quarter (28.6%) of the isolates were resistant to at least one of the antimicrobials tested, with 6.3% of the isolates resistant to both ciprofloxacin and tetracycline, and 8.5% resistant to both penicillin and tetracycline.

**Geographic differences in ciprofloxacin and penicillin resistance** The prevalence of ciprofloxacin and penicillin resistance by region, based on the location of the referring laboratory, is shown in Table 2. Because some laboratories process specimens from patients who live outside the area in which the laboratory is located, this geographic analysis may not strictly reflect the patients’ place of residence. The only significant geographical differences in ciprofloxacin and penicillin resistance were lower rates of resistance in the Gisborne/Hawkes Bay region than in the Northland/Auckland region.

**Differences in ciprofloxacin and penicillin resistance among New Zealand-acquired infections compared with infections acquired overseas** The country or overseas region where the infection was acquired was reported for 185 (44.8%) of the 413 patients. Only 13.0% of these 185 patients were reported to have acquired their infection overseas. Compared with infections acquired in New Zealand, infections acquired in Asia were more likely to be ciprofloxacin resistant [57.1% (95% CI 28.9-82.3%) vs 6.8% (95% CI 3.5-11.9%)] and penicillin resistant [85.7% (95% CI 57.2-98.2%) vs 6.8% (95% CI 3.5-11.9%)].
Table 2. Geographical differences in the incidence of culture-positive gonorrhoea and ciprofloxacin and penicillin resistance, 2002

<table>
<thead>
<tr>
<th>Region</th>
<th>Number (%) of isolates included in survey</th>
<th>Annualised incidence (per 100 000 population)</th>
<th>Percent resistance (95% confidence intervals)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ciprofloxacin</td>
<td>Penicillin</td>
</tr>
<tr>
<td>Northland/Auckland</td>
<td>215 (52.1)</td>
<td>49.1</td>
<td>10.2 (6.5–15.1)</td>
</tr>
<tr>
<td>Waikato</td>
<td>29 (7.0)</td>
<td>28.2</td>
<td>10.3 (2.2–27.4)</td>
</tr>
<tr>
<td>Bay of Plenty</td>
<td>29 (7.0)</td>
<td>31.7</td>
<td>0 (0–11.9)</td>
</tr>
<tr>
<td>Gisborne/Hawkes Bay</td>
<td>56 (13.6)</td>
<td>89.6</td>
<td>0 (0–6.4)</td>
</tr>
<tr>
<td>Taranaki/Wang*/Mana*</td>
<td>14 (3.4)</td>
<td>13.0</td>
<td>14.3 (1.8–42.8)</td>
</tr>
<tr>
<td>Wellington</td>
<td>33 (8.0)</td>
<td>23.4</td>
<td>0 (0–10.6)</td>
</tr>
<tr>
<td>South Island</td>
<td>37 (9.0)</td>
<td>12.2</td>
<td>2.7 (0.1–14.2)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>413 (100)</strong></td>
<td><strong>33.2</strong></td>
<td><strong>6.8 (4.6–9.6)</strong></td>
</tr>
</tbody>
</table>

Wang* = Wanganui; Mana* = Manawatu

Discussion

Ciprofloxacin has become the most widely used treatment for gonorrhoea in New Zealand because of its convenience and the prevalence of penicillin resistance. However, based on the results of this survey, 6.8% of N. gonorrhoeae isolated in New Zealand are now resistant to ciprofloxacin, and a further 5.8% have reduced susceptibility. These results indicate there is a need to consider alternative first-line treatment options for gonorrhoea.

The emergence of gonococcal resistance to fluoroquinolone drugs, such as ciprofloxacin, was first observed in South East Asia and the Western Pacific in the early 1990s. By 2001, there were extraordinarily high rates of fluoroquinolone resistance in many countries in these regions. For example, 88% resistance in Hong Kong, 87% in China, 64% in Japan, 54% in the Philippines, and 43% in Cambodia.

In most developed countries, ciprofloxacin resistance was first associated with imported infections acquired in South East Asia and the Western Pacific, but there is now an endemic focus of ciprofloxacin-resistant strains in some of these countries— including Australia, California and Hawaii in the United States, and the United Kingdom. This pattern of importation, followed by local spread, is also evident in New Zealand. DNA macrorestriction typing, auxotyping, and serotyping of a selection of ciprofloxacin-resistant isolates from Auckland at the beginning of 2001 showed that the majority belonged to one strain. This finding is consistent with local spread rather than ongoing importation of strains.

During the 14 years since the last national survey in 1988, penicillin resistance has increased nearly four-fold—from 2.5% in 1988 to 9.0% in 2002. Most of the increase has been due to CMRNG, rather than PPNG. Concomitant with the increase in CMRNG, the prevalence of strains with reduced penicillin susceptibility also increased markedly—from 47.7% in 1988 to 68.5% in 2002. While strains with reduced susceptibility can usually be effectively treated with higher doses of penicillin, they have the potential to accumulate further mutations, and become fully resistant and untreatable with penicillin.
Despite these increases, the prevalence of penicillin resistance in New Zealand is still relatively low compared with other countries in South East Asia and the Western Pacific, including Australia. In 2001, rates of penicillin resistance as high as 96% were reported in Laos, 88% in Korea, and 86% in the Philippines, with 23% in Australia. Given the high rates of gonococcal ciprofloxacin and penicillin resistance in many Asian countries, it was not surprising that infections acquired in Asia were more likely to be ciprofloxacin and penicillin resistant than those acquired in New Zealand.

Ideally, to guide empirical treatment, the susceptibility of all *N. gonorrhoeae* isolated in New Zealand should be tested using a standardised method either in the primary laboratory or a reference laboratory. Current antimicrobial susceptibility data are essential to the control of gonorrhoea, as treatment is usually prescribed before laboratory testing has been performed. Moreover, patients often do not attend follow-up appointments. Failure to effectively treat a case of gonorrhoea has public health implications beyond the failure to cure the patient being treated. It increases the chances of further spread of the disease, and, in particular, the spread of resistant strains.

As a general principle, the chosen treatment for gonorrhoea should cure at least 95% of infections. Therefore, when resistance to an antibiotic reaches 5%, it is usually considered to no longer be an acceptable first-line treatment option. Based on the results of this survey, the prevalence of both penicillin resistance (9.0%) and ciprofloxacin resistance (6.8%) in New Zealand are above this 5% threshold. In addition, more than 5% of isolates would be resistant to the commonly used empiric combinations of ciprofloxacin and tetracycline, or amoxicillin and tetracycline. However, resistance varied throughout New Zealand. Unfortunately, the numbers of isolates from all regions except Northland/Auckland were insufficient to calculate precise estimates of the regional prevalence of resistance. In fact, the Northland/Auckland region was the only region where the lower 95% confidence intervals for ciprofloxacin and penicillin resistance were greater than the 5% threshold.

The epidemiology of gonococcal infection reflects the fact that gonorrhoea is only transmitted by intimate human-to-human contact. Controlling resistance will therefore be best achieved by effective treatment of cases and tracing of sexual contacts. The results of this survey suggest that there is a need to review the treatment of gonorrhoea in New Zealand and consider new first-line treatment options. Intramuscular or intravenous ceftriaxone should now be considered the most reliable option for the treatment and control of gonorrhoea in New Zealand, particularly in the Northland/Auckland region.

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Pregnancy loss rate following routine genetic amniocentesis at Wellington Hospital

Michel Sangalli, Fali Langdana, and Claire Thurlow

Abstract

Aims To determine the institutional pregnancy loss rate following second-trimester genetic amniocentesis.

Methods Data from 293 consecutive women who had routine genetic amniocentesis at Wellington Hospital from 1 January to 31 December 2001 were collected. The primary outcome measure was pregnancy loss rate up to 6-weeks post-procedure. Secondary outcomes were pregnancy loss after 6 weeks and culture failure.

Results Complete information on the pregnancy outcome was obtained for 269 of 293 pregnancies (92%); corresponding to 275 procedures, including two twin pregnancies and four repeat amniocentesis for culture failure (1.3%). There were two miscarriages within 6 weeks of amniocentesis; giving a pregnancy loss rate of 2/269 pregnancies (0.74 %), or 2/275 amniocentesis procedures (0.73%). Of these pregnancies, one fetus had ‘trisomy 21’—giving a corrected pregnancy loss rate within 6 weeks of amniocentesis of 1/269 (0.37%) pregnancies or 1/275 (0.36%) amniocentesis procedures. The pregnancies lost after 6 weeks of amniocentesis was three in 269 pregnancies (1.1%); including one neonatal death at 31 weeks due to a lethal congenital anomaly, and two fetal deaths in utero (one at 23 weeks with a non-lethal congenital anomaly and a normal karyotype, and the other at 27 weeks from toxoplasmosis).

Conclusions The pregnancy loss rate from amniocentesis and the culture failure rate in Wellington Hospital (using modern techniques) are similar to rates found in recently published studies.

Amniocentesis is the most common invasive prenatal diagnostic procedure in pregnancy, and carries a risk of miscarriage of about 0.5–1.7%. This risk estimate is based on one randomised case-control study in the 1980s, and multiple case-control studies since the 1970s. Studies have shown that the procedure-related risk is operator-dependant and that current local figures will provide a more accurate estimate of the risk of miscarriage for parent counselling.

Although amniocenteses have been performed in New Zealand for about 30 years, the only data published from New Zealand come from the 1970s. Since then, the indications and the technique of amniocentesis have changed, and new methods of screening for Down’s syndrome have been introduced. This study aims to determine the risk of miscarriage associated with routine genetic amniocentesis in 2001 at Wellington Women’s Hospital, a tertiary unit.
Methods

Data was retrospectively collected from all women who had mid-trimester routine genetic amniocentesis at Wellington Women’s Hospital from 1 January 2001 to 31 December 2001. All women who had undergone genetic amniocentesis were identified from the ultrasound Perinatal Information Management System (PIMS) database, and the genetic laboratory database. All women’s hospital notes were reviewed.

Routine genetic amniocentesis was defined as an amniocentesis performed between 14 and 18 weeks of gestation for several indications; including, advanced maternal age defined as >35 years, previous pregnancy with chromosome abnormality, parent-known carrier of a chromosome abnormality, increased risk of aneuploidy on the basis of prenatal screening (defined as greater than 1 in 300), and maternal anxiety. Women of all ages were included—but non-viable pregnancies, pregnancies with obvious fetal anomalies on ultrasound scan, or soft signs at the time of the morphology scan were excluded from the study. Pregnancies found to have an abnormal karyotype (and terminated) were excluded from the calculation of the pregnancy loss rate.

High-resolution ultrasound imaging was performed prior to amniocentesis to determine fetal number, confirm gestational age, and assess for gross abnormalities. There were four operators (three specialists/subspecialists with an interest in maternal-fetal medicine, and one experienced specialist trainee), and the standard procedure for amniocentesis was an aseptic ultrasound-guided method using a 22-gauge needle. A pocket of fluid was chosen to avoid the fetus and cord. Transplacental procedure were avoided whenever possible. The first ml aspirated was discarded (to avoid maternal contamination), and then 10 ml of fluid was sent for analysis. All samples were referred to the Central Regional Cytogenetics Laboratory at Wellington Hospital.

