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This Issue in the Journal

Measurement of serum PSA as a predictor of symptoms scored on the IPSS for patients with benign prostatic hyperplasia
Calvin F J Lim, Nicholas C Buchan

It has been established by previous studies that serum prostate-specific antigen (PSA) levels correlate to size of the prostate gland and that prostate gland size is directly related to the symptoms experienced by patients. This study was done in order to potentially tie the two together and see if the levels of PSA would be able to be used as a predictor for symptoms. Data was collected on levels of serum PSA and the symptoms were scored on a standardised scale from males who attended the prostate clinic in Christchurch Public Hospital with an established diagnosis of enlarged prostate. Levels of PSA compared to symptoms a definite relationship but each increase of the level of PSA showed only a little real increase in symptoms that were reported. As a result, PSA has no real utility to accurately gauge symptomatic severity.

Government funding of health research in New Zealand
Ian R Reid, Peter Joyce, John Fraser, Peter Crampton

An analysis of levels of government health research funding carried out in 2008 demonstrated that funding in New Zealand, after adjustment for population size, was much lower than in comparator countries. This was perceived to be a major obstacle to the recruitment and retention of clinical and academic staff in our hospitals and universities. We have now repeated these comparisons, and find that from 2009 to the present, funds [for direct funding of research through the Health Research Council (HRC)] have remained static at 54 million dollars annually. As a result of inflation of research costs, this represents a decrease of approximately one-quarter in the quantum of research funded by the HRC over the last 4 years. Current funding rates are 3.4-fold higher in Australia, 4.5-fold higher in the United Kingdom, and 9.7-fold higher in the United States. Urgent and sustained action is needed to correct these major disparities in government health research funding if the quality of academic and clinical staff in our public institutions is to be maintained.

Treating pseudomyxoma peritonei without heated intraperitoneal chemotherapy—a first look in New Zealand
Benjamin R Wheeler, Sumeet K Reddy, Diane Kenwright, John P Keating

Pseudomyxoma peritonei arises from perforated mucus producing tumours inside the abdomen. We show that treatment with surgery alone may result in similar outcomes to surgery plus chemotherapy.
“Good intentions, but inadequate practices”—sun protection in early childhood centres, a qualitative study from New Zealand
Mary Duignan, Louise Signal, George Thomson

The research found a lack of comprehensive sun protection policies in many NZ early childhood centres. There appears to be an insufficient focus on sun protection in the regulations and monitoring of these centres. There is inadequate access to sun protection information for centre staff and parents. There needs to be a greater focus by government on sun protection for preschoolers, and this could be done by early childhood centre regulations.

Smokefree outdoor areas in New Zealand: how far have we come?
Louise Marsh, Lindsay A Robertson, Heather Kimber, Martin Witt

An online survey with Local and District Councils throughout New Zealand was used to examine smokefree outdoor area policies. This research found that local authorities are increasingly adopting smokefree outdoor area policies; 70% of councils now have a smokefree policy that cover the ‘greenspaces’ of parks, playgrounds and sports grounds. However, there is little evidence that councils are prepared to consider extending these policies out of the greenspaces and into other public places such as beaches, outdoor dining areas, and pedestrian shopping malls. Councils found that lack of time and resources made it difficult to implement these policies. Continued efforts are required to undertake evaluations of current policies which may provide evidence to extend them, to assist those councils without a policy to develop one, and to increase funding for implementation.
Pharmaceutical industry behaviour and the Trans Pacific Partnership Agreement

Erik Monasterio, Deborah Gleeson

Trans Pacific Partnership Agreement (TPPA) is a regional trade agreement involving 12 countries, including New Zealand, which has the potential to significantly alter the domestic environment for health policy-making. One of the key concerns is the future of New Zealand’s Pharmaceutical Management Agency (PHARMAC), on which affordable access to medicines for New Zealanders hinges.

Through the TPPA, the United States (US) is seeking to eliminate therapeutic reference pricing, introduce appeals processes for pharmaceutical companies to challenge formulary listing and pricing decisions, and introduce onerous disclosure and “transparency” provisions that facilitate industry involvement in decision-making around coverage and pricing of medicines (and medical devices).

This editorial examines trends in pharmaceutical industry conduct and strategy over the past 15–20 years and argues that if the TPPA (based on the US proposals) is successfully prosecuted, it will contribute to adverse health outcomes by increasing costs and reducing access to affordable medicines for New Zealanders. This in turn can be expected to disproportionately affect disadvantaged population groups, including Māori and Pacific peoples.

The Transpacific Partnership Agreement

New Zealand is 1 of 12 countries engaged in the final stages of negotiations for a regional trade agreement, the Trans Pacific Partnership Agreement (TPPA). The TPPA could have wide-ranging ramifications for health policy, however little is known about it amongst medical practitioners in many countries, including New Zealand.

Concerns have been expressed about many aspects of the TPPA which have the potential to significantly alter domestic environments for health policy-making in areas such as pharmaceutical policy, tobacco control, and alcohol and food policy.1,2 In the New Zealand context, one of the key concerns is the future of PHARMAC, on which affordable access to medicines for New Zealanders hinges.3

While the ramifications for health policy and programmes are significant, however, the negotiations are conducted under conditions of confidentiality, and draft texts are not available to the public. What little is known about the TPPA is derived mainly from leaked negotiating documents.

In this editorial, we draw on leaked documents to outline the proposals that have been made for pharmaceuticals in the TPPA and the new privileges they would provide to the pharmaceutical industry. We place these extra privileges in the context of strategies that have been used by the pharmaceutical industry to increase its market share and extend its monopolies.
We argue that there are hidden dangers in allowing the industry any greater influence over New Zealand’s pharmaceutical policies, laws and programs.

There are three main avenues through which the TPPA is likely to provide the pharmaceutical industry with extra privileges.

- First, the US has proposed a suite of provisions for the intellectual property (IP) chapter for the TPPA\(^4,5\) that taken together, would expand patent protection and prolong monopolies for pharmaceutical companies. For example, these include proposals to mandate that countries will allow patents for new uses and methods of using a known product, even when there is no evidence of additional therapeutic benefit.

  Patents would have to be permitted for diagnostic and treatment methods. Countries would also have to extend the term of patents beyond the current 20 years granted, to compensate for any delays in the process of issuing the patent or approving it for marketing. These and many more provisions proposed by the US would provide additional privileges beyond those provided by current New Zealand patent law, and would work together to delay the availability of generic medicines in New Zealand.\(^6\)

  Recently leaked documents\(^7\) have shown that the US has continued to pursue these proposals despite the resistance of many of the other countries, including New Zealand.

- The second way the TPPA would confer additional privileges on the pharmaceutical industry is through mandating procedural changes to pharmaceutical coverage programs, including New Zealand’s Pharmaceutical Management Agency (PHARMAC).

  PHARMAC’s autonomy, its strategies for procurement and price negotiation, and its careful evaluation of value for money make it highly effective in containing costs while maintaining access to essential medicines.\(^3\)

  The very features that make PHARMAC effective make it a target for the big transnational pharmaceutical companies based in the US. The 2012 special 301 watch report of the US Trade Representative cites US industry concerns over “the lack of transparency, fairness, and predictability of the PHARMAC pricing and reimbursement regime, as well as the negative aspects of the overall climate for innovative medicines in New Zealand”.\(^8\, p21\)

  The US negotiating objectives listed in the “fast track” (Trade Priorities Act) bill introduced into Congress in January 2014 include “the elimination of government measures such as price controls and reference pricing which deny full market access for US products”.\(^9\, p20\)

  US proposals for an annex to the transparency chapter of the TPPA\(^10\) endanger effective pricing strategies such as therapeutic reference pricing, provide new avenues for industry to appeal decisions and require additional disclosure of information and avenues for consultation and input by the industry.\(^3,11\) Even a less egregious set of provisions such as those in the Australia-US Free Trade Agreement could impinge significantly on PHARMAC’s decision-making autonomy and flexibility.
The US transparency chapter annex proposal would also institutionalise direct-to-consumer advertising (DTCA) of pharmaceuticals via the internet. While this practice is currently legal in New Zealand, accepting such a provision would mean that New Zealand would not be able to change its laws in response to mounting evidence that the risks associated with DTCA outweigh the benefits.  

- A third avenue for granting additional privileges to industry is via the highly controversial investor-state dispute settlement (ISDS) mechanism in the investment chapter of the TPPA. ISDS allows foreign corporations to sue governments for compensation (for awards that often amount to hundreds of millions of dollars) in international tribunals.

A US pharmaceutical company, Eli Lilly, has launched such action against Canada after it revoked patents for two drugs, seeking $500 million Canadian dollars in compensation. Leaked text suggests that New Zealand has already agreed to the ISDS mechanism in the TPPA.

The way in which these three different mechanisms could work together in practice to promote the interests of the pharmaceutical industry is highly worrying. Increased IP protection means drugs would cost more for longer periods; changes to PHARMAC’s procedures proposed by the US would further erode its capacity to obtain value for money; and an ISDS mechanism applying to the IP and transparency chapters would provide new avenues to the industry to challenge decision making regarding patents, pricing and reimbursement.

The challenge of escalating prescription drug costs at a time of increasing fiscal constraint has become a major concern to health care providers, a critical policy issue and a major focus of political debate. Future significant increase in medication costs, which is a likely outcome of a TPPA agreement based on the US proposals will contribute to significantly adverse health outcomes by reducing access and adherence to important medications; this can be expected to disproportionally affect disadvantaged population groups, including Maori and Pacific peoples.

What we have learnt about pharmaceutical industry strategy

It is salutary to note that in the US drug spending is driven by brand-name drugs, which account for 20% of all prescriptions but 80% of all costs. It is not surprising nor counterintuitive that the business model of the pharmaceutical industry, which seeks to maximise profits and returns to shareholders is often in direct conflict with public health interests and legal safeguards.

Given the current state of affairs and the implications of the TPPA negotiations, we urge close attention to the lessons that have been learnt about pharmaceutical industry conduct over the past 15–20 years.

We provide a (by no means exhaustive) list of concerns in relation to pharmaceutical industry strategy that should caution against allowing greater influence to be exerted by the pharmaceutical industry, a weakening of government drug monitoring and funding programmes, and changes to intellectual property law. These include: promotion of off-label prescribing (i.e. prescribing a drug for an indication outside of that for which it is licensed), reporting bias with unpublished negative findings and
misreported studies, medical ghost-writing (the practice of pharmaceutical companies secretly authoring journal articles published under the by-line of academic researchers) and evidence of increasing expenditure on promotion, to the extent that almost twice as much is spent on advertisement than in research and development.

Dr Peter Gotzsche (a physician and medical researcher with very high numerical literacy, and head of the Nordic Cochrane Centre) has recently published a book that draws on 20 years research to convincingly argue that the drug industry has corrupted the scientific process to play up the benefits and play down the harms of their drugs. His is unfortunately not an outlier’s voice, as other books and peer-reviewed articles from eminent academics, including former editors of the New England Journal of Medicine, have consistently reached similar conclusions in the past 10 years.

Recent landmark legal cases by the US Department of Justice have highlighted the extent to which the largest drug companies have repeatedly and systematically engaged in illegal activities to promote drug sales. Common recent crimes include illegal marketing of medications for off-label uses, misrepresentation of research results, withholding data on harms, and Medicaid and Medicare Fraud. As these crimes are widespread and recurrent, it has been suggested that they are probably committed deliberately and that some of these behaviours may be resistant to external regulatory approaches.

In 2012 GlaxoSmithKline (GSK) agreed to plead guilty and pay a record US$3bn in penalties for unlawful promotion of prescription drugs, failure to report safety data, and false price reporting. It also signed a 123-page corporate integrity agreement with the US Department of Justice that regulates its activity for the next 5 years.

Despite entering into such an agreement and after seeking to reassure the public of its intentions to root out corruption, GSK has again become embroiled in allegations of serious corruption and criminal behaviour in relation to drug sales in China.

Commenting on a recent legal case against AstraZeneca, US Attorney General Eric Holder said that illegal acts by drug companies “…can put the public health at risk, corrupt medical decisions by health care providers, and take billions of dollars directly out of taxpayers’ pockets.”

Off-label use of medications is costly, potentially harmful and of questionable benefit. Radley et al found that 73% of the off-label use of 160 commonly prescribed drugs lacked evidence of clinical efficacy, and only 27% was supported by strong scientific evidence. A Christchurch based study estimated that the cost for off-label use of the atypical antipsychotic medication, quetiapine was $9.5 million in New Zealand in 2010.

Pharmaceutical industry marketing appears to have influenced the rapid expansion in off-label prescribing of psychotropic drugs to child and youth populations, often by overstating benefits and hiding known harms.

The success of marketing over reason is perhaps best highlighted in the extraordinary worldwide expansion in the use of atypical antipsychotic medications, designed for the treatment of psychosis and psychotic spectrum disorders, which are rare conditions affecting around 2% of the general population.
Antipsychotic global sales were US$25.4 billion and the seventh biggest therapeutic group in 2010; Seroquel™ (quetiapine), Zyprexa™ (olanzapine) and Abilify™ (aripiprazole) were the 5th, 10th and 13th biggest selling pharmaceuticals, with sales of US$6.8; US$5.7 and US$5.4 billion respectively. Even the recent record-breaking fines imposed on the industry are unlikely to act as a significant disincentive in the face of such profitable sales.

Beyond illegal practices the pharmaceutical industry has also engaged in other (legal) strategies to extend periods of market monopoly. The term “life-cycle management” (evergreening) refers to this practice, which includes slight changes in formulation without the requirement of showing superiority over existing medicine, which can then be protected by later issue patents, negotiating settlements with generic companies to prevent challenges to potentially weak or invalid patents and legal action against licensing authorities to delay market entry of generic medications.

For example, recent research on eight commonly prescribed drugs subject to evergreening strategies in the public hospital system of the canton of Geneva (which represents about 5% of Switzerland’s total population), estimated an additional cost of 30 million euros between 2000 and 2008, without any proven clinical advantage.