Twin amniocentesis was recorded as two amniocentesis procedures, and women who required a second amniocentesis on a different occasion for the same indication (culture failure) were also recorded as two procedures.

The outcome of the pregnancy was obtained from the maternal post-partum discharge summary. Any further ultrasound examination or hospital admissions during pregnancy were identified from the maternal hospital notes and/or ultrasound database. To ascertain the pregnancy outcome of women who did not deliver in Wellington Women’s Hospital, attempts were made to contact their lead maternity carer or general practitioner.

Pregnancy loss was defined as loss of the fetus (for any reason apart from termination) within 6 weeks of amniocentesis. Stillbirth was defined as birth of a fetus that shows no evidence of life at any time later than 20 weeks after conception or weight > 400 grams.

Results

A total of 362 amniocentesis procedures were performed during the study period, of which 299 were defined as routine genetic amniocentesis procedures. These included 293 first procedures and an additional 4 for culture failure (1.3%) and 2 for twin...
pregnancies. All repeat amniocentesis for culture failure were successful. Complete follow-up information regarding pregnancy outcomes was gained for 269 of 293 women (92%), which corresponds to 275 amniocenteses procedures including two twin pregnancies and four repeat amniocentesis for culture failure. Mean gestational age at the time of amniocentesis was 15.2 weeks (± 1.2).

Women over 35 years of age account for 94% of the group (n = 276) and the average age was 38.1 ± 2.8 years. The most common single indication for amniocentesis was advanced maternal age (n = 237, 81%). Many women had more than one recognised indication for amniocentesis (e.g. age > 35 years and high-risk screening test, previous child with Down’s syndrome, parent with genetic anomaly). Only 10 women had an amniocentesis for an isolated high-risk nuchal translucency defined as a risk > 1 in 300 (3.4%), and 9 women (3.1%) had an amniocentesis for anxiety in the absence of an increased risk.

There were two singleton pregnancies lost within 6 weeks of amniocentesis—giving a pregnancy loss rate of 2/269 (0.74%) pregnancies or 2/275 (0.73%) amniocentesis procedures. Of these two pregnancy losses, one fetus had ‘trisomy 21’, and the other fetus had a normal karyotype. Hence the corrected pregnancy loss rate within 6 weeks of amniocentesis (excluding the case with aneuploidy) was 1/269 (0.37%) pregnancies or 1/275 (0.36%) procedures.

There were three unrelated losses after 6 weeks which included two fetal deaths in utero (FDIU) and one neonatal death. The first FDIU was diagnosed at 23 weeks and the fetus had a non-lethal anomaly (frontonasal dysplasia) with a normal karyotype, and the cause of death remained unknown. The second fetal loss was secondary to toxoplasmosis at 27 weeks. The neonatal death at 31 weeks was due to laryngeal atresia following spontaneous preterm labour.

In total, there were 13 chromosome abnormalities detected by amniocentesis (13/299, 4.4%) including trisomy 21 (n = 7), trisomy 18 (n = 1), trisomy 13 (n = 1), Turner’s and Klinefelter’s syndromes (n = 1 of each), and partial deletions (n = 2). Eight of these pregnancies were terminated, including 6 pregnancies with ‘trisomy 21’. One pregnancy with ‘trisomy 21’ miscarried spontaneously. Twenty-three amniocenteses were performed to detect one case of aneuploidy, and 41 amniocenteses were performed to detect one case of ‘trisomy 21’.

Discussion

This study from a tertiary unit in New Zealand in 2001 shows that the total pregnancy loss rate (background and procedure-related rate) within 6 weeks following routine genetic amniocentesis was 0.73% procedures. This finding is similar to other published results. Many other studies from different institutions with different populations, techniques, indications, and length of follow-up have been published with loss rates varying between 0.3 to 1.7%.2–4,6,7,10 We used a 6-week follow-up period to ensure comparability with earlier important studies.1,5 In the 1980s, Tabor et al published the only randomised controlled trial of amniocentesis with an 18-gauge needle with ultrasound versus ultrasound alone in 4606 low-risk Danish women, and showed a procedure-related risk pregnancy loss of 1% at 6 weeks in the amniocentesis group with a background pregnancy loss of 0.7%.1
In an Australian study of 3953 consecutive second-trimester genetic amniocenteses performed between 1989 and 1995, Reid et al showed a pregnancy loss at 6 weeks of 0.74%. This pregnancy loss was not significantly different from a 1% background loss rate of a similar population at similar gestation. Although the background miscarriage rate of our population is unknown, it is likely to be similar and probably higher than in the Australian study—as the average maternal age in our study was significantly older (38 ± 3 years versus 27 ± 6 years).

To our knowledge, in New Zealand only, Christchurch Hospital has published results of amniocentesis some 20 years ago with a pregnancy loss of 1.1% (2/186), and 0.26% (1/390). The methodological information for the amniocentesis technique and patient recruitment and follow-up in these reports is not clearly described. It is therefore difficult to compare results. A criticism of our study is that 8% (24/293) patients were lost to follow-up, which could bias the results. However, this rate of loss to follow-up is high compared to the Australian study rate of 42/3685 (1.1%), but similar to the rate in the Christchurch study of 56/446 (12.6%).

Regarding the number of failed cultures, the rate is similar to other studies, but no further comments can be made due to the small number of events.

Keeping in mind the potential bias due to the women lost to follow-up and the small number of procedures analysed, it appears that the risk of fetal loss due to a routine genetic amniocentesis is low in our institution (and in keeping with other reports from the literature). This will provide useful information for women interested in this test.

It is important to emphasise that, if New Zealand is to have a well functioning prenatal screening programme for aneuploidy, such audits will need to be prospective and fully integrated in the programme.

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References:


What makes a good performance indicator? Devising primary care performance indicators for New Zealand

Peter Crampton, Roshan Perera, Sue Crengle, Antony Dowell, Philippa Howden-Chapman, Robin Kearns, Tom Love, Bev Sibthorpe, and Margaret Southwick

As is true of other disciplines, primary care in New Zealand is not exempt from the search for the ‘holy grail of quality’. Indeed, there is currently significant activity and debate in New Zealand related to clinical governance and quality improvement in primary care (for example, Royal New Zealand College of General Practitioners, First Health, and Healthcare Aotearoa). The Primary Health Care Strategy charts a course for primary care where, increasingly, primary care and public health strategies are coordinated and inter-meshed, with the overall objective of improving population health and reducing health inequalities (Figure 1).

**Figure 1. The interacting roles of primary care and public health**

New approaches to measuring performance may be required to serve this new strategy, which focus on the effectiveness of multidisciplinary teams working under the aegis of Primary Health Organisations (PHOs). These new approaches, in turn, raise basic questions that must be answered. For example, the increasing complexity
of primary care suggests that performance indicators are now required to reflect a number of different perspectives (Table 1), but clearly not all perspectives can be given equal weight.

Table 1. Which perspectives matter most?

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population health</td>
<td>- Infant mortality rates</td>
</tr>
<tr>
<td></td>
<td>- Cervical screening rates</td>
</tr>
<tr>
<td>Inequalities</td>
<td>- Ethnic differentials in disease rates</td>
</tr>
<tr>
<td></td>
<td>- Socioeconomic differentials in cervical screening rates</td>
</tr>
<tr>
<td>Patient-centred</td>
<td>Patient perceptions of standards of care can be measured using tools such as:</td>
</tr>
<tr>
<td></td>
<td>- the Primary Care Assessment Tool</td>
</tr>
<tr>
<td></td>
<td>- patient enablement tools</td>
</tr>
<tr>
<td>Clinical</td>
<td>- Adherence to evidence-based prescribing is promoted as a performance indicator</td>
</tr>
<tr>
<td></td>
<td>- Length of consultation is associated with quality of care in the UK</td>
</tr>
<tr>
<td></td>
<td>- Primary care organisational characteristics at primary care group level (such as gender balance of GPs and list size) in the UK have a significant influence on a range of performance measures such as hospital admission rates for asthma and diabetes</td>
</tr>
<tr>
<td></td>
<td>- At the level of individual practices in the UK organisational factors such as quantity and quality of facilities, practice size and night visiting rates have a significant influence on hospitalisation rates</td>
</tr>
<tr>
<td>Organisational</td>
<td>- Tools are currently being developed to measure the extent of community involvement in governance</td>
</tr>
<tr>
<td>Government</td>
<td>- Indicators can be based on level of achievement of key government goals and targets for health, such as those identified in the Health Strategy</td>
</tr>
<tr>
<td>Rights-based</td>
<td>- Indicators can be based on the extent to which services adhere to the patient code of rights</td>
</tr>
<tr>
<td>Funding-based</td>
<td>- Financial incentives can be linked to performance indicators as is proposed in the new UK contract for general practitioners</td>
</tr>
</tbody>
</table>

Decisions need to be made regarding the balance of perspectives. Similarly, decisions need to be made regarding the number of indicators that can reasonably be expected to be used. The new contract for general practitioners in the UK specifies around 140 quality indicators—76 for clinical care, 56 in organisational areas, 4 assessing patients’ experiences, plus indicators for additional services. Are 140 indicators too many or too few? How much resource and effort should be invested in performance monitoring by providers?

Given that the New Zealand Ministry of Health proposes that performance indicators are required for PHO contracting, then these, and other key decisions regarding performance indicators, require wide debate within the primary care sector—with input from consumers and a wide variety of providers and stakeholders; including, general practitioners, Maori and Pacific providers, and primary care professionals working in rural and urban settings. This paper discusses a range of preliminary questions about performance indicators, and introduces a collaborative research effort that aims to underpin and inform a New Zealand approach to performance indicators for primary care.
What are primary care performance indicators?

Terminology is varied and inconsistently used. Nevertheless, standard frameworks for assessing the performance of healthcare systems, such as those of Maxwell, Murray and Frenk, the OECD, and the World Health Organisation, all include the notion of effectiveness—do health services result in improved health?

This is the central question underlying performance measurement. Performance indicators can be thought of as fitting within an overarching quality framework that seeks to improve patient care and population health outcomes, and reduce health inequalities (Figure 2).

Figure 2. Quality, outcomes and performance

Performance indicators have been defined as measurable elements of practice performance for which there is evidence or consensus that they can be used to assess the quality, and hence change in quality, of care provided. Performance indicators are an important component of (and adjunct) to most approaches to quality management, and can relate to clinical, population health, financial and organisational performance. Performance indicators may contribute to quality improvement programmes in two ways.

First, they can promote wider use of evidence-based interventions; for example, in the secondary prevention of coronary heart disease. Second, they may assist in the evaluation of quality improvement programmes run at a practice or PHO level. It
seems reasonable, therefore, that primary care performance indicators should be limited to those factors that can be directly influenced by primary care organisations, rather than attempt to assess the performance of the whole health system plus broader social programmes.\textsuperscript{11,13–15} If the latter were the case, primary care could be unfairly ‘judged’.

The overlapping concept of ‘outcomes’ is related to performance indicators, but tends to be a broader generic term used to refer to the results of care of individuals or populations,\textsuperscript{16,17} which are frequently long delayed.\textsuperscript{11} Two principal domains of outcome are health status (for example, diabetes related mortality) and user evaluation (for example, patient satisfaction surveys). Health status outcomes may be considered a simple count of health events that may be contingent upon a wide variety of factors.\textsuperscript{14,16}

In practice, most outcome indicators are also measures of need for healthcare services, and so serve a dual purpose. Outcomes research in primary care is generally either concerned with the impact of healthcare on disease processes, or the impact of healthcare on population health. With the former, outcomes research requires an understanding of the natural history of the condition, defined objectives of care against which the outcomes are measured; understanding of the full range of inputs that may influence the outcome, the hypothesised relationship between the inputs and outcomes, and a suitable research design to study outcomes.\textsuperscript{17} p.5

In the case of population health, while it is often not possible to make such clear connections between inputs and health outcomes, the same principles apply.

**Current use of performance indicators in primary care—too much or too little?**

Measuring performance of healthcare providers is a universal contemporary theme in health systems.\textsuperscript{18} Despite this, New Zealand lacks a nationally agreed approach to primary care performance indicators. Currently, it is likely there is a mixture of under- and over-use of performance indicators, little national consistency in their application, lack of clarity about any underlying theoretical development, and lack of local validation.

Furthermore, it is not clear how existing international performance indicator frameworks might be suitable for New Zealand. The presence of an indigenous population, both fee-for-service and capitation payment mechanisms in general practice, and particular health-related organisations (such as PHARMAC and ACC) provide a social and institutional setting different from many other countries.

Internationally, the importance accorded the development of performance and outcome indicators is underscored by the large amount of effort in the UK and the US in developing respectively the national performance framework,\textsuperscript{19,20} and HEDIS\textsuperscript{21} indicators for healthcare plans. In light of this situation, our purpose is to raise (for discussion) the questions of ‘what’, ‘when’, and ‘how’, with respect to performance monitoring of primary care in New Zealand.

**Who are the main users of primary care performance indicators?**

The validity, reliability, and acceptability of performance indicators depend to some extent on their intended uses.\textsuperscript{15} That is, the design of performance indicators is
intimately related to their purpose. Four key uses for performance indicators for primary care in New Zealand are listed below. It is probably neither possible nor desirable that these four purposes be achieved by a single set of performance indicators. Indeed, the aims of ongoing quality enhancement and incentive funding may be in conflict, if funding incentives result in less emphasis on desirable activities, in favour of those which are financially rewarded.

First, the government, communities and Maori iwi require tools for assessing the effectiveness and quality of care offered by different types of primary care organisations. Specifically, performance indicators may be helpful for assisting the public understand the healthcare system, and of conveying (to communities) the differences in the ways that key elements of care are provided in different populations and different localities.

Second, development of performance indicators will assist primary care organisations and healthcare providers in assessing the effectiveness of their own activities—in improving the health of their population and reducing inequalities. Already much time and effort is expended in collecting data in primary care, yet there is little consensus on which data should be collected. Focusing data collection on a limited set of meaningful performance indicators could result in a reduction in workload in some cases, and increased data collection in others.

Third, performance indicators are used in a policy and funding context, where there is increasing emphasis on accountability of primary care providers to their communities and to funders, and on information collection and sharing. The Primary Health Care Strategy states: ‘More research and evaluation is required to resolve issues—such as the degree of variation in service provision, the most appropriate ways to target limited resources, the most efficient ways to provide care, and what services are best in different circumstances’. Clearly, therefore, performance indicators are a key tool for assessing the impact of organisational changes, and the performance of provider organisations.

Fourth, performance indicators are useful for research. Given the increasing organisational heterogeneity in New Zealand's primary care sector, there is an urgent need for studies comparing the performance of care in different demographic, cultural, epidemiological, and organisational contexts. If primary care ‘models’ are to be compared meaningfully, then validated performance measures are required.

What should primary care performance indicators measure?

We contend that a theoretical foundation is absolutely necessary in the formulation of performance indicators. A theoretical framework provides answers to questions such as: why do we need indicators? What should they measure? How should they be constructed? In the absence of clear answers to these questions, performance indicators can be used variously as a means of unjustifiably punishing primary care providers, or as a tool for shifting funding in response to political or lobby group pressures.

Several theoretical approaches to primary care performance indicators have been advanced. (Also, it is evident from the literature that indicators research is sometimes carried out without any explicit theoretical elaboration.) Four theoretical approaches are given here as examples.
First, Campbell et al\textsuperscript{16} proposed a framework for assessing quality of primary care that builds upon Donabedian’s classic healthcare quality triad related to structure, process, and outcome.\textsuperscript{24} They assess quality-of-care on two key dimensions: access and effectiveness—do users get the care they need, and is the care effective when they get it? Effectiveness, in turn, has two dimensions: clinical effectiveness and interpersonal relationships. Structure refers to the organisational factors that determine how care is provided, and is divided into two domains—physical characteristics (eg, opening hours, user charges, booking system, waiting times) and staff characteristics (eg, teamwork, language skills). Process-of-care includes technical interventions (eg, prescribing and screening tests), and interpersonal interactions between staff and users. Process-of-care may be further classified into preventive care, care for chronic disorders, and care for acute illness.

At the population or societal level, Campbell et al identify four outcomes of importance: health status, user evaluation (such as satisfaction and enablement),\textsuperscript{25} cost of providing the service (which, when combined with outcomes, brings in the notion of efficiency), and equity (fairness). Furthermore, Campbell et al consider equity to be a sub-component of access relevant to structure and process; they define it as the extent to which all individuals in a population access the care they need in a timely way (as opposed to equality-of-access, which implies equal access to services, irrespective of need).

Second, Van Norren et al\textsuperscript{26} proposed an action-oriented framework that focuses on intermediate variables that directly affect health status, and can also be influenced by primary care interventions. The key feature of their framework is a set of intermediate variables (such as breastfeeding) that link the social and biological systems. The intermediate variables are grouped into five categories, and have the following characteristics—they are both behavioural and biological in kind (ensuring a direct biological effect on health while also ensuring that they can be influenced by interventions or policy); they have a particular focus of effect on a biological risk factor; they exert a direct effect on the factor in question; and they are susceptible to primary care interventions (preferably an item of priority in primary care programmes). In this framework, as with the Campbell et al framework, it is not necessary to measure the precise magnitude of the effects of intermediate variables on morbidity or mortality.

Third, McColl et al\textsuperscript{13} described an evidence-based approach for developing performance indicators for primary care groups. As with Campbell et al, they explicitly identified two key domains of performance broadly related to access and effectiveness. The focus of their research was effectiveness indicators, and involved three key steps—they identified interventions of proven efficacy for which primary care has a key responsibility; they estimated the number of preventable deaths or events in a primary care group or locality of 100,000 people if all those eligible were receiving the intervention; and they compared the potential indicators they derived with the indicators proposed by the UK government. Furthermore, they demonstrated considerable differences between their evidence-based indicators and those in the national framework. While the paper discusses numerous methodological problems with their approach, their proposed evidence-based indicators provide a useful set to consider in New Zealand.
Fourth, the Australian National Health Performance Committee developed a national performance measurement framework for the health system (adapted from the Canadian Institute of Health Information framework as part of the Canadian Roadmap Initiative [www.cihi.ca]).\textsuperscript{27} The Australian framework consists of three tiers: health-status and outcomes, determinants of health, and health system performance. The Committee grouped health system performance into nine dimensions, with any single indicator providing information across one or more of the nine dimensions. The nine dimensions that are defined and discussed in the report relate to the degree to which health services are: effective, appropriate, efficient, responsive, accessible, safe, continuous, capable, and sustainable. Two over-arching dimensions are applied to the three tiers: quality and equity. Advantages of the Australian framework include its practical applicability, its comparability with the Canadian framework, and its capacity to provide data for comparative studies with New Zealand.

Despite the diversity of theoretical approaches to primary care performance indicators exemplified above, there is very little research that evaluates different approaches thereby enabling links to be made between the different approaches to performance-monitoring, and improved quality of services and health outcomes.

**How should performance indicators be constructed?**

Examination of the literature suggests a number of important criteria for primary care performance indicators (Table 2).\textsuperscript{11,13,14,16,26–28} Clearly, not all these characteristics can possibly apply to every indicator. Arguably the only absolutely essential criterion is that the indicator be attributable to healthcare; the weight given to the various criteria is at the discretion of those devising indicator sets and there is very little evidence to guide weighting decisions. Nevertheless, having the criteria for an ‘ideal’ indicator identified and listed, allows ongoing critique of indicators, and increases awareness of the limitations of indicators. It is also important to identify characteristics for sets of performance indicators—characteristics that may not apply to any given indicator, but that must apply to a set (Table 3).\textsuperscript{11,13–15,26–29}

**Table 2. What makes a good performance indicator?**

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Explanation and examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflect important aspects of health status</td>
<td>Example: diabetes care</td>
</tr>
<tr>
<td>Be attributable to health care</td>
<td>There must be a link between provider actions and the performance indicator that the provider has some control over Example: prescribing indicators</td>
</tr>
<tr>
<td>Be linked to health outcomes</td>
<td>There must be evidence that improved indicator values are associated with improved health outcomes</td>
</tr>
<tr>
<td>Be sensitive to change</td>
<td>Performance indicators should detect changes in provider behaviour</td>
</tr>
<tr>
<td>Be sensitive to and discriminate between primary care organisations</td>
<td>-</td>
</tr>
<tr>
<td>Be based on reliable and valid information</td>
<td>Performance indicators should be evidence-based</td>
</tr>
<tr>
<td>Be precisely defined</td>
<td>-</td>
</tr>
<tr>
<td>Be easily quantifiable</td>
<td>-</td>
</tr>
</tbody>
</table>
Reflect a variety of dimensions of care - 
Be understood by people who need to act - 
Be relevant to policy and practice - 
Be feasible to collect and report The cost of collecting data for performance indicators should be within the scope of primary care funding
Comply with national processes of data definitions - 
Not be vulnerable to random fluctuation associated with rare events Indicators that reflect rare events might be expected to fluctuate from year to year due to statistical instability, as has been clearly demonstrated empirically with respect to hospital admissions. This difficulty may be reduced by using a three year moving average.
Minimise perverse incentives Punitive and constructive uses of indicators effect provider behaviour differently

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Explanation</th>
</tr>
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<tbody>
<tr>
<td>Reflect the needs of different ethnic and socioeconomic groups</td>
<td>-</td>
</tr>
<tr>
<td>Be agreed amongst stakeholder groups</td>
<td>-</td>
</tr>
<tr>
<td>Be applicable across a range of organisational settings A set of indicators should be applicable across a range of organisational and geographic settings, for example rural, urban, iwi-based etc.</td>
<td></td>
</tr>
<tr>
<td>Take into account population and secondary service characteristics Population, primary-service characteristics and secondary-service characteristics that are largely outside the control of primary care organisations have been shown to have an important influence on certain performance indicators. These factors effectively confound the relationship between primary care inputs and performance measures. For example, it has been demonstrated that at the electoral ward level in the UK hospital mortality is significantly associated with the ratios of doctors to head of population; and a high proportion of the variance in age and sex standardised admission rates can be explained by socioeconomic and secondary care factors (in the region of 30%-50% of variance). Therefore, methodologically, it is important that key population and secondary care characteristics (such as socioeconomic deprivation and proximity of hospital beds) are taken into account when performance indicators are measured and compared. To a limited extent the HEDIS set of indicators in use in the US takes into account ethnicity of enrolled Medicaid (welfare assisted) patients to address the issue of cream-skimming where again such factors confound the relationship between health care inputs and performance and outcome measures.</td>
<td></td>
</tr>
<tr>
<td>Minimum standards vs higher levels of performance Within a set of indicators, explicit distinctions should be made between indicators designed to assess minimum standards (with which practices should comply) and indicators designed to assess higher levels of performance.</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. What makes a good set of performance indicators?
How should we monitor the performance of performance indicators?