Conclusion

The range of strategies used by the pharmaceutical industry to advance and protect its economic interests and market share is well documented. This calls for patent law that prioritises the public interest, and for public institutions and decision making processes that are independent and free from pharmaceutical industry influence.

In the context of the TPPA negotiations, it is vital that New Zealand does not cede further ground to the pharmaceutical industry, by ‘locking in’ direct-to-consumer advertising, and by providing further intellectual property privileges, opportunities to influence decision making, and new avenues for legal challenges.

The TPPA negotiations are now in the final stages, with the conclusion of a deal predicted in the first half of 2014. It is time for New Zealand’s medical practitioners to join the growing chorus of voices highlighting the hidden costs of “free” trade, before the deal is done.

Competing interests: Nil.

Note: Statements or opinions expressed in this editorial reflect the views of the authors and do not necessarily reflect official policy of the New Zealand Medical Association unless stated as such.

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Improving outcomes for New Zealand men with prostate cancer

John N Nacey, Brett Delahunt, Stephen D Mark

Prostate cancer is the most common non-cutaneous malignancy affecting New Zealand men and accounts for 27% of all annual registrations of cancer. This malignancy is a significant burden to men’s health and kills around 600 men every year in New Zealand.¹

The registration rate is lower for Māori when compared to non-Māori however the mortality rate for Māori is 72.1% higher. This disparity is almost certainly related to a lower rate of screening among Māori men resulting in a higher proportion presenting with advanced, and therefore incurable, disease.

The Ministry of Health’s Awareness and Quality Improvement Programme for prostate cancer is timely.² It aims to improve prostate cancer outcomes for men and has a strong equity focus.

As with all malignancies, clinicians strive to find a reliable way of detecting prostate cancer early, so that potentially life-saving treatments may be implemented promptly. Such treatment has the dual aim of reducing prostate cancer-related mortality as well as reducing the very significant morbidity associated with advanced disease.

Early diagnosis of prostate cancer is largely driven by the use of prostate-specific antigen (PSA) testing. Following its introduction in the 1980s, PSA created a revolution, resulting in a definite stage migration from high-grade, high-risk cancer toward low-grade low-risk, disease.³,⁴ It is a powerful tool for measuring a man’s response to prostate cancer treatment and assessing disease progression. Nevertheless, this remains a controversial test because an abnormal result may not predict prostate cancer and is likely to lead to prostate biopsy.

Transrectal ultrasound-guided prostate biopsy is one of the most frequently performed urologic procedures. It is generally safe and well-tolerated and most adverse effects are minor and self-limited. These include haematuria, haemospermia, and transient rectal bleeding. Uncomplicated urinary infection occurs after biopsy in 1.2–11.3% of cases and febrile infections occur in 1.4–4.5%. Sepsis, one of the most serious clinical sequelae, is encountered in 0.1–2.2% of cases after transrectal prostate biopsy.⁵,⁶

Transperineal prostate biopsy is being increasingly utilised by New Zealand urologists as a means of accurate prostate sampling and with a much lower complication rate than the traditional transrectal approach. Using this technique the febrile infection rate has been reported to be as low as 0.7% with no patients developing sepsis.⁷

Critics argue that if a prostate cancer is found and treated it may have been indolent, the treatment may have been unnecessary and any management is usually associated with adverse consequences.
These concerns need to be viewed in the context of major advances in prostate cancer diagnosis and management. An often-repeated myth is that prostate cancer is common in younger men, with studies showing tumour in 27% of individuals in the fourth decade. These studies (based on postmortem findings) are, however, flawed due to a failure to exclude cancer mimics by contemporary immunohistochemical techniques.

Further, the incidence rates determined in earlier studies must now be questioned as it is now realised that a number of morphologic patterns originally considered to represent malignancy are, in fact, benign lesions. This is reinforced by a study of patients diagnosed with prostate cancer at the Mayo Clinic between 1960 and 1970, which showed on review, that 21% of lesions were benign.

The concept that the behaviour of prostate cancer is unpredictable is incorrect, as outcome is predicted by stage and Gleason grade/score. Of cancer grading systems, that of Gleason is one of the most powerful predictors of outcome. This system has undergone several modifications to align it with developments in clinical practice and our evolving understanding of the behaviour of prostate cancer.

In its current iteration Gleason scoring facilitates stratification of outcomes, such that it is now realised that low volume, Gleason score 3+3=6 tumours have a long-term mortality of less than 3% and are therefore appropriate for active surveillance. This does not apply to cancers with significant proportions of Gleason pattern 4 or with Gleason pattern 5, which have more aggressive growth characteristics and for which early treatment is indicated.

These developments mean that at diagnosis we can be more confident of assigning to each patient an accurate risk of disease progression. Men with a low-risk profile may be suitable for either active surveillance or curative treatment, using either radical prostatectomy or radiation therapy. Those at intermediate or high-risk need to be considered for curative treatment only.

Entering an active surveillance programme means men avoid the potential adverse effects of surgery. Urologists are well aware that for men on active surveillance programs there is a greater likelihood that they will die from causes other than prostate cancer. The risk is that men may develop more aggressive cancer and ultimately require not just radical intervention, but also adjuvant treatment. Therefore, men on active surveillance require intensive monitoring and while the triggers for intervention vary between protocols, most rely on the findings of re-biopsy.

If the original criteria for including men in active surveillance are breached (Gleason score and tumour volume) then men are likely to be directed to curative treatment. For many men the anxiety of an increasing PSA (even one that does not meet an intervention criterion of doubling time <3 years) will cause them to leave an active surveillance program and opt for curative treatment.

Only radiation and surgery have been shown to reliably cure patients of prostate cancer. These are the options for men with low risk of disease progression (who have withdrawn or been withdrawn from active surveillance), and for those with intermediate and high-risk disease. Of course, men need to understand the implications of their treatment. They also need to understand that the risk of declining intervention is disease progression and death from metastatic disease. More recent studies are challenging the notion that prostate cancer is not a major cause of death in
men. These studies emphasise that we must not underestimate the lethal nature of prostate cancer in men of all ages and the potential to do harm by undertreatment.\textsuperscript{15}

Curative treatment of all cancers carries risk of adverse events. Opponents of prostate cancer screening in New Zealand have commonly focussed on post-treatment incontinence and impotence and have described the treatments as “mutilating”.\textsuperscript{16}

No prostate cancer treatment causes mutilation. Men need to be advised that the curative options of radical prostatectomy, external beam radiation therapy, and low dose rate brachytherapy (seeds) differ in their adverse effect profiles. All have a risk of erectile dysfunction, although this is not uncommon in men over 50 years of age without prostate cancer.

The risk of erectile dysfunction increases at a rate of 11\% per year over the age of 45 years in normal men and, as such, is part of the aging process.\textsuperscript{17} Radical prostatectomy carries the additional risk of incontinence and as a consequence it is apparent that any curative treatment has possible benefits and risks.

For one man, the benefits may outweigh the risks, but for another, even with the expectation of similar outcomes, the risks may outweigh the benefits. These are “close call” situations and require shared decision-making between the man and his clinician to make the best possible choice of treatment at the level of the individual.

The Ministry of Health does not recommend population screening for prostate cancer. The quality improvement programme emphasizes the need for shared decision-making between men and their families, and the clinicians involved along the pathway of prostate cancer treatment.

It is important that not only are a man’s age and family history taken into account but also his personal preferences and values.

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Measurement of serum PSA as a predictor of symptoms scored on the IPSS for patients with benign prostatic hyperplasia

Calvin F J Lim, Nicholas C Buchan

Abstract

Objectives To investigate if serum PSA levels would correlate with patients’ symptoms. Serum prostate-specific antigen (PSA) levels correlate to size of the prostate gland. Prostate gland size has a direct correlation to the symptoms experienced by patients.

Patients and Methods A retrospective analysis of cross-sectional data collected on levels of serum PSA and symptom scores using the International Prostate Symptom Score (IPSS) collected from males who attended the prostate clinic in Christchurch Public Hospital with a diagnosis of benign prostatic hyperplasia (BPH) in the period of January 2007 to January 2012. A total of 833 subjects were found and a Pearson product moment correlation analysis (r value) and a coefficient of determination (R² value) was calculated to compare PSA levels versus symptom scores.

Results PSA compared to IPSS showed a mild trend with a r-value of 0.1375 (p=0.00003): showing a mild statistically significant correlation between these two parameters. However R² value was only 0.0189 meaning each unit increase of serum PSA only influences 1.89% of the change in the symptom score. PSA vs QoL scores, there was a mild correlation found with the r-value of 0.207 (p=0.00001). However the R² value was only 0.043, showing only a mild 4.3% influence by PSA on quality of life.

Conclusion PSA would not be a good predictor for symptom scores and hence it is unable to accurately gauge the symptomatic severity in BPH patients.

Prostate-specific antigen (PSA) measurements are performed in almost all health care practices in New Zealand as an indicator of prostatic disease. Prostatic diseases are the main cause of lower urinary tract symptoms in men (LUTS).

Lower urinary tract symptoms are divided into two broad categories: storage symptoms (urinary frequency, urgency, dysuria, and nocturia) and voiding symptoms (terminal dribbling, poor stream, hesitancy, incomplete voiding and overflow incontinence).

Benign prostatic hyperplasia (BPH) is thought to account for the vast majority of LUTS. BPH causes symptoms in approximately 90% of men over the age of 80. In a random population cross-sectional study done on 515 New Zealand men from Porirua it was found that BPH affected approximately 10% of men over the age of 40 and almost 34% of men over the age of 60.

There has been no difference in prevalence amongst Caucasian, Māori and Pacific Island populations although there is some evidence to suggest that Māori and Pacific
Island men seek less help for their condition. Although benign, symptoms caused by BPH have significant effects on the quality of life for men worldwide.

PSA is used as a measure of prostate growth hence is a potential tool to detect prostate malignancy early. PSA is produced solely in the epithelial cells of the prostate gland, initially as a proenzyme (proPSA) by the secretory cells. Then it undergoes removal of its pro-peptide and becomes proteolysed within the lumen of the prostate to form the structure that is measureable in blood test. However, in addition to growth of prostatic tissue, inflammation of the prostate, urinary tract infections, trauma to the perineal area and male ejaculation have been shown to increase serum PSA levels. Therefore, clinical context and knowledge of the patients’ background have to be taken into account when interpreting the results.

Due to the fact that serum PSA level was shown to be a good measure of the amount of glandular epithelium of the prostate, it was therefore seen as a good indicator for the size of the prostate gland in BPH patients. Roehrborn et al analysed placebo-controlled multicentre trial data collected on 4627 patients with BPH under the age of 80. This study showed a statistically significant strong correlation between serum PSA level and age as well as the size of prostate. In essence, as age increases, prostate volume increases and the growth rate of the prostate increases as the PSA level increases. Similar findings were shown in a 2003 Korean multicentre study of 5717 patients with benign prostatic disease where this strong correlation was demonstrated as well. Traditionally it has been thought that an increase in prostate volume precipitates the development of lower urinary tract symptoms (LUTS), due to the bladder outlet obstruction caused by the prostate exerting pressure on the urethra.

The International Prostate Symptom Score (IPSS) was developed in 1992 following the previous use of the American Urological Association (AUA) score, with an intention to quantify the symptoms experienced by patients. The questionnaire is divided into seven parts where symptoms of incomplete emptying, frequency, intermittency, urgency, weak stream, straining, and nocturia are quantified on a scale of 0 (not at all) to 5 (almost always) to give a total score out of 35. The score is then further categorised into ranges where 0–7 is termed mildly symptomatic; 8–19 moderately symptomatic; 20–35 severely symptomatic. There is a further 8th question which requests patient to state and rate it on a scale of 0 (delighted) to 6 (terrible): "If you were to spend the rest of your life with your urinary condition the way it is now, how would you feel about that?". Severity of symptoms, reported on IPSS in addition to the quality of life question score provide important information which are factored in to decide on management of the prostate: to manage it conservatively with medication or proceed to surgery.

Currently, there is conflicting evidence for the relationships between size of the prostate and severity of symptoms reported by patients: One study indicated a positive relationship by observing an increase in LUTS due to a measured increase in prostate volume when a group of patients were monitored over time.
Another study, a Chinese survey, showed a statistically significant results based on data from 1295 local prostate patients in the seven national urological centres, also supports this argument.\textsuperscript{8}

Other studies indicate that prostate volume is a weak determinant of symptom scores with negative Spearman correlation values found.\textsuperscript{9,10} A small Japanese study on 67 men with BPH which compared all three parameters of interest—PSA, prostate volume and IPSS scores—showed statistically significant correlation between PSA and prostate volume but a statistically non-significant relationship between PSA and IPSS symptom score.\textsuperscript{11}

The aim of this study was to evaluate the use of PSA as a proxy to the prostate volume to be used as a predictor for LUTS given that we have convincing evidence showing a relationship between PSA levels and prostate size\textsuperscript{5,6} and some evidence showing a positive correlation between prostate size and LUTS.\textsuperscript{7,8,11}

Method

A retrospective analysis of cross sectional data collected within the Canterbury urology database was performed. The data was collected from patients at the point of clinic attendance. Patients included in the study were males who attended the prostate clinic in Christchurch Public Hospital, who had no previous diagnosis of prostate cancer and lived within the Canterbury DHB from the period of Jan 2007 to 24 Jan 2012.

Excluded from the study were patients with histological evidence of malignancy; either prostatic intraepithelial neoplasia (PIN) on biopsy or by evidence of malignancy noted in clinical records. If there was no record of biopsy or note in the patients discharge summary, it was assumed that there was no evidence of malignant growth. Patients with current infection or chronic prostatitis were also excluded.

Data about patients age at the time of presentation to the clinic, serum PSA level, IPSS score (0-35) and quality of life score (0-6) were collected. Obtained data were then graphed on a scatter plot and correlated using a Pearson product moment correlation analysis (reflected as the $r$-value) to illustrate any trends. Also, a coefficient of determination ($R^2$ value) was calculated in order to estimate the extent of one of the variable to directly influence the other hence demonstrating the degree of its clinical significance.