Little research has been carried out into the effectiveness of quality programmes, let alone the use of performance indicators. Nevertheless, accountability and quality concerns remain at the forefront of the policy agenda, and so approaches to performance monitoring must be devised that are as robust as possible (given the lack of supporting evidence). More importantly perhaps, the implementation of indicators should be monitored and researched so that the value of performance indicators themselves can be judged. Does the use of performance indicators contribute to health gains and reductions in inequalities? Is the use of performance indicators leading to positive change in the organisation of services? In other words, to state the obvious, findings from using indicators should be the beginning not the end of a process of enquiry.

What are some barriers to implementing performance indicators?

There is a range of potential barriers to implementing performance indicators. Perhaps the most important barrier arises when primary care providers perceive that indicators are not relevant in their context or lack face validity. This barrier is best addressed by collaborative development of indicators that involves provider and community perspectives, and clear communication of the rationale for indicators. The perception amongst primary care organisations that indicators may be used in a punitive way may slow their acceptance and use. Similarly, high cost of data collection (for the Ministry of Health, Primary Health Organisations, or primary care practices) is likely to inhibit uptake and use of indicators.

Where are we heading with primary care performance indicators?

Efforts are underway by the Ministry of Health to establish an initial set of performance indicators that can be used in the context of PHO development. For example, the Ministry of Health commissioned an independent group to carry out an iterative, Delphi-like process to achieve consensus on a small set of clinical performance indicators that have face-validity, and where data about performance may be readily available. A small number of population-oriented indicators are also being explored. The Ministry has formed a technical advisory group, consisting of a range of primary care stakeholders, to assist in the implementation of this interim set of indicators (personal communication, Jon Foley, Ministry of Health, November 2003).

We support the introduction of a more systematic approach to performance indicators in primary care and are heartened that existing literature, and The Primary Health Care Strategy, support a positive continuous improvement approach rather than a punitive or sanctioning model of performance monitoring. We believe that performance monitoring should be carried out in a way that actively contributes to the development of population-based primary care in New Zealand while remaining in the scope of the primary care budget.

Conclusions

Although a variety of theories contribute to our understanding of what constitute good primary care performance indicators, there is (currently) little consensus on which
data should be collected by primary care organisations. The Ministry of Health is leading a project, in collaboration with primary care stakeholders and researchers, aimed at developing a standardised approach to selecting and evaluating primary care performance indicators that draws on international experience and also takes into account New Zealand's unique primary care context. However, more research, which evaluates the contribution of performance indicators to improved quality of primary care and health outcomes, is needed.

Acknowledgements: We thank Jon Foley (Senior Policy Analyst, Ministry of Health) and two anonymous reviewers for comments on an earlier draft of this paper.

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Treatment of Machado-Joseph disease with trimethoprim-sulphamethoxazole following successful desensitisation

Jacob Ablin and Nino Elgan

Machado-Joseph disease, also known as spino-cerebellar atrophy type 3, is a progressive, autosomal-dominant disorder. Originally described in individuals of Portuguese extraction, it has subsequently been identified worldwide, possibly derived from Portuguese travellers. The disease is caused by a (CAG)n trinucleotide repeat in the MJD1 gene, located on chromosome 14q32.1,2

Unexpectedly, trimethoprim-sulphamethoxazole has shown benefit in this disease.3-6 This has been attributed to increasing central nervous system biopterin levels.4 Disappointingly, however, a recent double-blind crossover trial failed to demonstrate a significant effect of trimethoprim-sulphamethoxazole in Machado-Joseph disease.7

In this paper, we report successful desensitisation of a male patient (allergic trimethoprim-sulphamethoxazole) suffering from Machado-Joseph disease, and outline subsequent treatment of his disorder.

Case report

A 58-year-old male patient of Jewish-Yemenite origin was previously diagnosed as suffering from Machado-Joseph disease after developing ataxia and slurred speech. The diagnosis had been genetically confirmed, and two siblings were also affected.

Treatment with trimethoprim-sulphamethoxazole had previously been attempted, and discontinued due to a rash and facial oedema. It was subsequently decided to undertake oral desensitisation to trimethoprim-sulphamethoxazole, using a protocol described for allergic HIV patients.8 This was achieved without significant reactions, treatment was commenced, and the patient experienced an initial neurological improvement—including improved swallowing, better balance, and general wellbeing. He achieved temporary restoration of partially independent gait, after having been wheelchair-bound for several months. Unfortunately, 9 months later, the patient contracted severe pneumonia with respiratory failure, which proved fatal.

Discussion

When facing a patient suffering from a proven allergy to a particular antibiotic, clinicians naturally attempt to avoid its use.

However, this commonsense practice is not of universal applicability, as extraordinary clinical circumstances may justify using ‘culprit’ drugs when no alternative exists. One such circumstance is the use of trimethoprim-sulphamethoxazole in HIV-infected patients who suffer an excessively high rate of allergic reactions to this drug combination; which however, remains crucial for the treatment and prevention of pneumocystis. For this reason, desensitisation regimens have been successfully utilised.8
When faced with this unusual circumstance of a patient requiring an antibiotic regimen for a non-infectious indication, no antibiotic alternative was available. Therefore in the case described, desensitisation was undertaken, which allowed temporary amelioration of the patient’s disabling disorder.

To summarise, clinicians should consider the option of drug-desensitisation in unusual cases where adequate alternative therapy is unavailable.

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The treatment of gonorrhoea by argyrol

This extract was taken from an article by Dr JS Purdy that was published in the New Zealand Medical Journal 1904, Volume 3(12) p435–439. (Reprinted from the Scottish Medical and Surgical Journal, May, 1904.)

There is no doubt that the treatment of gonorrhoea by hand injections has fallen into some disrepute of late years. Indeed, some surgeons have entirely abandoned this means of treatment. In was not, however, so much the method that was at fault as the fact that we were unable to employ any antiseptic in a strength sufficient to kill the gonococcus without also injuring the urethral mucous membrane. Most of the injections in common use were merely astringents, and, as such, are still very effectual in subduing the catarrh remaining after the complete removal of the gonococcus.

The introduction of the silver albuminoids, by far the most effectual of which is argyrol, has, however, given us a weapon with which we can fight the gonococcus without injury to the urethra. Argyrol is a compound of silver and vitellin, a proteid extract from wheat. This salt, which contains 30 per cent of silver, was first used in ophthalmic practice. It is quite bland when applied to the conjunctiva in a strength even of 25 per cent. That it will kill the gonococcus is shown by its effect in gonorrhoeal conjunctivitis. In a case of double purulent gonorrhoeal conjunctivitis recently admitted to the London Lock Hospital the eyes were mopped out every four hours with a 50-per-cent solution of argyrol. The eyes were also bathed every half-hour during the day with a saturated solution of boric acid. By the third day the pus, inflammation, and catarrh had quite disappeared. The patient stated that he did not feel any pain from the application of argyrol.

In spite of the fact that Pedersen, Swinburne, and Chetwood, of New York, Christian and Kevin, of Philadelphia, together with others of the modern school of American uro-genitary surgeons, have all recorded long series of excellent results of treatment of gonorrhoea by this salt, it is only recently that any attention has been given it in Great Britain.

At the London Lock Hospital, where there is unlimited material for observing the effects and contrasting the results of different methods of treatment. I have the opportunity of investigating the treatment with argyrol. In eight cases of acute anterior gonorrhoeal urethritis, in which treatment was commenced within fifteen days of the appearance of the discharge, six days of the appearance of the discharge, six days' treatment was sufficient to insure the disappearance of all obvious discharge, and within a fortnight all flocculi had disappeared from the urine.

In addition to a series of twenty-four cases published in the Lancet of the 19th December, 1903, the following are some in which the treatment had given excellent results. Although in the first cases treated a solution of 5-per-cent argyrol was used, it will be seen that almost as good an effect was obtained with a 2.5-per-cent solution. In some cases the argyrol was only used once in the evening after the discharge had ceased, together with injections of sulphate of zinc (1-8 gr. to 1 oz) three times daily,
Thus, as is the case also in those treated by irrigations, it is found, after the gonococci have been killed, advisable in most cases to complete the cure by using astringents. As in my first series of cases, the best results were obtained with in patients, although no special diet was given, and the men were not confined to bed during the day.

W.F., twenty-six years of age, journalist, admitted 2\textsuperscript{nd} February, 1904, with anterior gonorrhoeal urethritis of fifteen days’ duration, not previously treated.

Patient was put on a mixture of resin of copaiba and injection argyrol 5 per cent. After washing out the urethra by syringing with a saturated warm boric lotion, two drachms of the argyrol solution was injected, and held in the urethra for 5 minutes. On the 6\textsuperscript{th} February the discharge had ceased. Flocculi were, however, present in the urine. On the 7\textsuperscript{th} February a 2.5-per-cent solution of argyrol was used only at night one hour before retiring, whilst zinc-sulphate (1-8 gr. to 1 oz.) was used thrice during the day. The latter injection was held in the urethra for two minutes. February 11: No “floaters.” Urine quite clear. The copaiba and all injections were stopped, the patient simply continued treatment with a mixture containing salol 10 gr. and acid soda phosphatis 20 gr. thrice daily. There having been no reappearance the least suggestive of shreds or flakes after repeated urinations into series of glasses, the patient was discharged on the 14\textsuperscript{th} February.