Results

3545 patients’ entries from prostate clinics were included in the Canterbury urological database. Of those, only 1346 (38\%) were found to have completed data sets to be analysed (serum PSA, IPSS, QoL score).

Out of those 1346 patients, 833 (62\%) were ultimately diagnosed with benign prostatic disease resulting in a response rate of 23\%. The mean age of men who attended the prostate clinic was 68 years old (range: 28 years to 107 years). A summary of the results is shown in Table 1.
Table 1. Summary of the correlation findings

<table>
<thead>
<tr>
<th>Relationships</th>
<th>r-value</th>
<th>R² Value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum PSA vs IPSS</td>
<td>0.1375</td>
<td>0.0189</td>
<td>0.00003</td>
</tr>
<tr>
<td>Serum PSA vs QoL</td>
<td>0.2070</td>
<td>0.0430</td>
<td>0.00001</td>
</tr>
<tr>
<td>IPSS vs QoL</td>
<td>0.6805</td>
<td>0.4632</td>
<td>0.00001</td>
</tr>
<tr>
<td>Age vs PSA</td>
<td>0.2404</td>
<td>0.0602</td>
<td>0.00001</td>
</tr>
<tr>
<td>Age vs IPSS</td>
<td>0.0710</td>
<td>0.0051</td>
<td>0.02145</td>
</tr>
</tbody>
</table>

An analysis using a scatter plot of the individual patient data points for PSA in relation to the IPSS showed a mild trend (Figure 1), with a Pearson product-moment correlation coefficient (r-value) of 0.1375 (p=0.00003): this demonstrates a mild statistically significant correlation between these two parameters. However, the coefficient of determination (R² value) was only 0.0189. This means that, each unit increase of serum PSA only influences 1.89% of the change in the symptom score. Similarly, for PSA vs QoL scores, there was a mild correlation found with the r-value of 0.207 (p=0.00001) (Figure 2). However the R² value was only 0.043, showing a mild 4.3% influence by PSA on QoL.

Figure 1. A scatter plot illustrating the relationship between PSA and IPSS symptom scores (N=833; r=-0.1375; R²=0.0189)
Figure 2. A scatter plot illustrating the relationship between PSA and QoL scores (N=833; r=0.207; R²=0.04)

There was a moderate correlation (Figure 3) found between the IPSS symptom scores and the QoL scores, with a r value of 0.6805 (p=0.00001) and R² of 0.4632, showing a convincing evidence that an increase in symptom score affecting 46% of the QoL score.

Figure 3. Illustration of the relationship between the IPSS symptom scores measured in the population and the QoL scores (N=833; r=0.6805; R² of 0.46)
Further analysis was done to evaluate whether the age of patient at presentation to clinic was related to PSA or IPSS. It was demonstrated that increasing age had a mild statistically significant relationship to increasing PSA, with r-value of 0.2404 (p=0.00001) but a low R^2 value of 0.0602. Age however was not shown to correlate to the IPSS score with r value of 0.071 (p=0.02145).

**Discussion**

The results indicate that serum PSA has only a mild association with symptom scores reported by patients with BPH, as suggested by the Tsukamoto study. However, the clinical utility of this finding is minimal as it is only able to influence <4% of the symptoms (IPSS and QoL) reported by patients, hence making it a poor predictor.

Because this study was done retrospectively, low completion rate of data sets and was a hospital based cross sectional study (not a true population cross section), it is only able to provide a snapshot of the situation and cannot clearly demonstrate the trend that PSA is related to symptom scores.

A further study which follows up the same BPH patients for a number of years to monitor any changes in the above study parameters would provide a stronger evidence for any relationships and/or associations. However, given the poor significance of the relationship between PSA and symptom scores, the usefulness of such a study being conducted is very much doubted.

No data on prostate volume measurements were available within the Canterbury urological database and therefore no correlation could be drawn between the patients’ serum PSA and prostate volume, or prostate volumes and symptom scores. Having prostate volume measurements would have enabled the study to examine its relationship to study parameters and analyse the correlations between them, thus providing some insight into contributing factors of the symptoms experienced by the patient.

In addition, there are also some inherent weaknesses in the IPSS as a measurement. While the total score is taken into account, individual breakdown of its seven different components are not. Because of this, actual severity of symptoms could be underestimated or overestimated.

Based on the results of this study showing a positive relationship between IPSS and QoL score, it could be suggested that increase in some categories of symptoms correlate more strongly with the quality of life that the patient experiences (e.g. nocturia affects the quality of life more strongly for some patients compared to having a weak stream of urine).

Furthermore, as subjective as symptoms and QoL are individual patient variability in completing questionnaires and personal biases are also present. For example, patients might be inclined to rate their symptoms worse than it actually is hoping that a procedure would be done or vice versa where they report less in order to avoid treatment.

There was no correlation between age and LUTS on the IPSS score in this study, or a clinically significant increase in serum PSA as age increases. This is in conflict with previously established evidence which suggest that increase in age, LUTS or serum
PSA are related to the increased development of such symptoms being reported on the IPSS.\textsuperscript{1,5,10} This discrepancy could be attributed to the weaknesses of this study with low numbers of patient data entries and poor "response rate" of the patients (23%), hence the skewed results towards a null correlation.

Apart from the result of this study, causes other than prostatic disease have to be considered in clinical practice when there is an increase in LUTS in older men. Such causes include bladder dysfunction and/or non-prostatic bladder outlet dysfunction. Examples of bladder dysfunction pathologies are bladder hypersensitivity/overactivity, and reduced detrusor muscle contractility. Instances of bladder outlet dysfunction apart from prostatic enlargement are the development of urethral strictures, poor urethral sphincter relaxation and pseudodysenergia of the sphincter due to neuropathy.\textsuperscript{12}

**Conclusion**

Although there was a statistically significant correlation found between PSA, IPSS and QoL scores, the influence that PSA has on IPSS and QoL are minimal. This strongly suggests that PSA would not be a good predictor for symptom scores and hence it is unable to accurately gauge the symptomatic severity in BPH patients. PSA is a widely used marker in clinical practice but often results do not lead to any consequences due to coexisting lower urinary tract symptoms. As such, the findings of this study are certainly relevant.

**Competing interests:** Nil.

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**References:**


Government funding of health research in New Zealand

Ian R Reid, Peter Joyce, John Fraser, Peter Crampton

Abstract

An analysis of levels of government health research funding carried out in 2008 demonstrated that funding in New Zealand, after adjustment for population size, was less than one-third of that in Australia, less than one-fifth of that in the United Kingdom, and about 10% of that in the United States. This was perceived to be a major obstacle to the recruitment and retention of clinical and academic staff in our hospitals and universities.

We have now repeated these analyses to determine the current state of these comparisons. From 2009 to the present funds for direct funding of research through the Health Research Council (HRC) have remained static at $54m. As a result of inflation of research costs (principally salaries) this represents a decrease of approximately one-quarter in the quantum of research funded by the HRC over the last 4 years.

Current funding rates in the comparator countries, population-adjusted and converted to NZ$, are 3.4-fold higher in Australia, 4.5-fold higher in the United Kingdom, and 9.7-fold higher in the United States. Urgent and sustained action is needed to correct these major disparities in government health research funding if the quality of academic and clinical staff in our public institutions is to be maintained.

Research provides a fundamental under-pinning of medicine, and has transformed clinical practice over the last 50 years. Maintaining familiarity with the research literature is an integral part of continuing medical education for all doctors, many doctors expect to remain research active as part of their clinical duties, and universities require research activity of their academic staff. As a result, opportunities to undertake research and its resourcing are key requirements for the staffing of our hospitals, general practices and medical schools.

Unfortunately, research funding in New Zealand has not always been internationally competitive. An analysis of levels of government health research funding carried out in 2008 demonstrated that funding in New Zealand, after adjustment for population size, was less than one-third of that in Australia, less than one-fifth of that in the United Kingdom, and about 10% of that in the United States,¹² a state of affairs that attracted international editorial comment.³

This is a major challenge to the recruitment and retention of clinical and academic staff in our hospitals and universities. The global financial crisis has been a major obstruction to increasing funding levels in New Zealand so, as that ebbs, it is timely to re-assess funding levels here and in the countries with whom we compete for our clinical and academic staff.
Methods
Data describing funding levels of the Health Research Council of New Zealand and the National Health and Medical Research Council, in Australia, were obtained directly from those organisations. Funding information relating to the National Institutes of Health (US), Medical Research Council (UK), and National Institutes of Health Research (UK), was obtained from those organisations websites. Population data for each country are based on recent census figures, accessed via Google.

Results

HRC funding 2007–2013—Figure 1 demonstrates the levels of funding provided to the HRC from 2007 to the present. The only significant increase occurred in the first year of the present government, when total funding of the HRC increased 11.2%, from $73.96m to $82.28m.

Figure 1. Government funding (from Vote Science) of the Health Research Council of New Zealand, 2007–2013

Note: The red area represents that portion of funds spent on administration within the HRC.

Of these figures, $3.19m was committed to management costs within the HRC, and the balance was disbursed as research grants. However, 37% of this research investment is paid in overheads to maintain research infrastructure within the host institutions (usually universities or hospitals). Thus, in the 2012-2013 financial year, only $53.6m was available for direct research support.

The figure demonstrates that the dollar amount available to support research has been static over the last four financial years which, in the presence of ongoing inflation, means that the quantum of research able to be supported has been steadily declining.
HRC figures prior to the capping of project grant budgets demonstrated an annual inflation of approximately 9%, and this is broadly consistent with data from the NHMRC which show that the average cost of a project has increased 62% over the decade to 2012, or 6.2% per annum. Thus, when these inflationary effects are taken into account, there has been a decrease of approximately one quarter in the quantum of research funded by the HRC over the last 4 years. This shrinkage in effective funding levels runs counter to staff numbers in our hospitals and universities over this period.

The Performance Based Research Fund census of academics in the areas of Medicine and Public Health, shows an increase in numbers from 523 full-time equivalents in 2006, to 723 in 2012, which is probably a reflection of the progressive expansion of undergraduate medical student numbers during this period.

As a result of these opposing trends, the success rates in HRC project grant funding rounds have progressively declined, reaching 7% in 2012. This contrasts with the situation in Australia, where progressive increases in total funding have maintained project grant success rates at about 23% between 2000 and 2011.

**International comparisons**—We have previously highlighted the much lower per capita funding rates of health research in New Zealand, and have updated those figures in Table 1. From 2007 to 2012, the NHMRC budget, which does not pay for institutional overheads, increased 19.6%, increasing the per capita annual investment in health research in Australia to NZ$41.

<table>
<thead>
<tr>
<th></th>
<th>HRC New Zealand</th>
<th>NHMRC Australia</th>
<th>MRC + NHS United Kingdom</th>
<th>NIH United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding per annum</td>
<td>NZ$ 53.6m*</td>
<td>Au$ 761m*</td>
<td>£1852m*</td>
<td>US$ 30.9b</td>
</tr>
<tr>
<td>Funding per capita</td>
<td>NZ$ 12.0*</td>
<td>NZ$ 41.0*</td>
<td>NZ$ 54.3*</td>
<td>NZ$ 115.7</td>
</tr>
</tbody>
</table>

*Excluding overheads.

In the United Kingdom, the government research investment through the Medical Research Council and the National Institutes of Health Research (the latter mostly channelled into research carried out in the National Health Service) increased 47.5% between 2007 and 2011, which maintained per capita annual funding in New Zealand dollar terms at NZ$54.

In the United States, funding of the National Institutes of Health increased 7.9% between 2007 and 2011, producing an annual investment of NZ$116 per head of population.

Thus, the disparities in government health research investment that we highlighted in 2008 have been maintained, with comparative funding rates being 3.4-fold higher in...
Australia, 4.5-fold higher in the United Kingdom, and 9.7-fold higher in the United States.

**Discussion**

In 2008, we documented static funding levels for the HRC over the previous 4 years which, in the face of substantial inflation in research costs, had resulted in a one-third decrease in the quantum of research funded over that time. This contrasted markedly with the patterns of health research investment in Australia and the United Kingdom, where there had been a long-term commitment to annual funding increases which had resulted in progressive growth of medical research activity in those countries.

As a result, New Zealand's per capita funding levels were only a fraction of those in the countries with whom we compete for staff to run our hospitals and medical schools. The government's capacity to actively address this problem has been curtailed by the global financial crisis, but that has also impacted heavily on the United States and the United Kingdom.

Despite this, and the substantial devaluation of their currencies, their per capita funding of health research in New Zealand dollar terms has maintained its substantial margin over what obtains here during the last 5 years.

The present analysis has only considered HRC funding. While this is by far the major source of government health research funding, there are also contributions from other sources including the Marsden fund, grants administered by the Ministry of Business Employment and Innovation, the Performance Based Research Fund, and support for Centres of Research Excellence.

The proportions of these funds that hitherto have come into health research are small, and do not invalidate the international comparisons since the comparator nations also have a diversity of funding sources (e.g. Australian Research Council, National Science Foundation in the United States, and the other constituents of Research Councils UK together with European Union funding in Britain) which also support health-related research.

Up to now, these non-HRC funds have explicitly not supported clinical research, the final common pathway between all discovery research and clinical care, so this area has been particularly disadvantaged in comparison to the United Kingdom were the National Institute of Health Research channels funds specifically to this area.

The progressive decline in grant application success rates in the HRC demonstrates that these other funding sources are not significantly addressing the imbalance between supply and demand for health research funds.

Thus, we can look back on a decade of diminishing investment in health research in New Zealand. During this time, investment in our hospitals has substantially increased, as have the number of academic staff working in medicine and public health. As a result, an increasing number of would-be researchers have been pursuing a progressively diminishing pool of resource to support research, resulting in funding rates in HRC grant rounds which are among the lowest in the world, and one-third of those in Australia.
Such low rates of grant success discourage individuals from submitting grants, but also discourage academics from working in New Zealand. The medical faculties in both Otago and Auckland suffer a steady loss of academics disgruntled by the research funding environment, who move overseas, most commonly to Australia.

We also face a continual battle to recruit academics, including expatriate New Zealanders, because there is the perception that moving to New Zealand necessitates abandonment of serious medical research activity.

Thus, the failure of successive governments to recognise health research funding as being an integral part of their total investment in health is compromising our ability to train the health professionals that the nation requires in order to build the health service that it needs. Academically able clinicians have no incentive to come and work in our hospitals and general practices.

The current crisis has arisen because there has been no indexing of research funding to the cost of research, nor to the size of the workforce that should be research-active. Structural changes need to be put in place to ensure that these parameters guide future levels of funding. Funding levels should be indexed to salary levels in our hospitals and universities, since these represent the bulk of the research costs.

Academic staff numbers have increased 40% over the last 6 years to meet the greater needs for health workforce training. Such increases are likely to continue over the next 4 years as we complete a programme of doubling medical student numbers.

If academic workforce numbers are to increase, then research funding must be recognised as an integral part of supporting that workforce. Changes in the academic and clinical workforces must be explicitly considered when determining the size of the HRC budget.

At a practical level, there is an immediate requirement for a 30% increase in HRC funding to match the substantial disinvestment which has occurred over the last decade as a result of cost increases.

While there was no increase in HRC funding in the 2013 Budget, there was the announcement of the 10 National Science Challenges, three of which have a primary focus on health. This could potentially produce an increase of $10m annually in health research funding, so is a very welcome addition to the support available. However, it falls well short of correcting the erosion in effective funding levels that has occurred over the last decade, and which will continue to occur due to ongoing inflation in research costs (particularly salaries), the expected increases in staff and student numbers in our medical faculties, and the growth in clinician numbers driven by ongoing population growth.

Assuming that the National Science Challenges are operationalized successfully, health research funding will still be $10–20m behind where it was a decade ago, and still be in need of an explicit plan to deal with growth in the sector.

For a long-term investment policy to be implemented, the nation needs to change its attitude to health research. It is not just a luxury which we can purchase in times of plenty. Rather, health research is an integral part of health training and practice which also provides financial returns to the nation through its support of the international marketing of our education and private healthcare sectors (including medical
tourism), and through its direct contributions to the agricultural and high-tech industrial sectors. This is the view that our competitor nations have taken and it is a view that we must adopt if we wish to retain our most able graduates and to enjoy the levels of healthcare and affluence that those nations accept as-of-right.

Competing interests: Nil.

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References:
Treating pseudomyxoma peritonei without heated intraperitoneal chemotherapy—a first look in New Zealand

Benjamin R Wheeler, Sumeet K Reddy, Diane Kenwright, John P Keating

Abstract

Background Pseudomyxoma peritonei is a condition characterised by dissemination of mucin-producing neoplastic cells throughout the peritoneal cavity. There are two pathological subsets, disseminated peritoneal adenomucinosis and peritoneal mucinosis carcinomatosis. Once a lethal disease, cytoreductive surgery combined with heated intraperitoneal chemotherapy (HIPEC) is challenging debulking as the standard of care.

Objective We present the first case series detailing the postoperative morbidity, mortality and survival outcomes of patients treated for pseudomyxoma peritonei by cytoreductive surgery without heated intraperitoneal chemotherapy by a single surgeon.

Design Wellington Hospital clinical databases were retrospectively searched. Inclusion criteria were a diagnosis of pseudomyxoma peritonei with a major cytoreductive operation with the intention of complete cytoreductive clearance. Exclusion criteria were palliative debulking operations and patient records not available for analysis.

Results 25 patients underwent cytoreductive surgery between June 1999 and July 2011. Mean follow-up was 43.5 months (1.5–138). Histological classification was DPAM for 13/25 and PMCA for 12/25. Complete cytoreduction (CC-0 and CC-1) was achieved in 21/25 patients. There was no 30 day mortality following primary cytoreduction. Six patients underwent subsequent debulking/cytoreductive surgery; one patient died following repeat surgery. Clavien-Dindo grade 3 or 4 complications occurred in 7/25 patients. Combined 5-year survival was 64%, 92% for DPAM and 33% for PMCA.

Conclusion Cytoreductive surgery alone may result in comparable survival outcomes to those achieved with combined surgery and HIPEC in selected patients, especially for patients with DPAM.

Pseudomyxoma peritonei is a condition characterised by dissemination of mucin-producing neoplastic cells throughout the peritoneal cavity. The originating tumour is usually a mucinous appendiceal neoplasm. Ovarian, urachal, pancreatic and colonic tumours have also been implicated. There are several pathological grading systems in use. The classification proposed by Ronnett et al is used at our institution.

Two distinct subtypes are recognised, the more benign disseminated peritoneal adenomucinosis (DPAM), and peritoneal mucinous carcinomatosis (PMCA), the latter of which follows a more aggressive course. An intermediate grade tumour has also been described with a prognosis that falls between DPAM and PMCA. More recently
similar two and three category systems have been proposed by Bradley et al.\textsuperscript{5} and Misdraji et al.\textsuperscript{6}

Pseudomyxoma peritonei is a rare condition, with an incidence of 1–2 cases per million population, and this rate may be increasing.\textsuperscript{7} The published literature over the last thirty years has been developed significantly, largely due to the efforts of Paul H Sugarbaker at the Washington Cancer Centre who established the first national centre of interest. The treatment that he has developed is for complete cytoreduction of all macroscopic disease within the peritoneal cavity, combined with heated intraperitoneal chemotherapy, usually with mitomycin C, prior to reconstruction of the gastrointestinal tract.\textsuperscript{8}

In spite of an increasing uptake internationally of this technique to treat pseudomyxoma peritonei, there is a paucity of evidence guiding and evaluating the individual components of this multimodal therapy for this indication. Most published accounts are case series. There are no randomised controlled trials of HIPEC for pseudomyxoma peritonei.\textsuperscript{9,10}

In New Zealand, the majority of cytoreductive surgery for this condition has been carried out at Wellington Hospital by a single surgeon. Following the adoption of the Sugarbaker procedure for a local patient in 1999, further patients from around the country have been referred for treatment.

A national consensus meeting involving medical and gynaecological oncologists was held and it was decided that there was insufficient evidence to support use of the heated intraperitoneal chemotherapy for this indication.

This case series reports the outcomes for the first 12 years of experience performing cytoreductive surgery with conventional chemotherapy alone for pseudomyxoma peritonei.

**Materials and Methods**

A retrospective analysis of all patients receiving cytoreductive surgery at Wellington Hospital was undertaken from 1997 to July 2011. All patients in New Zealand are registered with a unique code on the National Health Index. This database was used to identify patients’ date of death (where applicable) and their local General Practitioner.

Hospital databases were searched for operative and pathological coding and cross-referenced. Local electronic records were then searched to establish accurate coding. Paper records from Wellington Hospital and the referring hospital were then examined. The inclusion criteria were undergoing a Sugarbaker procedure for pseudomyxoma peritonei with curative intent, paper records being available for analysis and a minimum of 30 days of follow-up post-procedure.

Preoperative data including patient demographics, details of prior abdominal surgery, preoperative histology, and tumour markers (CEA, CA19-9 and CA125) were recorded. The theatre records, operation notes and histology were examined to determine length of operation, number and type of peritonectomies and visceral resections, and stoma requirement.

The Completeness of Cytoreduction Score (CCRS) was derived from the surgeon’s operative records.\textsuperscript{11} Postoperative ICU and hospital stay, morbidity and mortality, use of pre- and post-surgical chemotherapy, recurrence of disease, survival and follow-up were recorded and analysed.

The cytoreductive procedure is undertaken via a long midline incision from xiphisternum to the symphysis pubis, and involves stripping of peritoneum from up to six regions of the abdomen combined with visceral resections of involved organs as per the Sugarbaker procedure. Omentectomy, splenectomy, cholecystectomy and right hemicolecctomy are commonly performed.\textsuperscript{7} An ultrasonic surgical aspirator is used to facilitate the dissection, as previously described.\textsuperscript{12}
At the end of the operative procedure the peritoneal cavity was washed out with warmed 50% Betadine solution for 10 minutes in view of its known tumouricidal properties. This was followed by a saline lavage to remove all residual povidine-iodine solution. Prophylactic chest drains were placed if the diaphragmatic peritoneum was stripped. Intrapertoneal drains are placed according to the extent of dissection. All patients went to ICU postoperatively. Prophylactic TPN was initiated unless the dissection was limited.

Clinical follow-up for patients remaining under the care of Wellington Hospital consisted of three monthly clinic review and abdominopelvic CT scan at one year after surgery with further surveillance tailored to the patient’s individual situation. Patients from outside the Wellington region underwent postoperative care as determined by their local referring surgeon.

Follow-up length was determined from the time of the first procedure to the last clinical interaction recorded at the base hospital or with the General Practitioner. For deceased patients the cause of death, if not apparent from hospital records, was confirmed from the General Practitioner records.

Patients having a CCRS score of 3 with residual nodules exceeding 2.5 cm were considered as immediate relapses. Recurrence was defined by radiological evidence of recurrent disease, recurrent disease on a subsequent laparotomy or on clinical grounds, where further CT or operative intervention was inappropriate.

Data was extracted from the database using SPSS-17 software. Kaplan-Meier survival analysis was used to determine 5-year overall survival. The survival curves were compared using the log-rank test. T test was used to compare the demographics of the palliative and curative groups. Prospective ethical approval was granted by the New Zealand Multi-Region Ethics Committee.

Results

Thirty-nine patients were identified from database searching (see Figure 1); 14 patients were not included while 10 patients were deemed on clinical grounds to not be fit for a Sugarbaker procedure and underwent palliative debulking.

The mean age for the patients undergoing cytoreduction compared to the patients who underwent palliative debulking was 51.1 versus 61.8 years (P<0.01). The mean American Society of Anaesthesiologists (ASA) Score for the patients undergoing cytoreduction compared to the patients who underwent palliative debulking was 2.1 versus 2.6 (P=0.04). One patient was miscoded. Two patients left New Zealand shortly after their operation and were lost to follow-up. One patient’s referring hospital notes were not available for analysis and therefore excluded.

The age of the 25 patients who underwent cytoreductive surgery ranged from 32 to 66 years with a median age of 49 years; 16 of 25 patients were female. There was a wide range of methods of presentation. Eight patients had mucinous material within a ventral hernia. Five patients were diagnosed during laparoscopy or laparotomy for another indication. Eight patients presented with abdominal distension, pain or unexplained ascites. Three patients were identified from a workup for an ovarian mass. One patient was an incidental finding on abdominal radiology for another indication.
Twenty-two of the 25 patients had undergone prior surgery for their pseudomyxoma peritonei prior to their referral to Wellington Hospital for definitive surgery. 12 had undergone an exploratory laparotomy with diagnostic biopsy only (Prior Surgical Score=1), 10 had undergone laparotomy with some visceral resections (Prior Surgical Score=2). One patient underwent a second cytoreductive operation.

Of the 22 patients who had prior surgery, histology was available in 21. The preoperative histology was non-diagnostic in five cases, DPAM in nine and PMCA in seven. Following full histopathological analysis by an experienced pathologist, the preoperative histology was confirmed in 11 of 16 cases. Four of the preoperative DPAM cases were upgraded to PMCA, and one patient was downgraded from PMCA to DPAM.
In total, 13 patients were classified as DPAM and 12 as PMCA. The primary tumour was identified as appendiceal in 21, ovarian in one patient and unknown in three cases.

Characteristics of patients’ surgery, chemotherapy and in-hospital stay are detailed in Table 1. The extent and type of visceral and peritoneal resections are listed in Table 2. CCRS-0 or 1 was achieved in 21 of 25 patients. There were 17 Clavien-Dindo grade 3 or 4 complications, occurring in 7 of 25 patients, as shown in Table 3. There were no deaths within 30 days of primary cytoreduction.

Table 1. Patient characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>DPAM (N=13)</th>
<th>PMCA (N=12)</th>
<th>Overall (N=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age (range)</td>
<td>48 (32–65)</td>
<td>53 (42–66)</td>
<td>50 (32–66)</td>
</tr>
<tr>
<td>Male/Female</td>
<td>3/10</td>
<td>6/6</td>
<td>9/16</td>
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<tr>
<td>Mean body mass index (range)</td>
<td>27.5 (20.4–40.4)</td>
<td>28.9 (20.9–45.5)</td>
<td>28.2 (20.4–45.5)</td>
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<tr>
<td><strong>Treatment details</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number receiving preop. chemotherapy</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Median operating time (range)</td>
<td>6hr 59min (3hr 46min–12hr 38min)</td>
<td>8hr 23min (5hr 10min–12hr 22min)</td>
<td>8hr 0min (3hr 46min–12hr 38min)</td>
</tr>
<tr>
<td>Intraoperative units of packed red cells transfused (range)</td>
<td>4 (0–16)</td>
<td>7 (0–32)</td>
<td>5 (0–32)</td>
</tr>
<tr>
<td>Intraoperative units of fresh frozen plasma transfused (range)</td>
<td>2 (0–8)</td>
<td>4 (0–26)</td>
<td>3 (0–26)</td>
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<td>Median days in ICU (range)</td>
<td>2 (0–4)</td>
<td>1.5 (0–34)</td>
<td>2 (0–34)</td>
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<td>Median days on TPN (range)</td>
<td>8 (0–23)</td>
<td>7 (0–72)</td>
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<tr>
<td>Median hospital stay in days (range)</td>
<td>11 (5–45)</td>
<td>20 (10–92)</td>
<td>16 (5–92)</td>
</tr>
<tr>
<td>Postoperative chemotherapy</td>
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<td>7</td>
<td>10</td>
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Table 2. Operative characteristics

<table>
<thead>
<tr>
<th>Visceral resections and number of patients</th>
<th>Peritonectomies and number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectosigmoid</td>
<td>Anterior parietal</td>
</tr>
<tr>
<td>Right colectomy</td>
<td>Omectomy ± splenectomy</td>
</tr>
<tr>
<td>Total abdominal colectomy</td>
<td>Right and left subphrenic</td>
</tr>
<tr>
<td>Small bowel resection</td>
<td>Lesser omentectomy + omental bursa stripping ± cholecystectomy</td>
</tr>
<tr>
<td>Gastrectomy</td>
<td>Pelvic</td>
</tr>
<tr>
<td>Mean number of resections</td>
<td>Mean number of peritonectomies</td>
</tr>
<tr>
<td>1.3</td>
<td>22</td>
</tr>
</tbody>
</table>

Table 3. Clavien-Dindo postoperative complications

<table>
<thead>
<tr>
<th>Patient</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 3/4 combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Postoperative haemorrhage</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Ascites, pulmonary embolism</td>
<td>Postoperative haemorrhage</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Central venous line sepsis</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Respiratory distress, pleural effusion, UTI</td>
<td>Bile leak, hypotension</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Enterocutaneous fistula, pleural effusion</td>
<td>Respiratory distress, pulmonary embolism, wound infection</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>N/A</td>
<td>Pneumonia</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>N/A</td>
<td>Postoperative haemorrhage</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>8</td>
<td>17</td>
</tr>
</tbody>
</table>
Five patients underwent subsequent debulking procedures. Four of these were performed by the local surgeon caring for the patient. Two were performed by the cytoreductive surgeon. One of these procedures was an attempted salvage cytoreduction. This patient died subsequent to this operation. The patient presented acutely on postoperative day 19 under another surgeon’s care, emergency gastroscopy was performed and multiple gastric ulcers were seen oozing gelatinous fluid. The patient was taken to the operating theatre, where the gastric disease was deemed to be unresectable by the operating surgeon.