R. P., aged twenty-two years, pipe fitter, admitted from on the metropolitan unions. History of gonorrhoea for three weeks’ duration. Profuse discharge of gonorrhoeal pus, pain on urination, and chordee. February 23: Received first night 1 oz mistura alba. On the 24\textsuperscript{th} one injection of argyrol 2.5 per cent. This was continued thrice daily until the 1\textsuperscript{st} of March, on which day he received only one injection. On the evening of the 25\textsuperscript{th} February, after four injections, there was no discharge, although two white cotton-like threads were seen in the first urine-glass. On the first three days of March repeated examinations of the urine failed to give any indication of flocculi. He was discharged on the 4\textsuperscript{th} March.

C.M., aged twenty-two years, valet: Gonorrhoea seven weeks, not previously treated owing to phimosis. On the 22\textsuperscript{nd} February, four days after circumcision, he was put on an injection of argyrol, 2.5 per cent, every three hours. No injection was used after the fourth day, since when there has been no discharge up to the present date, 24\textsuperscript{th} March. This patient, being at the same time under treatment for syphilis, has also been under daily observation.

A. R., aged fifty-three years, asylum attendant, acute anterior gonorrhoeal urethritis, three weeks. First attack. Chordee with ardor urinae. On the 27\textsuperscript{th} February patient was put on pulv cubaebae 2 dr. thrice daily, and injection of argyrol, 2.5 per cent,. only once a day one hour before retiring. On the 4\textsuperscript{th} March he received three injections of sulphate of zinc during the day. On the 7\textsuperscript{th} March “floaters” were still present. On the 10\textsuperscript{th} the urine was quite clear.

Among cases recently treated in the out-patient department are the following:-

No. 1253. Shop-assistant, age twenty-two, gonorrhoea three weeks. 16\textsuperscript{th} January, mistura copaiba resin and injection argyrol 2.5 per cent thrice daily. 30\textsuperscript{th} January, discharge ceased. Injection zinci sulphatis during the day, argyrol in evening. 8\textsuperscript{th} February no “floaters” urine clear and sparkling.
No. 1089. Blacksmith, age thirty-one. 16\textsuperscript{th} February. Gonorrhoea one month. Resin of copaiba with injection argyrol 2.5 per cent. On the 1\textsuperscript{st} March no discharge, no “floaters”, urine clear.

No. 1466. Labourer, age twenty-five. Gonorrhoea one week. 19\textsuperscript{th} February, sandalwood-oil and injection argyrol 2.5 per cent. 24\textsuperscript{th} January, patient reported that the discharge ceased on the 21\textsuperscript{st} after four injections. Examination of urine showed “floaters,” smallest possible size, uncoloured. Put on injection zinci’s sulphatis. 8\textsuperscript{th} February, no return of discharge, “floaters,” still present. Put on argyrol again. Patient has not returned. As discharge had been absent ten days when last seen, it is probable that there has been no relapse.

No. 1246 Warehouseman, aged eighteen. Gonorrhoea three weeks and a half. 16\textsuperscript{th} January, put on copaiba resin and injection argyrol 2.5 per cent. On the 30\textsuperscript{th} January no discharge. On the 6\textsuperscript{th} February “floaters” still present. Put on injection zinci sulphatis twice daily, argyrol once in the evening. On the 13\textsuperscript{th} February patient reported “no discharge”. A few “floaters” were still seen. On the 20\textsuperscript{th} February the urine was quite clear.

No. 3058. Dustman, age twenty-three. Gonorrhoea three days. 28\textsuperscript{th} February, pulvis cubeae and injection argyrol 5 per cent thrice daily. On the 11\textsuperscript{th} January patient reported that discharge had ceased on the 3\textsuperscript{rd} January. He was then put on injection zinci sulphatis (1-8 gr. to 1 ox.). On the 18\textsuperscript{th} January there have had been no return. Examination of three urine glasses were negative.

After an extensive trial of this salt in sixty-four cases, in which an accurate record has been kept, in addition to others at present under treatment, I have no hesitation in saying that so far I have seen no treatment for acute anterior gonorrhoeal urethritis which is so satisfactory, both to the patient and the surgeon, as that above described.

In argyrol we have salt which is certainly a bactericide, and which kills the gonococcus without injuring the mucous membrane. Whilst the treatment with argyrol is as effective as the method of irrigation, I consider it is more serviceable as entailing the loss of less time in its application both from the point of view of the surgeon and the patient. The chief point in its favour, next to its efficacy, is that patients never complain of any pain after using it, as is the case when other silver salts are used in strengths much less than those used in the treatment of gonorrhoea by argyrol.
Fish fancier’s disease?

A 75-year-old hypertensive man presented with sudden-onset chest and epigastric pain whilst fixing an aquarium. His ECG and TNT were normal, but a chest radiograph demonstrated a widened mediastinum and a CT scan of the aorta was performed. (See Figure 1.)

**Figure 1.** A contrast-enhanced CT scan of the thoracic aorta.

Questions:

*What is the diagnosis and what complications can arise from this condition?*

*What is the management of this condition?*

See below (next page) for answer.
Answer:

Figure 1 shows a dissection of the thoracic aorta with a membrane separating the true and false lumens. This dissection did not involving the ascending aorta and therefore would fit the Type B category. Type B dissections may be complicated by branch vessel compromise, eg, kidney or limb, due to true lumen collapse as in this case (Figure 2), or acute aneurysm formation (Figure 3) ± rupture. Traditional treatment of complicated Type B dissection is surgery, but mortality rates are high, and endoluminal exclusion is often preferred.

Figure 2. A contrast-enhanced CT scan of the abdominal aorta, showing a collapsed true lumen (dense elliptical structure - arrowed in PDF version).

Figure 3. A contrast-enhanced CT scan of the transverse thoracic aorta, demonstrating acute aneurysmal dilatation of the pseudolumen.
Blood donor list slashed to stop vCJD

Anybody who has received a blood transfusion in the past two decades will no longer be allowed to give blood because of the risk of spread the human form of BSE, the Health Secretary, John Reid, announced last week.

The drastic measure is likely to slash the number of blood donors in Britain by 52,000, some 3.2% of all donors. The national blood service has appealed to all those eligible to give blood to make a long-term commitment to make up the loss.

Mr Reid's announcement follows the revelation that a man died last autumn after receiving blood in 1996 from a donor who was later discovered to have a vCJD. In February it was revealed in the Lancet that at least 48 people had received red blood cells or other blood components from 15 donors who went on to develop the fatal disease.

The numbers infected with vCJD are still uncertain and the incubation period is unknown, so there may well be more people who have been infected through contaminated blood. Mr Reid played down the risks, however, saying the Government was adopting "a highly precautionary approach".


Asthma and inhaled steroids

Doubling the dose of corticosteroids is a widely advocated, but unproven, method of treating deterioration of asthma control. T W Harrison and colleagues from Nottingham City Hospital, UK, undertook a randomised controlled trial to investigate the effect of such treatment. They monitored 390 individuals for up to 12 months, doubling their dose of corticosteroids when symptoms worsened. Ineffectiveness of this therapy was judged to be the patient needing prednisolone. The investigators noted that the percentage of individuals starting prednisolone did not differ significantly between those on the doubled dose and controls. They concluded that this frequency recommended intervention is not supported by sufficient evidence.


Misinformation about mammography on the internet

The websites of 24 professional advocacy groups and governmental organisations in Australia, Canada, Denmark, New Zealand, Norway, Sweden, the United Kingdom, and the United States, fail to provide information on the major harms of mammographic screening—overdiagnosis and overtreatment, and what they do tell the public is severely biased, Jorgensen and Gotzsche analysed 27 websites, 13 from advocacy groups, 11 from governmental institutions, and three from consumer organisations. The consumer sites were much more balanced and comprehensive, but the others did not reflect recent findings, were severely biased in favour of screening,
and had poor quality of information. The consumer sites were not clear about conflict of interest, and few websites lived up to accepted standards for informed consent.


**Adverse events (AE) and patient safety in Canadian health care**

The evidence on AEs in hospitals has generated considerable interest and action. A recent Canadian study from Ottawa suggests that even greater problems may emerge after discharge. Whereas hospital-based studies in Britain, New Zealand and the United States have suggested that 2.9% to 11.7% of adult patients in general hospitals experience one or more AEs, Forster and colleagues found that 23% of their sample had an AE after discharge. Although Forster and colleagues used interviews rather than chart reviews, their definition of AE was similar to those used in inpatient studies. Thus, the risk of AEs may increase rather than diminish after discharge.

Most of the research on AEs has occurred in hospitals where clinicians and health records are more accessible. Few studies have been done on patients in ambulatory or community settings. Forster and colleagues, by following patients discharged from hospital care, have identified that many problems can occur in the community, and they have provided tools that may prove useful for other researchers, clinicians and managers.


**Herbs for (ill) health?**

Devotees of the herbal antidepressant St John's wort may be alarmed by a report showing that the concentration of hypericin, the active ingredient in the product, is not always as stated on the label.

A survey of St John's wort products purchased from Californian health food stores has found that the concentration of hypericin can vary from just 2.9 per cent of what is stated on the label to as much as 114 per cent. And sometimes the majority of the active ingredient is hypericin itself but a close relative, pseudohypericin.

The finding, by Miao-Lin Hu's team at the National Chung-Hsing University of Taichung, Taiwan, is worrying because a high dose of hypericin can interfere with prescription drugs for depression, migraine, heart disease and even contraception. The Medicines and Healthcare products Regulatory Agency, which regulates medicines in the UK, says it is concerned about such mislabelling, and a European directive is being prepared to try to remedy the problem. "There is persistent evidence, both in the UK and internationally, that some unlicensed herbal medicines are manufactured to poor quality standards, leading to a public health risk," says a spokesman. On 6 February, the US Food and Drug Administration formally banned all bodybuilding food supplements containing the plant extract ephedra following a spate of deaths and illness linked to the ingredient.

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Key arguments for increasing New Zealand’s health development assistance in the Pacific

Nick Wilson, Osman Mansoor, and George Thomson

Overview

New Zealand is a relatively poor contributor of financial aid to developing countries – with a rank of 15th in the OECD. Given the poverty and poor health status within some Pacific Island Countries (PICs), there is an ethical imperative to do more. This imperative is strengthened by the need for the remediation of current and past harms to the health of Pacific peoples (eg, from New Zealand tobacco exports). Development aid can also lead to direct and indirect health (and other) benefits for New Zealand. These benefits are most obvious for communicable disease control (eg, for tuberculosis, measles, pandemic influenza, and vector-borne diseases). These benefits will apply more broadly to any health intervention of relevance to the Pacific Island community in New Zealand (eg, diabetes prevention programmes). The reduction of poverty and population stabilisation in PICs may also enhance regional stability. Such stability would benefit New Zealand in terms of trade, reduced needs for peacekeeping, and a lowered risk of refugees arising from internal conflicts.