The 5-year overall survival was 64%. For the 13 patients with DPAM, the 5-year survival was 92%. The mean survival for patients with DPAM was 7.4 years. For the 12 patients with PMCA, the 5-year survival was 33%. The Kaplan-Meier survival curves are demonstrated in Figure 2. The mean survival for this group was 4.7 years. This difference in survival was compared using the log-rank test and was statistically significant with a P value of 0.01. Mean follow-up was 43.5 months (range 1.5–138 months).

**Figure 2. The Kaplan-Meier survival curves**

![Survival Functions](image)

**Discussion**

Pseudomyxoma peritonei is uniquely suited as a model of peritoneal surface malignancy due to its indolent nature and lack of metastatic potential. Due to its rarity, the evidence base for treatment relies to date on the accumulation of case
There have been no randomised controlled trials of the standard treatment regime and it has been suggested that these trials may never occur. In this study we have demonstrated that acceptable outcomes can be achieved without the use of HIPEC, particularly with the more pathologically benign DPAM. Reported figures from published case series vary widely dependent on many variables, including patient demographics, tumour characteristics and surgeon experience.

Exclusion criteria are rarely listed and poorly defined. Patients declined for definitive treatment are often not discussed in detail if at all. This renders decision-making regarding treatment suitability fraught with difficulty. At our institution we have made individual decisions on a case by case basis with a resultant lower mean age and ASA for the included patients.

A review of the literature shows a range of published outcomes. Overall survival ranges from 53–73%. DPAM patients consistently have better outcomes, with 5 year survivals of 70–90%. Morbidity is difficult to compare due to inconsistent definitions and reporting but range from 7–40%. 30 day mortality is 1.6–4.4%. The results from this series are consistent with these figures without the use of HIPEC. The use of chemotherapy was idiosyncratic as most patients were referred from outside the Wellington Hospital catchment area. These patients preoperative and post-discharge care was determined by their referring surgeon and the local Oncology Service.

There are limited comparisons of cytoreductive surgery with and without HIPEC in the published literature. In a case series of 60 patients by Hadi et al from St George’s Hospital in New South Wales, Australia, a survival advantage was conferred from the use of HIPEC. This series involved only 23 patients with pseudomyxoma peritonei. The non-HIPEC patients were from the beginning of the series prior to HIPEC becoming available. This result may be confounded by the learning curve involved in cytoreductive surgery.

Chua et al have published the outcomes for the 2,298 patients registered in the recently established Peritoneal Surface Oncology Group International registry, of which some results have been previously reported. 11% of these patients did not receive intraperitoneal chemotherapy, the reasons for which are not elaborated upon. Univariate analysis showed these patients to have a poorer progression-free, but not overall survival. As stated by the authors, this suggests that cytoreduction is more important than intraperitoneal chemotherapy for achieving optimal outcomes.

The high survival rate that can be achieved for DPAM patients without the use of intraperitoneal chemotherapy would suggest that this treatment modality may be an unnecessary burden. We compared preoperative histology, where available, to the definitive histological diagnosis from post-cytoreductive specimens, but there was insufficient correlation to suggest that preoperative biopsy might be sufficient to separate out PMCA patients for consideration of a more aggressive strategy.

If it was accepted that patients with DPAM could be safely excluded from intraperitoneal chemotherapy, combination strategies involving preoperative histology and peritoneal cytology, radiological findings and frozen section analysis may provide
enough certainty to target the chemotherapeutic regimes towards the patients affected by the unfavourable PMCA.

The centralisation of treatment into specialised peritoneal surface malignancy units has allowed for enough experience in a rare condition and it’s operation treatment for impressive results such as those achieved by Youssef et al.\textsuperscript{21} This maximisation of surgical performance is an eminently suitable setting for the first randomised trials of pseudomyxoma peritoneal treatment to occur.

**Competing interests:** Nil.

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“Good intentions, but inadequate practices”—sun protection in early childhood centres, a qualitative study from New Zealand

Mary Duignan, Louise Signal, George Thomson

Abstract

Aim To examine sun protection policies and practices in New Zealand teacher-led early childhood centres, identifying underlying factors and key steps to support effective sun protection.

Method This qualitative study used a review of sun protection information on the New Zealand Ministry of Education early childhood “ECE Lead” website; 10 key informant interviews; and a review of sun protection policy documents provided by key informants.

Results The data indicated a lack of comprehensive sun protection policies and practices; while sunscreen and hats were focused on, sun protective hats, role-modelling and protective clothing were frequently not emphasised. Key underlying reasons for these failures were: (i) insufficient emphasis on sun protection in government early childhood regulatory and monitoring processes, due to focusing on other priorities, and (ii) centre staff lacking access to sun protection information.

Conclusion Recommendations include: (i) that early childhood regulations specifically include sun protection; and (ii) easy access for staff and parents to appropriate evidenced-based information about sun protection. The implications for other countries are that, despite written sun protection policies, and motivated staff, factors such as insufficient emphasis on sun protection in regulations, and inadequate access to information can undermine the quality of sun protection in early childhood centres.

Skin cancer, the most commonly diagnosed cancer in New Zealand, was estimated to have cost NZ $57 million in associated health care costs in 2006. The 2010 New Zealand melanoma incidence rates per 100,000 were 43.4 for men, and 36.1 for women, with 2341 new melanoma cases and 324 melanoma deaths. These are amongst the highest rates worldwide. There are an estimated 67,000 new non melanoma skin cancer (NMSC) cases annually, and around 100 deaths.

Ultraviolet radiation (UVR) is a known carcinogen and in high UVR areas such as New Zealand, excessive UVR exposure is estimated to cause over 90% of skin cancers. While lighter skin colour increases skin cancer risk, eye damage and immunosuppression occur irrespective of skin colour. Vitamin D is produced in response to UVR exposure and there is an increasing focus worldwide on Vitamin D and health.

While evidence shows that Vitamin D is essential for bone health, recent research suggests a link between low Vitamin D levels and diseases such as cancer.
on the relationship between sun exposure, Vitamin D levels and health is complex, and there is debate as to what is the optimum level. Obtaining adequate Vitamin D requires a balance between sun exposure and sun protection.

As UVR exposure is a major skin cancer risk factor, reduction of excessive exposure is the key prevention strategy. However, skin cancer’s prolonged latency period means it may take many years to establish whether prevention programmes are effective.

Australian research suggests prevention efforts are effective. Evaluation of the SunSmart programme in Victoria, Australia, showed decreased melanoma incidence rates, giving an estimated return of AU$2.30 per dollar spent. Evidence supports the particular importance of sun protection in early childhood, as excessive childhood UVR exposure increases melanoma risk later in life.

The Cancer Society of New Zealand’s (CSNZ) SunSmart Schools Accreditation Programme (SSAP), provides accreditation to primary and intermediate schools that meet best practice sun protection criteria. Evaluation of the SSAP after 4 years, compared to baseline, showed a statistically significant increase in the number of sun protection criteria schools met. Sunscreen use, hat wearing and a requirement to play in shade if not wearing a hat, showed the greatest increase. There is no similar New Zealand programme for early childhood services.

Children attending Early Childhood Centres (ECCs) risk excessive UVR exposure. As a signatory to the 1989 United Nations Convention on the Rights of the Child, New Zealand has the responsibility to ensure effective sun protection for children in ECCs. There is limited international or New Zealand research on children’s sun exposure in ECCs. Available research suggests that while exposure is variable, levels can potentially be excessive, with the quality of shade an important determining factor.

While international research indicates that ECCs with written policies report better sun protection practices, ineffective practices do occur despite having a written policy. A lack of in-depth understanding by staff of the risks of excessive sun exposure, an over-reliance on sunscreen, and children not consistently wearing sun protective clothing and hats has also been identified.

Recent Australian research identified the need to understand the barriers to effective sun protection in ECCs. Given the lack of New Zealand research in this area, this study aimed to examine sun protection policies and practices in New Zealand teacher-led early childhood centres, identifying underlying factors and key steps to support effective sun protection.

New Zealand has a diverse early childhood care sector where infants and preschoolers attend services licensed by the Ministry of Education. In 2012, there were over 196,500 enrolments in licensed early childhood services. Over 178,000 (89%) of these enrolments were in ECCs, with the remainder being in home based care. In 2012, 76% of ECCs were teacher-led (50% of staff required to be qualified), with over 153,900 enrolments, the remaining 24% were parent-led (no qualification requirement).
Potentially, there could be significant differences in the underlying factors influencing sun protection in teacher-led versus parent–led ECCs, as qualified teachers may have formally studied sun protection. Therefore, it was decided to limit the focus of the research to teacher-led centres which the vast majority of children attend.

Method

The study involved three stages detailed below: a review of sun protection content on the New Zealand Ministry of Education (MoE) early childhood “ECE Lead” website; 10 key informant interviews by the lead researcher (MD); and a review of sun protection policy documents provided by key informants.

The research was approved by the ethics process of the Department of Public Health, University of Otago, Wellington, New Zealand (July 14, 2009). An expert advisory group consisting of four experts, two in public health, one in early childhood care, and one in sun protection research, provided advice.

Review of Ministry of Education early childhood website

In September 2010, the “Lead” section of the MoE early childhood website, was searched systematically for sun protection content, using the website menus and search function using the key words “sun protection”.

Key informant interviews

As the most productive way of getting information on sun protection policies and practices in teacher-led ECCs, and identifying underlying factors for practices, the Advisory Group recommended a key informant approach recruiting ECC professional development advisors. These are responsible for groups of ECCs, working with ECC staff in each centre to ensure correct policies and practices are implemented.

Professional development advisors visit centres on a regular basis to monitor care, provide advice, and ensure centres are meeting licensing requirements. Their positions enable them to get a much more informed view of policies and practices across the sector than could be obtained by interviews at the centre level.

Interviewing staff working in individual ECCs was considered but rejected, as the information gained would be limited to a small number of ECCs. A survey or observations of ECCs was not considered appropriate as a preliminary step in investigating policies and practices, because of the complex nature of policy implementation in this field.

“Purposeful sampling” was used to recruit key informants able to provide in-depth information about sun protection policies and practices in a range of teacher-led ECCs. Data collection continued until data saturation was reached at 10 interviews. The inclusion criteria were: professional development advisors working with groups of teacher-led ECCs.

The key informants were specifically chosen because they had extensive ECCs experience, and detailed knowledge of the day-to-day activities of the centres they were responsible for. Most respondents had over 15 years’ experience in a variety of ECC roles including teaching.

Nine respondents were from the following organisations: three commercial nationwide ECC chains: a nationwide not-for-profit provider; and three small, and two large kindergarten associations (independent but with substantial government funding). Additionally, a regional health service early childhood advisor was recruited. The respondents were working with a combined total of over 90 centres, ranging from small centres to one with over 160 children.

The organisations the respondents worked with had over 660 early childhood care licences, catering for over 32,800 children. The geographical spread was from Northland to Southland including major cities and provincial towns.

A semi-structured interview schedule was pre-tested with two ECC managers and a health promoter. Hour long telephone interviews were conducted between April 2009 and May 2010.
Data analysis

All interviews were recorded and transcribed. An established approach for analysing qualitative data was used, whereby the data was organised and reported according to the areas that were explored. As the interview schedule covered the main categories of interest, collating the data for each category was straightforward, with the data in each transcript located under the relevant question.

Thematic analysis was used to analyse the data. The research aimed to understand the real life situation, rather than working from or testing a particular theoretical viewpoint. Therefore, an inductive “data driven” approach was used to identify themes, with the data determining the codes rather than pre-determining them.

In each category the range of responses was assessed; codes were developed and data coded; the coded data was analysed in each category, and across categories, to identify underlying themes. Being open to divergent information that emerged from the data was important. The themes are reported under each heading in the results section. The coding and analysis was conducted by the first author (MD) with the other authors checking each stage and providing suggestions for alternatives.

Respondents were asked to provide copies of their organisation’s sun protection documents which were evaluated against the CSNZ model ECC sun protection policy. The study was not attempting a nationwide survey of policy documents. However, the respondent’s policies provided an example of current polices used by some ECCs and enhanced understanding of the respondent’s comments.

Results

Review of Ministry of Education Early Childhood Website

The website showed that ECCs were governed by the Education (Early Childhood Services) Regulations, 2008, administered by the MoE. Regulation 45 required services to provide, “suitable and sufficient space for a range of activities…to support safe and healthy practices by the service provider”.

Regulation 46 required services to, “take all reasonable steps to promote the good health and safety of children enrolled in the service”. Licensing criteria cover a range of health issues including; hot water temperature and toileting facilities. However, there were no specific sun protection/shade licensing criteria.

While all ECCs need a licence, the situation differs for new, versus established ECCs.