Introduction

The New Zealand Government has been contributing around $NZ 250 million in overseas development aid each year, with this being recently boosted by $NZ 20 million.$ This sum is only around $NZ 70 per person per year—which is equivalent to just a few hours work per year for a person on the average wage. In 2001, New Zealand ranked only 15th out of 22 OCED countries in terms of aid as a proportion of GDP.$ This level was also less than half the United Nation’s target of 0.7% of GDP and less than a quarter of the level provided by Denmark. Nevertheless, New Zealand has also been ranked fourth out of the world’s 21 richest countries on a ‘Commitment to Development Index’ (with this index considering additional factors such as support for peacekeeping and trade policies).$

The major recipients of New Zealand development assistance are countries in the South Pacific (47% of the total assistance) and countries in East and South East Asia. New Zealand is the fifth largest donor in the Pacific region (after Japan, the European Union, Australia, and France). New Zealand’s development assistance has recently been reviewed and a new semi-autonomous organisation ‘NZAID’ (New Zealand Agency for International Development) has been established. The current major focus of development assistance is on poverty elimination, which includes health development.

Various non-governmental organisations based in New Zealand also contribute to overseas development (eg, VSA, Oxfam, etc). Yet the impact of such organisations is generally small compared to official overseas development assistance.$ This article takes a public health perspective on the key arguments for increasing overall development assistance to the Pacific, particularly for health development.
Reason 1—Ethical reasons

There is a strong case on ethical grounds for rich countries to assist developing countries in alleviating poverty and disease. As noted in a recent review, the South Pacific region includes places with extreme poverty. In particular, the Solomon Islands, Papua New Guinea, and Vanuatu suffer from serious health problems, reflected in low life expectancy and high infant mortality. Infectious and vector-borne diseases are important contributors to the poor health outcomes (including malaria, diarrhoeal diseases and respiratory infections in many PICs). HIV/AIDS is spreading in the region and is of particular concern in Papua New Guinea. There are also problems with alcohol abuse, intentional and non-intentional injury, and increasing rates of diabetes and cardiovascular disease. Premature deaths from these conditions can result in families losing their principal income earners, which in turn exacerbates poverty. Similarly, chronic illness impairs workforce productivity and increases dependency levels.

Another ethical issue is remediation of current and past harms imposed on PICs by activity allowed by New Zealand Government policy. For example, one estimate is that New Zealand’s cigarette exports cause around 75 premature deaths per year in nine Pacific countries. New Zealand also exports meat products high in saturated fat (eg, as ‘mutton flaps’) thus contributing to cardiovascular disease and diabetes in PICs (given the good evidence that saturated fat consumption is associated with these diseases).

In the past, New Zealand has provided ‘development funding’ to the construction of a cigarette factory in Samoa in the 1980s. This factory continues to supply cigarettes to Samoa and surrounding countries. Some of New Zealand’s training of health professionals from the Pacific may also have contributed to a drain of nurses and doctors from Pacific Island Countries (PICs) to New Zealand or Australia.

There is a precedent for New Zealand concern for the consequences of its actions in the Pacific with a recent apology being by the Prime Minister to Samoa over New Zealand’s ‘inept’ management of pandemic influenza.

Reason 2—Shared communicable disease control benefits

Globalisation and extensive air travel allow for the rapid spread of communicable diseases between countries, and border controls have incomplete capacity to prevent their spread. In order for New Zealand to achieve or maintain control of these diseases, control is vital in neighbouring countries with frequent reciprocal travel.

New Zealand faces three types of communicable disease risk from PICs: importation of diseases (and their subsequent spread in New Zealand); infection of New Zealand travellers who then require treatment by New Zealand health services; and infection in Pacific migrants who then both require treatment by health services and who can spread disease in New Zealand.

There are a number of examples of communicable disease spread from PICs to New Zealand—including typhoid, Ross River fever, and acute haemorrhagic conjunctivitis. Dengue fever poses both risks to travellers from New Zealand, and there is also a potential risk of it becoming established in this country. Migrants from PICs to New Zealand also have relatively high rates of tuberculosis (30% of all cases in Auckland were born in PICs). Infectious agents in imported food from PICs
have also caused health problems in New Zealand. Indeed, the 1997 measles epidemic may also have been started by an importation from the Pacific. Other diseases in which there is a potential risk of spread (from PICs to New Zealand or vice versa) include: HIV, pertussis, rubella, pandemic influenza, and SARS (severe acute respiratory syndrome). Indeed, the global response to SARS particularly highlights the importance of nation states cooperating on communicable disease control issues.

Fortunately, many communicable disease control interventions in developing countries are highly cost-effective. Tuberculosis control strategies in developing countries are estimated to save a disability-adjusted life year (DALY) for only $US 3–5 (and $US 12 per year of life saved). There is extensive international data on the cost-effectiveness of malaria control (eg, $US 13 and $US 43 per year of life saved in Guinea, and $US 69 per DALY in Brazil). In Melanesian countries, malaria poses a major and continuing threat and there is evidence from the Solomon Islands that permethrin-impregnated bednets are an effective low-cost control strategy.

Immunisation programmes are also generally considered to be extremely cost-effective in developing countries (eg, $US 12 – $17 per DALY for the Expanded Program on Immunization). A hepatitis B immunisation programme (part-funded by the New Zealand Government) was found to be successful in protecting infants from chronic infection in the Pacific—at an estimated cost of around $US 190 per premature death prevented. Even newer vaccines such as Hib vaccine appears to be cost-saving in some settings, and in the Pacific, Fiji has used this vaccine to substantially reduce Hib disease rates. Given this evidence, it is not surprising that improving immunisation cover is an indicator for one of the United Nations Millennium Development Goals (ie, Goal 4 to ‘reduce child mortality’).

Reason 3—Shared non-communicable disease control benefits

New Zealand shares with PICs such problems as high rates of rheumatic heart disease, obesity, diabetes, and tobacco use among its citizens (particularly among Maori and Pacific peoples). Indeed, the increasing prevalence of adult obesity and type 2 diabetes are particularly major problems for both New Zealand and PICs. As Auckland has the largest single concentration of Pacific peoples in the world, many lessons learnt in the process of addressing these health problems (in both Auckland and in PICs) can be shared to the benefit of all. Examples might include the sharing of lessons in public health legislative frameworks, tobacco control policies, culturally-appropriate nutritional interventions, physical activity promotion programmes, and diabetes control programmes (eg, as per a programme run in Otara, Auckland).

If future immigration from PICs occurs at high rates, then improved control of chronic diseases in these countries might ultimately lower health costs for New Zealand. — This may especially be the case for low-lying island nations (eg, Tuvalu, Kiribati) that could be de-populated by rising sea levels attributable to global climate change (particularly as seawater invades below-ground freshwater supplies).

Reason 4 — Enhanced regional stability

There are several areas of instability in the Pacific. Furthermore, some small states may also be at risk of exploitation by terrorist organisations and crime syndicates (eg, for money laundering, human smuggling, and drug trafficking). New Zealand has
been involved in a number of successful stability-promoting initiatives, including peace-keeping activities in both the Pacific and South East Asian region (eg, Bougainville and East Timor), providing police training (eg, Solomon Islands), and supporting constitutional reform (eg, Fiji). Such actions appear to be well worthwhile, but can be supplemented with actions to reduce poverty and improve health. For example, improving the health status of the workforce may contribute to stronger economic development and therefore reduce the risk of state instability. Family planning programmes can assist in lowering population pressures in island nations that have limited natural resources. Family planning is also a very cost-effective way to improve child and maternal health (at $US 20-30 per DALY\(^2\)). Child health programmes may also contribute to population control, since as child survival improves, maternal fertility tends to decline.\(^3\)

A more stable South Pacific would facilitate mutual economic development (including more trade and tourism) and reduce New Zealand requirements for expensive peacekeeping operations. It would also lower the long-term risk of New Zealand having to accept refugees from local conflicts. Similarly, enhanced stability may increase the resilience of PICs to the impacts of climate change and, therefore, future numbers of environmental refugees.

Summary

There are both ethical and self-interest reasons for New Zealand to enhance its health development assistance to neighbouring Pacific Island Countries (PICs). Many of the relevant health-related interventions are highly cost-effective and are likely to result in health gains in both PICs and New Zealand.

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References:

AIDS in New Zealand

We would like to bring to your attention a depressing statistic printed in the latest issue of AIDS–New Zealand.

‘Overall there have been 22 children diagnosed with HIV acquired from an infected mother at or around the time of birth. The largest number for any year was in 2003, when 5 children were diagnosed. Of the 13 children diagnosed in the 5 year period from 1999-2003, five had been born in New Zealand to women whose HIV was not recognised when they were pregnant’.

These infections were clearly preventable, had the mother’s HIV-positive status been identified. Since at least 1997, there have been repeated calls from the medical profession for, and clear evidence to support the update of, a review of the Ministry of Health guidelines and implementation of a more effective screening policy.

Moreover, since antenatal HIV testing is rarely offered in New Zealand, it is almost certain that other cases of vertical transmission have gone undetected.

Not only is there a moral obligation to prevent these infections, but the minimum cost of antiretroviral therapy (without taking laboratory and hospital costs into account) in New Zealand is about $14,000 per annum. Available antiretroviral therapy appears to suppress viral replication indefinitely, thus the community will need to support treatment for many years. Such sums would be better spent in prevention.

It has already been demonstrated that women in New Zealand are amenable to a screening approach, and yet still there has been no change in policy. The prevention of mother-to-child transmission of HIV is a global priority. Antenatal women in developing countries are routinely offered HIV testing and antiretroviral therapy is increasingly available. Meanwhile, New Zealand babies continue to contract HIV.

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References:


Diabetes mellitus: an under-recognised health problem in New Zealand

There is considered to be a ‘global epidemic’ of diabetes,¹ and it is predicted that the prevalence of diabetes will increase in New Zealand, especially in Maori and Pacific Islanders.² Considerable importance is attached to the reliability of mortality statistics, collated by the New Zealand Health Information Service (NZHIS) [http://www.nzhis.govt.nz], derived predominantly from death certification, although with support from other sources.³

The reliability of death certification in NZ, however, has recently been brought into question following our recent publication of a retrospective review of 600 death certificates (during 1999) from the Mortality Review Database in Christchurch Hospitals.⁴ We found that 104 cases (17%) had previously documented diabetes, of which only 47 (45%) had diabetes recorded on either the death certificate or the coroner’s report.⁴ Furthermore, diabetes was recognised in the NZ Health Information Service coding in only 45 (43%) of cases despite the fact that hospital clinical coding was able to identify 94 (90%) cases.⁴ A previous NZ study showed that diabetes was missed from 36% of death certificates when present.⁵

In addition, we found that there were 159 (32%) of those people not known to have had previous diabetes that showed a highest random plasma glucose ≥11.1 mmol/L (range up to 34 mmol/L, median value 13.7) in their clinical records. Of these 159, 33 had two or more glucose elevations ≥11.1 mmol/L documented in their clinical records.

Documented diabetes is thus under-reported on more than 50% of death certificates and not compensated by NZHIS coding. Deficiencies in diabetes death certification could be addressed by better training of doctors and medical students. More efficient linkage of NZHIS with hospital coders might also improve the recognition of diabetes in NZ. Notwithstanding the above, the real concern is that of the cohort we examined, only 7.8% would be recorded as having had diabetes when the actual figure is 43.8%.