Requirements when establishing a new ECC

To obtain a licence, new ECCs require a satisfactory health report from their local public health unit (PHU). The health report requires a sun protection policy. For new ECCs the website provided a health and safety policy template (including sun safety), and referred to the CSNZ for information. Sun protection and shade were very briefly mentioned several times in the information about developing a new ECC.

Requirements for established ECCs

Established ECCs may have been licensed for many years, but there is no requirement for an updated health report, although the MoE can require one, if concerned. The MoE are currently re-licensing centres that were licensed prior to the new regulations coming into effect on 1 December 2008.

Re-licensing includes a MoE inspection, (to ensure adherence to new licensing criteria); however, there are no sun protection licensing criteria and an updated health
report is not required. The website review did not identify any detailed information about sun protection measures.

**Key informant interviews**

**Regulation of ECCs**—Respondents reported that all their ECCs had written sun protection policies/procedures and staff took sun protection seriously. While half did not think implementing sun protection was difficult, several later described problems implementing consistent practices.

A common theme was the reported lack of focus on sun protection by those regulating and monitoring ECCs. Respondents reported that during the MoE visit prior to granting a licence, sun protection was not usually focused on. One respondent involved in licensing for twenty years commented “at licensing they [the MoE] may ask to see our sun safe policy. I’ve had that happen twice… so it is not very often”. No respondents mentioned the PHU health report prior to licensing.

At the time of this research, the Education Review Office (ERO) was monitoring ECCs through two to three yearly visits, followed by a written report. Most respondents indicated ERO might ask about sun protection during a visit, but this was not routine.

**Sun protection measures**—Eight respondents reported children were required to wear hats; two reported hat-wearing was encouraged but not required. Several acknowledged that hat wearing was not actually enforced, indicating a gap between policy and actual practice. Parents usually supplied the hat and while “sun protective hats” were “encouraged”, almost all centres allowed caps.

A key theme was less emphasis on sun protective clothing compared to hats. Most respondents reported spare clothing was available; two respondents indicated sunscreen may be applied when the shoulders were not covered, rather than extra clothing; one respondent highlighted concern to not impose staff views on parents:

> One thing on the clothing is that we’re seen as not trying to make judgments on what the parents have decided that the children can wear …. [therefore] it would be just a matter of the hats and sunscreen.

A further theme was inconsistent management of sunscreen. This ranged from systematic application at specific times, (more common at full day centres), to teachers applying sunscreen to individual children when necessary. Respondents reported that children were expected to arrive with sunscreen on, even as early as 7am.

Most respondents stated that skin colour did not influence sun protection, with statements such as, “I would hope all children would be treated the same”. However, several suggested teachers may particularly focus on fairer skinned children.

The complexity of shade was another key theme. Several respondents indicated individual centres funded shade projects. Some respondents acknowledged that in low social economic status (SES) areas fundraising was difficult, so the central organisation helped fund shade structures. Some respondents reported inappropriate shade had been erected due to lack of specialist shade knowledge.
Respondents from larger organisations with specialised staff generally reported fewer shade development problems. Most respondents reported shade sails were removed during winter; while solid structures provide outdoor winter play space.

Most respondents reported that the regulatory requirement that children can move easily from indoor to outdoor prevented scheduling of indoor activity to avoid peak UVR exposure.28 However, lunch was generally inside or in shade and some full day centres had a rest time. Most respondents considered sun protection did not compromise physical activity.

A theme of inconsistent role-modelling was identified. Several respondents reported that while staff role-modelling was important, in practice it was variable and could be resisted:

they’re [teachers] not keen on it,… they’ve never had to do it, because ‘don’t tell me what to do’, ‘because I have hat hair and I don’t want to have hat hair’ … ‘I’m not normally outside at that sort of time, so look, it won’t matter if I duck in and out.’

Sun protection information for parents and children—Co-operation and commitment from parents was emphasised, and all respondents reported sun protection information was given to parents and incorporated into children’s learning.

Staff access to information—Difficulty accessing sun protection information was a key theme. For some, access to information was haphazard; and limited to the media:

“It would be good for them [teachers] to have more knowledge; we’ve got nearly a hundred teachers. I’m sure that they’re not all sun aware, but I haven’t got that knowledge to be…telling them”.

When specifically asked, all respondents reported the MoE had not provided any specific sun protection information. While all respondents had some knowledge about Vitamin D, typically from the media, most had not discussed Vitamin D with ECC staff.

Key steps to improve sun protection

Better access to information was an important theme, identified by five respondents as a key step to improve sun protection. Many respondents thought more information would support staff to confidently promote sun protection to parents:

The way to improve their ability to articulate the importance of sun safety would be to give them some good research and facts about it… if teachers have got facts behind them, they’re more than happy, but they don’t want to just go talking off the top of their head.

A key theme was the emphasis on raising awareness rather than the regulations being overly prescriptive. Four respondents recommended the regulations specifically include sun protection and/or shade, several were unsure, and two thought regulation could be unhelpful. When prompted, most respondents supported a sun protection accreditation programme, similar to the SSAP.

Analysis of sun protection policies/procedures

Of the nine policy documents provided by seven respondents only two met all recommendations of the CSNZ model policy.26 While all policies included sunscreen, five lacked a statement about the time period the policy covered. While all policies included hat wearing, four did not require hats to be sun protective. Three policies did not mention clothing. Staff role-modelling was required in seven policies. Many
policies lacked detail on sun protection measures; e.g., on sunscreen sun protection factor ratings.

Generally, the practices the respondents reported were more comprehensive than their written policies. However, some practices included in policies were reportedly not consistently implemented, e.g. role-modelling. More research would be needed to determine whether this is generally representative of New Zealand ECCs.

Discussion

Findings and analysis

While the respondents generally reported many positive sun protection measures were being implemented, the policies and practices fell short of best practice. Overall, there was greater awareness and action in regard to hats and sunscreen, compared to sun protective clothing; a similar finding to an Australian study. The key underlying factors identified as influencing sun protection policies and practices were: (i) that the Education (Early Childhood Services) Regulations 2008, did not include specific licensing criteria in regard to sun protection; (ii) the processes in regard to ECCs that obtained their licence prior to 1 December 2008, seemed unable to ensure sun protection policies were consistent, comprehensive, evidence-based and reviewed regularly; (iii) inadequate access by ECC staff to appropriate information; (iv) in some cases staff resistance prevented consistent role-modelling.

The research findings were consistent with the literature, particularly in regard to; hat wearing, policies being incomplete, and the overemphasis on sunscreen.

Research shows appropriate sun protection knowledge has a significant influence on ECC staff’s sun protection practices. This research suggests staff may lack access to background information to support their practice, with inadequate practices occurring despite good intentions.

The lack of information about Vitamin D is concerning, as increasing skin pigmentation increases the UVR exposure required to make Vitamin D. Respondents emphasis on all children being treated the same irrespective of skin colour, and children having sunscreen applied before 7am, could potentially influence the Vitamin D levels of very dark skinned children.

The Ministry of Health suggests that in the future sun protection advice may increasingly need to vary between groups, rather than being a standardised message for all. While ECC staff may be highly motivated, unless they are well informed they may implement ineffective practices.

Role-modelling teaches and reinforces behaviour. Lack of consistent role-modelling gives conflicting messages, potentially undermining children’s understanding of sun protection by expecting children to, “do as I say, not as I do”.

There did not appear to be a clear, consistent process for established centres’ sun protection policies and practices to be regularly reviewed by PHUs.

The absence of sun protection/shade licensing criteria potentially reduces the focus on the hazard of UVR exposure. This may partially be because of skin cancer’s long
latency period, which may diminish awareness of the seriousness of the problem, thus contributing to sun protection practices being less than ideal.

**Strengths of this study**

Strengths include: the research was informed by an expert advisory committee; the use of multiple data sources; the substantial combined experience of the 10 respondents, the range and geographical spread of the organisations, and the semi-structured interview format. The information sheet detailed the lead researcher’s sun protection background which may have assisted recruitment by enhancing the research credibility.

Further research could use direct observation of ECCs and surveys of ECC staff to test the results we found and further explore practices. A wider review of ECC sun protection policies would help to indicate national patterns.

**Policy and practice implications**

While this is a small study, the lack of emphasis on sun protection in the regulations was concerning and potentially impacts on the entire New Zealand early childhood care sector. Inclusion of sun protection licensing criteria would ensure sun protection policies and practices are regularly externally reviewed when ERO reviews ECCs compliance with licensing criteria. This would place sun protection higher on the agenda of those responsible for regulating, monitoring and running ECCs.

Respondents specifically identified that increased knowledge would raise staff confidence when discussing sun protection with parents. Clearly, ECC staff need easy access to appropriate sun protection information. While from a health promotion perspective increased knowledge does not automatically lead to behaviour change, knowledge has been shown to be an important factor influencing sun protection practices in this setting.

A multifaceted approach, combining the suggested policy changes with increased knowledge, may potentially lead to a heightened focus on sun protection. Government involvement in regulating ECC sun protection is necessary for both health and fiscal reasons: the responsibility to protect children from excessive UVR, and the fiscal responsibility to reduce unnecessary future health expenditure on a largely preventable disease.

The research identified a lack of evidence, both nationally, and internationally, on sun protection in ECCs. More research is needed to establish the present situation in more detail, and develop and evaluate strategies to support sun protection policies and practices.

Ideally research would look at the UVR exposure levels of children in the ECC setting, current policies and practices, and parental and staff attitudes to, and knowledge of, sun protection.

**Conclusions**

This research suggests ECC teachers need more support to consistently implement best practice sun protection. These findings are consistent with the evidence...
internationally which suggests sun protection practices and policies in ECCs are not ideal.

The research also highlights the importance, in New Zealand and internationally, of having effective regulating and monitoring processes which ensure effective, comprehensive policies. Even though there appeared to be a high level of awareness by staff of the need for sun protection, key changes including a regulatory emphasis on sun protection and improved information for staff may potentially significantly improve sun protection practices in ECCs.

International research indicating that skin cancer prevention programmes help reduce skin cancer,8,9 and save health care costs,10 support the importance of reducing excessive UVR exposure in the ECC setting. Thus, a small investment now to support ECCs to implement best practice sun protection would likely produce long term savings in costs associated with skin cancer.

Ensuring that evidence-based sun protection practices in ECCs are consistently implemented is a cost-effective opportunity to promote a healthy future for our children.

Competing interests: For the sake of complete disclosure, the lead author has worked for Cancer Society of New Zealand (CSNZ) in the past.

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References:


Smokefree outdoor areas in New Zealand: how far have we come?

Louise Marsh, Lindsay A Robertson, Heather Kimber, Martin Witt

Abstract

Aim This research examined 1) the extent and nature of smokefree outdoor area (SFOA) policies in New Zealand, and 2) the process of developing, implementing and promoting compliance with a SFOA policy.

Method An online survey was carried out with 43 of the 67 Local and District Councils, supplemented by other means. The survey assessed whether the council had a smokefree policy and if so, what locations the policy covered, the process of developing, implementing and promoting compliance with a smokefree policy, the challenges associated with policy development, and plans for future policies.

Results SFOA policies had been enacted by a total of 47 councils, 31 of which responded to the survey, covering a combination of playgrounds, sports grounds, parks, and council run events. Lack of public health priorities, and resources were common issues preventing other councils from developing a policy. Letters from health advocacy groups strongly influenced councils to introduce SFOA policies. The biggest barriers to implementation of SFOA policy were time and resource commitment required from staff, and the financial cost for signage. Voluntary compliance was used to ensure compliance with the policies; no councils used active enforcement. Few councils have evaluated their policies, but most felt that it had been successful.

Conclusion Health groups can take heart that their advocacy is resulting in policy change within local government. However, continued efforts are required to undertake evaluations of current SFOA policies which may provide evidence to extend SFOAs, to assist those councils without a SFOA policy to develop one, and to increase funding for implementation.

Following an inquiry into the tobacco industry in New Zealand (NZ) and the consequences of tobacco use for Māori,1 in March 2011 the Government endorsed a goal of a smokefree NZ/Aotearoa by 2025.2 This is not a ban on tobacco, but is a goal to reduce the prevalence of cigarette smoking to under 5%.

There is research to suggest that smokefree environments may reduce the exposure of young people to smoking, thereby counteracting the view that smoking is a normal adult behaviour. Consequently, they are potentially less likely to take up smoking themselves.3-6 De-normalising tobacco smoking is one of the main goals of smokefree outdoor area (SFOA) policy. Additional benefits of these policies include that they assist those quitting by reducing exposure to other people smoking, potentially preventing relapse; reduce littering and environmental impacts; and empower non-smokers to speak up when people smoke in smokefree areas.7, 8
Several countries have implemented outdoor smoking restrictions and these have been successfully implemented in a range of outdoor areas including parks, playgrounds, beaches, bus shelters, sports fields, building entrances and outdoor dining areas.

Smokefree outdoor areas are an emerging issue in tobacco control and public policy in NZ. The current smokefree legislation mandates that the grounds of schools and early childhood centres must be smokefree at all times, however, some District Health Boards and tertiary educational institutions have also adopted this policy for their own outdoor areas with no legislative requirement. Local authorities have also taken this issue on themselves.

A literature review and interviews with local authorities in 2008 found that there had been an increasing trend of adoption of ‘educative’ SFOA policies since 2005, with 23 of the 73 local authorities having a policy for at least one smokefree playground. However, policies in the past have been confined to the ‘greenspaces’ of parks, playgrounds and sports grounds. Since then, there has been significant public support shown for restricting smoking in various outdoor settings in NZ and internationally.

As the managers of a large amount of public open space where communities live work and play, local authorities have the potential to help reduce the visibility and acceptability of smoking in public places, thereby contributing to the smokefree 2025 goal. However, SFOA policy presents a new challenge to local authorities. Unlike traditional council bylaws, the SFOA policies enacted in the past have been voluntary rather than enforceable, relying on public awareness and smokers choosing responsibly not to smoke. As such, these policies may be perceived by councils as difficult to implement and to measure their effectiveness.