Reliance on death certification will result in significantly distorted mortality statistics and under-recognition of diabetes as a health problem in NZ.

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¹ The New Zealand Medical Journal, 2 April 2004, Vol 117 No 1191
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References:


New cervical screening legislation: access to clinical records

The National Cervical Screening Programme (NCSP) became operational in 1990. Since then, the Programme has contributed to an almost 40% reduction in incidence of, and a 46% reduction in mortality from, invasive cervical cancer.\(^1\) However, like other national programmes,\(^2\) New Zealand’s programme has suffered setbacks, the most notable being under-reporting of cervical smear abnormalities by one regional laboratory in the early 1990s, which led to the Gisborne Inquiry 1999.\(^3\) One of the Inquiry findings was that legal barriers inhibited access to information about women’s smear histories—so obstructing evaluation of the Programme. A key recommendation of the Inquiry, therefore, was that new legislation be introduced to enable comprehensive evaluation of the NCSP.

The Health (National Cervical Screening Programme) Amendment Act 2004 provides a statutory basis for such evaluation, and permits evaluators to assess relevant information under strict safeguards, in order to assure programme safety and effectiveness.

What does this mean in practical terms?

The most important type of evaluation will focus on the reasons why some women continue to develop, (and sometimes die from) invasive cervical cancer, despite the existence of the Programme. Examination of cervical cancer patients’ histories will provide information on possible causes of programme failure. In particular, evaluators will try to answer such questions as:

- Did this cancer develop because the woman did not know about the Programme, or because she could not access smear taker services?
- Were her smears repeatedly misread?
- Did she not attend for colposcopy (despite appropriate referral), or was she not correctly treated at colposcopy?

Currently, about 150–200 women develop cervical cancer each year. Access to clinical records will focus on this small group. The Act mandates access without individual consent (as the woman may be dead or otherwise not contactable), and—given the small numbers—access to close to 100% of records is required for the results to be epidemiologically meaningful. Furthermore, evaluators will only be concerned with these women’s smear histories. Any other information in the woman’s health record (whether held in primary or secondary care settings) is irrelevant to the Programme and will not form part of the evaluation.

Furthermore, under the new Act, evaluators will be bound by stringent confidentiality requirements. The Act allows health practitioners, such as GPs, to oversee access by evaluators to the records of women. This extra requirement, which is not usually part of routine audit or accreditation activities undertaken in primary or secondary care, was aimed at giving women even greater confidence in the integrity of the Programme, and assuring both women and their caregivers that evaluation poses no threat to the confidentiality of the doctor-patient relationship or to a woman’s privacy.
Women continue to have the right to ‘opt off’ the Programme, in which case they will lose the benefits that participation in the Programme confers; such as receiving reminders when a smear is due, and quality assurance processes that help to assure the safety and effectiveness of screening. Should a woman who has ‘opted off’ the Programme develop cervical cancer, her records will still be subject to review as part of an evaluation.

Audit of the smear histories of women who develop invasive cervical cancer is the most important (but not the only type of) evaluation permitted under the new Act. Occasionally, other evaluations may require access to records of samples of women who have not developed cancer. These evaluations will be restricted to women who have not ‘opted off’ the Programme. The same strict safeguards for privacy and confidentiality will apply to all evaluations, of whatever type.

The effectiveness of the Programme in reducing the incidence of and mortality from cervical cancer depends on increasing the proportion of eligible women participating in the Programme (coverage), as well as improving our ability to evaluate all Programme outcomes and components—which is what the new Act allows.

The National Screening Unit is currently working on a range of communication strategies for women and smear takers that will explain the legislative changes in more detail.

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References:


Medical Discipline – Fraud Conviction

Charge:
A CAC charged that Mr Christie Arianesan Philipiah was convicted by the District Court of the following offences, each being an offence punishable by imprisonment for a term of three months or longer;

1. Take/obtain/uses documents for pecuniary advantage [x28] Crimes Act 1961 section 229A;

The CAC charged that the offences reflect adversely on the practitioner’s fitness to practise medicine.

Background:
Mr Philipiah was found guilty of 28 charges of fraudulently using General Medical Services claim schedules for the purpose of obtaining for himself a pecuniary advantage and three charges of wilfully attempting to obstruct the course of justice by writing false entries in a patient’s clinical record and by requesting a women’s refuge worker and a patient to sign letters which contained statements he knew to be incorrect.

Mr Philipiah was originally committed for trial on 107 separate charges but following a decision of the Court of Appeal in *R v Tuckerman* ((CA) 280/86 31 October 1986), a lesser number of charges were selected to proceed to trial.

On 29 October 2002 Mr Philipiah was sentenced to two years and three months imprisonment in respect of the 28 counts of fraudulently using GMS claim schedules and nine months imprisonment in respect of the charges relating to attempts to obstruct the course of justice, the terms being cumulative thus making a total of three years imprisonment. Mr Philipiah is currently under home detention.

Finding:
The Tribunal was unanimously of the view that Mr Philipiah’s actions in making claims for patient visits he did not undertake were for the purposes of pecuniary benefit to himself and they do reflect adversely on his fitness to practise medicine. The Tribunal considered his fabrication of patient records and the flagrant disregard for patients’ health and safety was a most serious aspect to this offending. Further, the Tribunal considered that Mr Philipiah’s actions in requesting his patients to make false statements in order to support him was an abuse and breach of trust.

Penalty:
The Tribunal ordered that Mr Christie Arianesan Philipiah’s name be formally removed from the Register; that he be censured; and pay 40% of the costs and expenses incidental to this inquiry. It further ordered publication of the orders in the New Zealand Medical Journal.
The full decisions relating to the case can be found on the Tribunal web site at http://www.mpdt.org.nz Reference No: 03/114C.
Medical Discipline – Alternative Medicine

Charge:

The Director of Proceedings charged that Dr Richard Warwick Gorringe was guilty of three charges. Dr Gorringe denied all the charges.

**Charge 1 – Mrs Short – Professional Misconduct:**

*Particulars 1.1 to 1.5 (Diagnoses)*

It was alleged Dr Gorringe relied unduly on Peak Muscle Resistance Testing (PMRT) in diagnosing paraquat poisoning; and reached that diagnosis when it was not supported by Mrs Short’s history or clinical presentation; and failed to carry out any other diagnostic tests to confirm or exclude his diagnosis.

It was alleged that in diagnosing cytomegalovirus, Legionella infection and electromagnetic radiation sensitivity Dr Gorringe:

(a) Failed to undertake an adequate clinical examination;
(b) Relied unduly on PMRT to reach the diagnoses;
(c) Failed to carry out any other diagnostic tests to confirm his diagnoses; and
(d) Reached a diagnosis not supported by Mrs Short’s history or clinical presentation.

*Particular 2 – (Informed Consent – PMRT)*

It was alleged Dr Gorringe carried out PMRT without adequately explaining this diagnostic technique. In particular, he failed to advise Mrs Short of its advantages and disadvantages when compared to conventional and generally recognised diagnostic investigatory techniques; and/or failed to advise her of the degree to which PMRT had been scientifically evaluated for efficacy as a diagnostic tool; and in failing to give an adequate explanation he failed to enable Mrs Short to make an informed choice and therefore failed to obtain her informed consent to PMRT.

*Particular 3 – (Informed Consent – other treatments)*

It was alleged Dr Gorringe provided and/or arranged to be provided various treatments, namely, homeopathic paraquat injections, homeopathic drops, laser management, and spiritual healing, and also required Mrs Short to forego conventional medical treatment including topical steroid creams and Histafen without advising Mrs Short of the risks, benefits and efficacy of the treatment options; and in failing to give such treatment/management he failed to enable Mrs Short to make an informed choice, and therefore failed to obtain her informed consent to the treatment/management.
**Particular 4 – (Documentation)**

As an alternative to particulars two and three, it was alleged Dr Gorringe failed to adequately document any explanations given to or informed consent received from Mrs Short.

**Particular 5 – (Exploitation)**

It was alleged Dr Gorringe knew or ought to have known that the various diagnoses were not supported by Mrs Short’s clinical presentation and thus exploited Mrs Short for financial gain by:

(a) continually advising and/or reassuring her that her condition was improving; and/or

(b) by advising her to purchase homeopathic treatment from him; and/or

(c) by advising her to attend follow up appointments for the monitoring of her condition and/or treatment.

**Charge 2 – Mrs Short - Disgraceful Conduct in a Professional Respect:**

It was alleged:

1. Dr Gorringe, in his management of Mrs Short knowing she had been previously diagnosed with chronic eczema and, having diagnosed her variously with paraquat poisoning, cytomegalovirus, Legionella infection and electromagnetic radiation sensitivity required her to cease her then current medication (including Histafen and topical steroid creams) which he knew, or ought to have known, were essential to the ongoing management of her condition; and/or

2. Dr Gorringe, in his management of Mrs Short when he knew, or ought to have known, of her severe continuing physical and psychological deterioration continued to advise and/or reassure her that her condition was improving and would continue to improve when he knew or ought to have known this was not correct; and/or

3. Dr Gorringe, when he knew, or ought to have known, that Mrs Short’s physical and psychological condition had deteriorated and was continuing to deteriorate:

   (a) failed to reinstate her former medication in a timely manner; and/or

   (b) failed to prescribe other medication appropriate to her condition in a timely manner; and/or

   (c) failed to advise her to seek further medical care or advice; and/or

   (d) failed to refer and/or consult with an appropriate specialist regarding her clinical condition at any time during this period.

**Charge 3 - Ms Ghaemmaghamy – Professional Misconduct:**

**Particular 1- (Diagnosis)**
It was alleged that during this period in diagnosing brucellosis, Dr Gorringe:
(a) failed to undertake an adequate clinical examination; and/or
(b) relied unduly on PMRT to reach his diagnosis; and/or
(c) failed to carry out any other diagnostic tests to confirm his diagnosis; and/or
(d) reached this diagnosis when it was not supported by Ms Ghaemmaghamy’s clinical presentation.

**Particular 2 – (Informed Consent – PMRT)**

It was alleged that Dr Gorringe carried out PMRT as a means of reaching the diagnosis of brucellosis without adequately explaining PMRT and in particular:
(a) failed to advise Ms Ghaemmaghamy of its advantages and disadvantages when compared to conventional and generally recognised diagnostic/investigatory techniques; and/or
(b) failed to advise her of the degree to which PMRT had been scientifically evaluated, for its efficacy as a diagnostic tool;

and in failing to give an adequate explanation regarding PMRT was alleged to have failed to enable Ms Ghaemmaghamy to make an informed choice and therefore failed to obtain her informed consent to PMRT.