In some Australian states such policies are commonly backed by legislation and therefore allow for enforcement. However, in NZ the emphasis has been on voluntary compliance amongst those who smoke, rather than enforcement.

An increasing number of local authorities appear to be actively recognising their role in promoting smokefree communities. With the growth in councils adopting SFOA policies, there is a need to assess the nature and extent of these policies nationally, and to better understand the process of policy implementation.

This research seeks to extend the work undertaken by Hyslop and Thomson (2009) and reports the results of a survey designed to assess the current extent of SFOA policies in local authorities throughout NZ.

The survey covers the development and implementation of policies, barriers, and evaluation or review processes. This will provide an overall indication of the extent that councils are implementing their current smokefree policies and their readiness to consider policies that are beyond the greenspaces of parks, playgrounds and sports grounds.
Methods

Participants and recruitment

Each of the 67 Local Councils (LC) and District Councils (DC) was invited to take part in an online survey between November 2012 and February 2013. Regional Councils were not involved in this study. Details of the councils were obtained from the Internal Affairs Local Government website (www.localcouncils.govt.nz). Councils were initially contacted by telephone to identify the person considered to have the most knowledge of smokefree outdoor areas.

The nominated staff member was then contacted by telephone, the purpose of the study was explained, and the researcher verified whether they were the most appropriate person to participate. If they agreed to participate in the study, they were sent an email with a link to the online survey. Those who did not respond to the email were followed up initially by telephone, then by a reminder email.

For councils which did not respond to the survey, policies were collected from council websites, where available. Where this was not possible, the council was contacted for a copy of their policy if they had one. These policies were examined to assess what locations were covered.

In some cases, it was difficult to ascertain whether the policies covered all of a particular location, e.g. all parks in the region, or only some of these. Therefore, it has been assumed that all areas of a particular type were covered unless otherwise stated.

Ethical approval to conduct the study was granted by the Ethics Committee within the Department of Preventive and Social Medicine at the University of Otago.

The survey instrument

Research literature on smokefree policies in outdoor areas was consulted to inform the general content of the survey, as well as a recent similar survey with councils in New South Wales, Australia. The online survey was created and administered using Qualtrics survey software (www.qualtrics.com).

The survey included 40 questions and took participants an average of 20 minutes to complete. Items were a combination of multiple choice, sliding scale and free-text questions. Participants had the option of not answering every question and some questions allowed for multiple response options.

The survey included questions about the respondent and the council they were employed by, whether they had a SFOA policy, what areas the policy covered including traditional greenspaces, as well as locations outside greenspaces, the process of developing, implementing and promoting compliance with their SFOA policy, the challenges associated with policy development, and plans for future policies.

Smokefree outdoor areas were assessed through an initial question about whether the council had implemented a SFOA policy, and if so the extent of their policy, date of adoption, whether it was available via the internet, whether the policy is part of the councils Long Term Plan (LTP) and whether the council had cited the Government’s goal of a smokefree NZ by 2025.

We assessed policy development and the factors that contributed to implementation of the policy, and respondents were asked to choose from a list that included: results of annual council surveys, advocacy from health groups and SFOA policy development from neighbouring councils. Respondents were also asked to identify those in roles that were instrumental in developing and implementing the policy.

Respondents were asked about the activities which had taken place as part of the policy implementation, the challenges encountered during the implementation process and the associated costs. Information regarding funding from external providers was also gathered.

Questions were also included regarding how the policy was managed operationally—e.g., whether voluntary or actively enforced. This also included information regarding promotion of the policy to the community—e.g. signage or other communication methods.

Councils were also asked if their policy had been evaluated in any way and whether the policy would be reviewed. To assess any development of SFOA plans the councils were asked which locations they were intending to cover in future policies.

Those councils which were in the process of developing a policy were also asked questions about policy development, implementation and promotion, and compliance with the policy. Those councils with no policy were asked a question about what has prevented them from developing a SFOA policy.
Data analysis

Descriptive statistics are provided for all variables, including both sample characteristics and key measures. The standard test for assessing the difference between two proportions was used to compare responding and non-responding councils.

All significance tests were two-sided, with $p<0.05$ considered statistically significant. All statistical analyses were performed using Stata v10.1 software. The first author (LM) coded responses to the open-ended questions using Microsoft Word software. Codes were then grouped into meaningful patterns so as to understand the themes that ran through the answers.

Results

A total of 43 of the 67 councils responded to the survey; giving a response rate of 64%. The councils were generally representative of councils in NZ in terms of the type of council, location and population size, however significantly more South Island councils took part (Table 1).

Table 1. Council and participant characteristics

<table>
<thead>
<tr>
<th>Council characteristics</th>
<th>Took part in survey</th>
<th>Did not take part in survey</th>
<th>All NZ councils</th>
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<td>% (n=43)</td>
<td>% (n=24)</td>
<td>% (n=67)</td>
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<td>Type of council</td>
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<td>16.7 (4)</td>
<td>20.9 (14)</td>
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<tr>
<td>District</td>
<td>62.3 (33)</td>
<td>37.7 (20)</td>
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<td>41.9 (18)</td>
<td>64.2 (43)</td>
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<tr>
<td>South Island</td>
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<td>25.0 (6)</td>
<td>35.8 (24)*</td>
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<td>Participant characteristics</td>
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<td>% (n=43)</td>
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<td>Years employed by council</td>
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*p<0.05.

Many of the participants were employed in the area of parks and reserves or policy and planning. Property, Environment and Parks or Recreation managers were the most common occupations of respondents.

Over half the participants had been employed at their current council for 6 or more years, and over half had been in their current role for 1 to 5 years (Table 1).

Of the 43 councils who responded to the online survey, 31 had a SFOA policy in place and 4 were developing a policy (Figure 1). Of the 24 non-responding councils, 16 were found to have SFOA policy.
Councills with a policy

The policy—For the 31 councils with a policy, the first council adopted their smokefree outdoor areas policy in 2006, with a steady number of councils adopting policies each year following this. In 2012, 6 new councils adopted smokefree outdoor area policies.

Over one-third of the councils have their policy available on the internet for the public to view, 17% of councils have included the policy in the long-term plan, and 17% have cited the Government’s smokefree 2025 goal in their plans.

The locations covered by the SFOA policies of these 31 councils are shown in Table 2. The most common locations to be covered by the policies were greenspaces of playgrounds, sports grounds, parks, as well as council events, and entrances to council owned buildings.

The percentage of council policies which cover these locations currently and in the future, are presented in Figure 2.

Additional locations reported as being covered were swimming pools, public toilets, and council vehicles. Eight councils have considered extending their SFOA policy further, mainly to include parks, sports grounds and council events. These can also be seen in detail in Table 2, and graphically in Figure 2.
Table 2. Council SFOA policies for the 31 councils who responded to the survey and had a SFOA policy, and the 16 non-responding councils who had a SFOA policy

<table>
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<tr>
<th>Council</th>
<th>Playgrounds</th>
<th>Parks</th>
<th>Sport grounds</th>
<th>Beaches</th>
<th>Entrance to council buildings</th>
<th>Entrances to buildings used by public</th>
<th>Outdoor seating on pavements</th>
<th>Outdoor seating for premises with food or alcohol licenses</th>
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<th>Other pedestrian areas</th>
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*Did not take part in survey (n=16)**
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<th>Parks</th>
<th>Sport grounds</th>
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*Policy covers all areas, ✓ P Policy covers some or partial areas, ✓ F Future policy will cover all areas, ✓ PF Future policy will cover some or partial areas, ✓ P/✓ Current policy covers some or partial areas, Future policy will cover all areas, *Policies obtained from council websites or by contacting each council **There is a total of 67 Councils in NZ, 43 responded to the survey, and of these 31 had policies, of those who didn’t respond (24) 16 had a policy *** This was taken from a strategy document as there is not written policy.
A similar proportion of the 16 non-responding councils with a SFOA policy had smokefree playgrounds, parks and sports grounds as those who took part in the survey, but a lower proportion had smokefree councils events. The policies of the non-responding councils did not cover any other SFOAs.

**Policy development**—The process councils followed to develop their current SFOA policy can be identified through three key areas; influences on council to develop policy, personnel involved in the development of the policy and involvement of external partnerships.

Overwhelmingly, direct letters from health advocacy groups was the factor reported as most strongly influencing councils to consider or introduce a SFOA policy. Receiving funding for development of the policy, improving the public profile of the council, having a champion Councillor or council staff member, and submissions on LTP was also important.

The factors reported as least strongly influencing council to introduce SFOA policies were results of annual council surveys, SFOA workshops, neighbouring councils introducing a policy, and problems with litter from cigarette butts.

In most councils, staff from the Parks team were heavily involved in the development of the SFOA policy, but working with them were members of the Policy and Strategy team, Senior Management/Executive, Councillor or Community Board Member, and the Recreation team.
Other teams within councils have also been involved in the development of these policies including Youth Council, Community Development team, Swimming Pool staff, and Events Coordinator.

Councils also worked with external providers and advocates when developing their policy. Two-thirds of these councils worked with their local District Health Board (DHB) or Public Health Unit, nearly half worked with the Cancer Society of New Zealand, and a small number worked with the Health Promotion Agency and Action on Smoking and Health.

Councils also described working with the Heart Foundation, Auahi Kore, Partnership Health Organisations, Community Health Trusts, and neighbouring councils. Five councils did not work with any external providers.

Policy implementation—Methods, roles and challenges of policy implementation and promotion can be identified through three key areas; signage and communication, roles and responsibilities, and costs.

All councils with a policy in place have used smokefree signage as part of the implementation for their policy. Most of these signs are stand-alone signs, and the remaining councils have stickers attached to existing signage. Signs are also placed on buildings and other existing structures such as bollards, and incorporated into new signs being developed.

As part of implementing their policy they also used media releases and local newspapers, as well as development of their website, removal of cigarette receptacles, and monitoring. Smokefree is also included in the annual residents’ survey of one council to monitor awareness of, and support for, the policy, and one council includes the policy in all venue hire agreements, event promotional material, and guided walks programmes.

Few councils have a formal plan as to how they intend to promote their policy. Smokefree signage was the most popular way of informing the community of its SFOA policy. The location of the signage reflects the areas that have been designated smokefree with most councils reporting signs placed in playgrounds, sports grounds, parks, community centres and other areas including swimming pools, public places, council buildings and facilities.

Almost two-thirds also used media publicity when the policy was launched while nearly half reported that their policy was available for download from their website. Councils also used promotion to sports clubs, on-going news articles, changes to procedures for council events, internal communication to staff to help make the community aware of their SFOA policy, and incorporated into all agreements with users of council facilities and grounds.

As with policy development, the Parks team is responsible for implementing most of the councils’ SFOA policies, often in collaboration with Recreation and Property Services teams. Other councils have implemented the policy alongside their DHB or local smokefree coalition. Many of the responses to this question emphasised that the policy is voluntary only and no enforcement is actively undertaken.

One-half of councils reported the biggest barrier to the implementation of SFOA policy was the time and resource commitment required from staff involved. The main
costs associated with implementing the policy was the cost of smokefree signage and the cost of installing the signs, mainly staff time. In terms of the actual dollar cost of implementing the policy almost half of councils spent less than $5,000 and a small number had spent between $5,000 and $15,000 over the period the policy had been in place.

Eight councils did not know how much the policy had cost, and few councils reported no costs associated with implementing the policy. Ten councils received funding from DHBs, Cancer Society, local smokefree coalitions, Heart Foundation and Health Sponsorship Council (now Health Promotion Agency) for implementing their policy. The amounts received ranged from $2,000-$5,000.

**Policy compliance and evaluation**—All councils have used voluntary compliance to enforce their SFOA policy; none have used active enforcement.

One-quarter of councils had evaluated their SFOA policy to determine its effectiveness. The methods used for policy evaluation varied and included: observation of the prevalence of smoking; community comments; analysis by staff; and community surveys.

Each council used more than one method to evaluate their policy; two councils have recently adopted their policy and no evaluation has yet been undertaken. One-third of councils have a review date for their policy which ranged from the current year to 10 years in the future.

Over three-quarters of respondents felt that their SFOA policy was successful. The main reasons were: the policy promotes smokefree messages, smokers respecting no-smoking signs, and positive feedback to council.

In contrast, one-fifth of councils did not consider the policy to be successful because of its voluntary nature, reliance on self-regulation, lack of change in smoking behaviour, and lack of council commitment to the policy beyond signage.

**Barriers to future SFOA policy**—Of the councils who are not considering extending their SFOA policy into other public areas, the main reasons given include: the council want to see how successful the initial policy is before extending it; SFOA was not on the current political agenda; difficulties with compliance; that SFOA was not the core business of council; and resource issues.

The main barriers encountered when extending SFOA were: resistance or lack of support from community, council or staff; funding and resourcing; and erecting the signage. Councils also cited political mandate, conflict with smoking area for sports clubs, a view that SFOA areas may discourage people from using parks, and that councils are being criticised by advocacy groups for the things that are not being done, rather than supporting what has been done.

**Councils in the process of developing a policy**

Councils in the process of developing a policy reported being heavily influenced by direct letters from health advocacy groups, their concerns about second hand smoke exposure, and the smokefree Aotearoa 2025 goal. Each council involved their Parks team in developing their smokefree outdoor areas policy, along with various other teams from their council.
All four councils were planning on having smokefree signage in locations covered by the policy; two councils are intending on having a communications plan. In terms of making the community aware of the SFOA policy, all four councils will have their policy available for download from their website, and three councils will have media publicity when the policy is launched. In terms of compliance, three councils will adopt policies that are voluntary policies.

Councills who do not have a policy and are not currently developing a policy

For the councils which did not have a SFOA policy, smokefree outdoor areas was not seen as a priority and lack of time and or resources were identified as preventing them from developing a policy.

Discussion

This study sought to describe the extent and nature of smokefree outdoor area policies in NZ and the process by which councils develop, implement, ensure compliance, and evaluate their SFOA policies. Thirty-one of the 43 councils who responded to the survey reported they had a SFOA policy in place, and of the 24 who did not respond to the survey, 16 councils had adopted a SFOA policy. In the 4 years since Hyslop and Thomson’s research (2009)\(^1\) the number of councils with a SFOA policy have doubled from 23 in 2008 to 47 in 2012; meaning 70\% of councils now have a smokefree policy.