**Particular 3 – (Informed Consent - Homeopathic Medication and Spiritual Healing)**

Based on his diagnosis of brucellosis it was alleged that Dr Gorringe provided/administered and/or arranged to be administered spiritual healing and homeopathic medication without advising Ms Ghaemmaghamy:
(a) the manner in which the spiritual healing, as a treatment modality, would be conducted; and/or
(b) whether antibiotics were available in conjunction with, or as an alternative to, homeopathic medication and/or spiritual healing; and/or
(c) the purpose of risks, benefits and efficacy of the non-conventional treatment, and, in failing to give an adequate explanation to Ms Ghaemmaghamy it is alleged he failed to enable her to make an informed choice and therefore failed to obtain her informed consent to the treatment/management.

**Particular 4 – (Documentation)**

As an alternative to particulars two and three, it was alleged that during the said period Dr Gorringe failed to adequately document any explanations given or informed consent received from Ms Ghaemmaghamy.

**Particular 5 – (Exploitation)**
It was alleged that during the said period when Dr Gorringe knew, or ought to have known, that the diagnosis of brucellosis was not supported by Ms Ghaemmaghamy’s clinical presentation and, on being advised she had tested negative for brucellosis, he exploited her for financial gain by advising her she had brucellosis of the intracellular form which would not be detected by conventional blood tests and advising her to purchase homeopathic treatment from him.

Finding:

Mrs Short

The Tribunal was satisfied that both the charge of professional misconduct and the charge of disgraceful conduct laid against Dr Gorringe in respect of Mrs Short in all the particulars, except particular four of the professional misconduct charge, both separately and cumulatively, were established. Particular four was laid in the alternative to particulars two and three. As the Tribunal found particulars two and three of the professional misconduct charge established, it did not consider it necessary to address particular four of the professional misconduct charge.

The Tribunal found:

- That Dr Gorringe in respect of Mrs Short over a six month period of consultations made untenable diagnoses of paraquat poisoning, cytomegalovirus (CMV/CMV toxin), Legionella infection and electromagnetic radiation sensitivity by undue reliance on peak muscle resistance testing (PMRT) to the exclusion of conventional medical diagnostic methods and when not supported by Mrs Short’s clinical presentation.

- That PMRT is not a plausible, reliable or scientific technique for making medical decisions and that there was no plausible evidence that PMRT had any scientific validity and that therefore reliance on PMRT to make diagnoses to the exclusion of conventional and/or generally recognised diagnostic/investigatory techniques was unacceptable and irresponsible.

- That Dr Gorringe failed to obtain Mrs Short’s informed consent either to the diagnostic techniques or treatments used.

- That he exploited Mrs Short.

- That he failed to adequately/appropriately treat Mrs Short or refer her for care in the face of her deteriorating condition.

Ms Ghaemmaghamy

The Tribunal was satisfied that the charge of professional misconduct laid against Dr Gorringe in respect of Ms Ghaemmaghamy in all its particulars, except particular four, both separately and cumulatively, was established. Particular four was laid in the alternative to particulars two and three. As the Tribunal found particulars two and three established, it did not consider it necessary to address particular four of the charge.

The Tribunal found in respect of Ms Ghaemmaghamy:
Dr Gorringe made an untenable diagnosis of brucellosis of the intracellular kind by undue reliance on PMRT.

He failed to obtain her informed consent either to the diagnostic technique or treatments used.

He exploited her.

The Tribunal was of the view that where a registered medical practitioner practises “alternative” or “complementary” medicine, there is an onus on that practitioner to inform the patient not only of the nature of the alternative treatment offered but also the extent to which that is consistent with conventional theories of medicine and has, or does not have, the support of the majority of practitioners. The Tribunal recognises that persons who suffer from chronic complaints or conditions for which no simple cure is available are often willing to undergo any treatment which is proffered as a cure. As such, they are the more readily exploited. The faith which such persons place in practitioners offering alternative remedies largely depends on the credibility with which such practitioners present themselves. Where such remedies are offered by a registered medical practitioner, it is difficult to escape the conclusion that the patient derives considerable assurance from the fact that the practitioner is so registered. It follows, therefore, that a registered medical practitioner cannot discharge his or her obligation to treat the patient to the acceptable and recognised standard simply by claiming the particular treatment was “alternative” or “complementary medicine”.

It was satisfied that medical practitioners who practise both conventional and alternative medicine must be well aware of the possibility that patients consult them to get “the best of both worlds” and to avoid those aspects of alternative medicine which are extreme or incredible.

**Penalty:**

The Tribunal ordered:

(a) Dr Gorringe’s name be removed from the Register of Medical Practitioners.

(b) Dr Gorringe be censured.

(c) Dr Gorringe pay $46,659.83 which represents 40% of the costs of the Director of Proceedings’ investigation and prosecution and $57,436.64 which represents 50% of the Tribunal’s costs, making a total payment of $104,096.47.

(d) A report of the Tribunal’s Decisions be published in the New Zealand Medical Journal.

The full decisions relating to the case can be found on the Tribunal web site at [http://www.mpdt.org.nz](http://www.mpdt.org.nz) Reference No: 02//89D.
Sydney Ronald Arthur Ayling

Ron Ayling, a well-known general practitioner in Christchurch, died on 24 January 2004 after 9 months of illness borne with great stoicism.

Ron was born in Christchurch on 27 June 1925; the only son of Sydney, a civil engineer, and Del, a music teacher. He attended St Andrews College, and (after the death of his father) left when he was 16 to assume the responsibility of helping his mother and two aunts.

He attended the Otago Medical School, graduated in 1949, and then spent 2 years as a house surgeon at Christchurch Hospital and a further year at Ashburton Hospital.

During his time at Ashburton, he met Alison Bruce who eventually became his wife and provided great support throughout the rest of his life; however, he had already arranged postgraduate studies in England so he left Alison and travelled as ship’s surgeon on the ‘Tamaroa’. He was in England for 4½ years—working at St Mary’s Hospital (Manchester), Simpson Memorial Hospital (Edinburgh), and London Hospital where he did postgraduate obstetrics and gynaecology studies. He had always planned to return to general practice in New Zealand, so in 1956 he returned and married Alison.

Ron did some locums and then set up his own practice in Wairakei Road, Christchurch where he worked until his retirement in 1995. Ron, with Alison’s support, ran a large obstetric and general practice for patients of all ages. This responsibility did not stop him from spending countless hours, beyond the call-of-duty, helping these patients. He was a truly family doctor, and served his patients with skill and care—his patients loved him.

Ron was a foundation member of the Royal New Zealand College of General Practitioners and continued to be involved in the College throughout his practising life. In 1974, at the First College Conference in the newly completed Christchurch Town Hall, Ron was responsible for the Inauguration Ceremony, which went without a hitch. In fact, he was a superb and dependable organiser who paid great attention to detail.

For many years, Ron was involved with Kilmarnock Enterprises Rehabilitation Services where he was medical officer, and member of their Selection and Training Committee and Board. He will be remembered for his dedication and loyalty to this organisation, as well as his expert and sensible advice about medical matters.

Ron and Alison were (for many years) keen skiers, and spent many happy days with family and friends at Mt Cheeseman where his children learned to ski. They were also members of the special ‘parents-only’ ski group, which went on annual week-long trips to Coronet Peak. Ron’s tales of happenings from the weeks are legendary.
Ron and Alison had a lovely home—‘Gartmore’—and garden in Fendalton where they were wonderful hosts. They were very active members of St Barnabas Parish for 40 years and their church meant a lot to them. They were also involved for many years in the Rhododendron Society, and (in 1998) Ron was President of the Canterbury Society, hosting the National Conference in Christchurch. During their retirement, they travelled widely.

To Alison; who supported him for 47 years, especially during the last 9 months; his children, Vicki, Pip, and Nick; and to his five grandchildren—we offer our sincere condolences.

We are grateful to Dr John Musgrove for this obituary.
Richard Stewart Scholarship

The Dunedin Basic Medical Sciences Course Trust calls for applications for the Richard Stewart Scholarship for 2005. The scholarship, which is normally held for one year, was established by the trust in memory of the late Assoc Prof Richard Stewart FRACS, Postgraduate Dean, Wellington School of Medicine, and is currently valued at $12,000. From 2004 the trust will undertake the selection process, obviating the need for candidates to make application to the RACS in Melbourne.

The following conditions apply:

1. The scholarship is open to medical graduates holding a degree registrable in NZ.

2. A candidate will be either a basic or advanced surgical trainee of the RACS, or a surgeon who is a fellow of the RACS. In the latter situation, a candidate will normally have held the FRACS diploma for not more than 5 years.

3. The scholarship will usually be held in a surgical research post in a surgical department at the University of Otago Medical School in Dunedin, but it may also be held in a comparable post in a surgical department at either the Christchurch or Wellington School of Medicine.

4. The monies may be used to supplement the candidate’s stipend, or to purchase materials and equipment related to the research, at the discretion of the head of the department. Some of the monies may, on occasion, be used to fund travel related to the candidate’s research, or to present his/her research at an approved meeting.

Application for this scholarship should be made directly to Chairman of the Trust, Office of the Dunedin Basic Medical Sciences Course Trust, Department of Pathology, Medical School, P O Box 913, Dunedin.

There is no specific application form, but the information supplied to the trust should include the candidate’s curriculum vitae, a brief description of the intended research (maximum 500 words), and the names of 2 referees.

Application close on May 31 2004.
Erratum

Spontaneous coronary artery dissection: a report of two cases occurring during menstruation

Robert Slight, Ali Asgar Behranwala, Onyekwelu Nzewi, Rajesh Sivaprakasam, Edward Brackenbury and Pankaj Mankad


The correct spelling of the second author’s name is Ali Asgar Behranwala, which differs from that supplied to the New Zealand Medical Journal and subsequently published.

Please refer to the above URL to view the corrected copy of the article.
Effective Writing for Health Professionals: a Practical Guide to Getting Published


This book is written for those health professionals ‘daunted by the prospect of writing’. Ms Johnstone makes the point that health professionals have very poor publishing rates and subsequently miss out on sharing their experiences and promotion opportunities. She cites lack of time, lack of support, and lack of confidence as being the main hindrances to putting pen to paper, or fingers to keyboard.

The book aims to tackle this problem. The book is well set out, easy to read, and is full of basic practical tips including exercises at the end of each chapter. There are chapters on Getting Started, The Writing Process, Winning Habits of Successful Authors, and Promoting your Work. There are many basic tips that I, and apparently Ms Johnstone, have found out the hard way. Writing of books, newsletters, reviews, and scientific articles are all covered.

Ms Johnstone is a well known, and well published, nursing ethicist and knows her stuff. The book has a ‘been there, done that’ feel to it without being arrogant. It is a good read, without being too simple, and a good introduction to the field of medical and nursing publishing. The book is not strong on specifics regarding the writing of scientific papers for high-powered basic science and medical journals as it is not written specifically with this rather small group of clinicians and scientists in mind. For the broader medical and nursing profession, the book is very appropriate and encouraging. I hope that Ms Johnstone is the reviewer for my next paper as she seems very understanding.

Anyone considering how to begin writing for doctors and nurses should read this book. It will be well worth your time.

Andrew Hill
Senior Lecturer in Surgery, South Auckland Clinical School, Middlemore Hospital, University of Auckland