Thirteen councils in NZ do not have or are not intending to develop a SFOA policy. Some of the arguments identified by Hyslop and Thomson (2009)\(^1\) no longer seem to be an issue for councils today e.g. arguments about personal freedom, a reduction in park attendance, and strong vocal opposition. However, some of the arguments are still valid issues for councils in NZ and overseas\(^16,17\) today. So what are these barriers and how do we overcome them?

Policy development

Interviews undertaken by Hyslop and Thomson (2009)\(^1\) found that lobbying and community submissions were not a motivating factor for introducing SFOA, but their role in terms of submissions still clearly played a large part.

In this current research the single greatest reason that councils considered introducing SFOA policies is due to letters from health advocacy groups. Health non-government organisations (NGO) can take heart that their efforts are resulting in policy change within local government, and should continue their efforts in this area. However, getting traction with local authorities on local SFOA policies is not an easy task and Satterlund and colleagues\(^17\) discuss the main barriers being: the cumbersome policy making process; access to policymakers; soliciting their support; and providing evidence that the policy is what the constituents want. Understanding the barriers also provides an opportunity to develop strategies to overcome them.

One of the reasons given in this current study for not extending the policies, or not introducing them in the first place, is due to a lack of knowledge of whether they work. Hyslop and Thomson (2009)\(^1\) and Tay and Thomson (2008)\(^18\) identified the
need to evaluate policies to show whether they are working, however, only one-quarter of the councils in this current research had evaluated their policy.

Regardless of whether an evaluation was undertaken, most of the respondents commented that they felt the policy was successful, however, being able to prove this to local councils when asking them to extend their policies is very important. Despite the importance of evaluation, few have been undertaken in NZ, particularly for long-term outcomes.19

A recent evaluation of the Kapiti Coast District Council Smokefree Parks and Playgrounds Policy found a non-statistically significant reduction in smoking observations and discarded butts in playgrounds and a sports field. However, the stakeholder perceptions of the policy were positive.19

**Policy implementation**

Many of the barriers to implementing and enforcing a SFOA policy reported by the councils in this study related to the costs in terms of human and financial resources, and this was also found in a study of the Kapiti Coast District Council.20 However, the cost of smokefree signage is small in comparison to other council costs such as roading and infrastructure.

In this study and in other NZ cases,20 signage costs have been partially met by NGOs, smokefree coalitions, and public health organisations, so the financial cost to councils has been minimal. This might be an important point to make when health advocates are speaking with councils.

One finding which came to light in this research was the lack of awareness of the policy; and consequently how best to communicate the policy to the community.19 The Kapiti Coast District Council employed the services of a communication expert when developing their communication plan,20 and is something councils and other organisations should think about, however, can add significant cost to the project.

An alternative, which may be more attractive to councils is to work in partnership with other stakeholders to share resources and minimise costs.

**Policy compliance**

One of the main barriers that respondents had issues with was that the policy was not enforceable as it was voluntary and served to educate. This is consistent with previous research reported.20 One goal of a SFOA is to change social norms around smoking, and relies on education and promotion of responsible choices when it comes to matters of smoking in public.

Satterlund and colleagues (2011)17 found that “signage and small education campaigns often created situations where citizens felt emboldened to self-enforce ordinances” and that this approach “effectively created an on-going norm change as it related to smoking”. However, a key component for the success of an ‘educative’ policy is to ensure that the policy is communicated to the public.20 Councils in other jurisdictions have found SFOA policies to be self-regulating with high compliance from smokers.21
Implications

With the adoption of a smokefree Aotearoa goal by 2025, creating further smokefree outdoor areas is becoming increasingly important.

This research has shown that NZ local authorities are increasingly adopting SFOA policies that cover the ‘greenspaces’ of parks, playgrounds and sports grounds. However, there is little evidence that councils are prepared to consider extending these policies out of the greenspaces and into other public places. Despite this, there continues to be high public support for smokefree outdoor areas, among non-smokers and smokers,12,22 such as outdoor eating areas and pedestrian malls and streets.23 In developing policies that go beyond the greenspace there needs to be engagement of new stakeholders and sectors of the community, including businesses, and an emerging body of evidence suggests there is support for such policies.24-27

If further extensions to SFOA are successful and more organisations are actively promoting smokefree, NZ could see a move towards whole communities, towns and cities becoming smokefree. In Australia where SFOA are more comprehensive, it is acknowledged that policies are strengthened through state legislation.28 In NZ, the introduction of national legislation may be required to ensure a consistent approach to SFOA throughout NZ. Further research is needed to examine the acceptability of this approach to key stakeholders and decision-makers.

Strengths and limitations

One of the main strengths of this research is the good response rate from councils to the survey (64%), and the additional data obtained for councils who did not respond. This survey also extends previous NZ findings and examines the policy process in more depth, to give information on how we might make it easier for councils to adopt policies in the future or extend existing SFOA’s.

Further, this research highlights some areas in which those working with councils on SFOA’s can overcome barriers and reach solutions to move forward. For health promoters and researchers, it highlights pressing need for greater emphasis on policy evaluation.

The research may have been limited by the knowledge of the person responding to the survey. In most councils SFOA are the responsibility of a number of areas so locating the most appropriate person to the complete the survey may not have always been found. However, steps were put in place to ensure we found the most appropriate person in the council.

The research may have been further limited by the response categories given, when an open-ended option was not available for respondents to provide further information.

Conclusion

This research has provided a summary of local councils and their SFOA policies; the extent of adoption, implementation, barriers and compliance. New Zealand is only one of two countries in the world to set an endgame for tobacco, SFOA policies are part of this goal.
It is encouraging to see that there is public support for wider adoption beyond the greenspace. However, whilst this research shows 70% of councils now have some form of SFOA policy, it also indicates the apparent reticence of councils to move their SFOA policies into other public places. This apparent disparity between public acceptability and council reluctance could impact on New Zealand’s ability to be smokefree by 2025.

Competing interests: Nil.

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Dementia: continuation of health and ethnic inequalities in New Zealand

Lorna Dyall

Abstract

Dementia has been framed and seen as a condition associated with ageing and in particular with advanced age, especially amongst those over 80 years of age. For Māori and Pacific peoples in New Zealand dementia is not necessarily associated with age but is directly related to our respective histories within this country, patterns of migration and the socioeconomic determinants of health for both populations from different tribes and nations. Issues are discussed in relation to Māori and Pacific development and the importance of prevention and early detection of chronic health conditions.

Whānau Ora is proposed as a developing indigenous and Pacific model with one of its purposes being to support individuals and families involved in the management of one or more of the chronic health conditions, that may lead onto dementia as part of the end of life process.

This paper proposes that the needs of Māori and Pacific, especially, in the Tamaki Makaurau area (Auckland region) must be included in the planning and decision making of policy and services related to dementia. The health and social inequalities of these populations during life and across generations also need to be considered in planning to prevent dementia from occurring early or in midlife.

Dementia is commonly associated with ageing, particularly in those over 80 years of age. With Māori and Pacific peoples in New Zealand, other determinants of health such as socioeconomic status are significant factors in dementia which need to be factored into dementia policy and decision-making.

Whānau Ora is proposed as a developing indigenous and Pacific model with one of its purposes is to support individuals and families involved in the management of one or more chronic health conditions, which often leads onto dementia as part of the end of life process.

The health and social inequalities of these populations across the life course and across generations also need to be considered in planning to prevent dementia from occurring early or in midlife.

New Zealand like many other countries is now recognising that our population is ageing and that there will be greater need for health and disability services. The Māori population in 2013 was 598,605 and 107,391 people reported they had Māori descent forming a combined population of 668,724 and of this population 5.4% (36,111) were over 65 years of age. For non-Māori there were 3,573,324 of which 570,921 were over 65 years of age, similar to the total size of those who identified as Māori.
From 2011 to 2026, Statistics New Zealand predicts that Māori aged 65 year or more will grow by 7.1% almost twice the rate of non-Māori (3.3%) due to a greater number reaching and moving through midlife. Increase in the number of Māori over 65 years of age is predicated to increase by 121.8% compared to 60.3% for non-Māori aged 65 years within a decade.

In 2006, 1 in 5 Māori were aged between 50 to 64 years and 1 in 10 Māori was aged 65 years or more and was resident in the Auckland region. As the Māori population ages, the number of Māori aged over 65 years or more will continue to increase in the Auckland region, if this sub-population is supported and not actively encouraged to be displaced, such as encouragement to return to their tribal areas to free-up employment and housing for those who are recent immigrants to the area, such as those from Christchurch after the earthquake (2010–2011) and recent migrants from other countries seeking better life opportunities. The 2013 Census has identified that Auckland is a place of residence for new migrants and those who have relocated from Christchurch.

For Pacific nations as a group it is anticipated that this population will continue to increase from being 7.4% in 2013 and by 2026 1 in 10 of (9.6%) the New Zealand population will identify as belonging to a Pacific nation. This population is similar to Māori, it is youthful with 4% of the Pacific population being over 65 years of age.

Two thirds of the total Pacific population in 2006 were resident in the Auckland region. Both Māori and Pacific populations are creating changes and this will require those involved in planning and decision making to have greater understanding of the different profiles and diversity within and across ethnic populations who have their own sense of nationhood in New Zealand. There will also be a need to develop reciprocal and respectful relationships across and within ethnic populations as changes occur.

Populations with high health needs, such as those with high prevalence of chronic and co morbidities will require support and caregivers both formal and informal whom are able to provide palliative or end of life care. Poor health often shows visibly the inequalities and privileges that exist within a society and the support available to different groups. Those marginalised may receive minimum support due to inability to afford or access services when needed.

Recently, the New Zealand Public Health and Disability Amendment Act (No2) was passed and was enacted in October 2013. This new legislation reaffirms that people will not generally be paid to provide health services or disability support services to their family member. But it confirms that the Crown and a District Health Board (DHB) may operate and is authorised to operate, policies in respect of family carers that allow payment in certain limited circumstances, or allow for payment at a lower rate than that for carers who are not family members.

These developments although limited at this stage give DHBs their own authority to develop their own policies to provide financial support to family members to provide care for severely disabled members in which care can be personalised to meet their needs. This form of care would support many Māori and Pacific whānau in the Auckland region caring for severely unwell kin.
In all areas of the health, disability, corrections and accident compensation corporation sectors, the health and related workforces will need to become knowledgeable and skilled in working with older or frail people who are likely to have several chronic health issues which need to be diagnosed and managed with appropriate support.\textsuperscript{1,13}

Recognition of the complexity of people with multiple health issues now requires health workers either to work in multidisciplinary teams or to develop the necessary skills to be aware if a person has a physical health problem, this has likely affected their mental health status or and vice versa. Poor health also affects others domains of their life, such as finance, relationships, work and recreational interests.\textsuperscript{14} These changes all have flow on implications and affect the stability of a family, whānau, community and society generally.

**Dementia**

Dementia is now increasingly an emerging public health issue on the radar of health decision makers.\textsuperscript{1} Diagnosis and support to people with dementia is complex. It is generally assumed that it occurs from midlife, increasing with age and for those over 85 years of age they have been identified the greatest risk.\textsuperscript{15,16}

Alzheimer’s Disease International has estimated that there are 36 million people worldwide living with dementia and this figure will double in 2030. The increase predicted will be significantly in low to middle income countries and this would include low income populations in New Zealand.\textsuperscript{17}

Early onset of dementia may occur suddenly or develop over time with a gradual loss of the brain to perform one or more functions and requires consideration of when to screen. Symptoms often include a decline in cognitive and intellectual abilities, loss of memory, confusion, problems with speech and increased reliance on others for support with daily living.

Te Pou, the National Centre of Mental Health Research, Information and Workforce Development recommend for a diagnosis of dementia to be given four criteria should be present. Firstly, disturbance of cognition, secondly, this has consequences, thirdly, it is progressive and fourthly, it occurs in the absence of delirium.\textsuperscript{1}

Dementia occurs as a result of brain cell deterioration and as a result of the slow process of decline many with this condition may be unaware that their brain or cognitive function has changed over time.\textsuperscript{18}

Increasingly, it is being recognised that the brain is the most important organ of the body. It affects how all parts of the body and systems functions including moods. This influences thinking, behaviour, feelings, emotions and decisions made in life.

Changes in the way the brain functions may be related to health conditions, medication, trauma, especially in early child and adolescent, such as head injuries and other significant life events, which are often considered as part of the process of ageing, such as loss of employment, loss of a partner, parent or child, the development of addictions and being diagnosed with one or more chronic health conditions.\textsuperscript{19} With increasingly age, several of these events may occur in close proximity.
Interest in brain function and impact of brain trauma or injury at any stage of life is increasingly an interest of research by Māori for Māori, with consideration of cognition development, and intergenerational ancestral patterns of development and adaption and brain accident injuries. Indeed, dementia research and health service development is a growing area of interest also for other indigenous populations, such as first nations in Canada and Aboriginal health and research workers in Australia.

There is now recognition of the need to undertake development work in this area from an indigenous perspective. A need also to review and develop appropriate tools for cognition assessment for indigenous populations, as well as greater understanding of why dementia is increasingly becoming visible in these populations which have experienced intergenerational and historical trauma. There is also a need to address issues related to communication, that is verbal and nonverbal and ongoing cultural safety.

It is envisaged that the use and development of new tools will be used by indigenous and allied health workers in different settings and who are competent to undertake such assessments and to offer help in improving functioning and quality of life of individuals with cognition issues as well as support those who are part of their social and kin support systems.

Communication has been identified as a challenge for those with dementia, such as those who have had a stroke and those who desire to communicate in a language of his or her choice, which affirms their ethnic and cultural identity. This development will likely occur in New Zealand as the number of Māori increase and who use te reo Māori as part of defining who they are and determining how they think and relate to the World.

This population may desire a cognitive assessment in either te reo Māori or bilingual. This development will likely occur for other populations as Pacific nations who choose to communicate in their own languages linked to their cultural identity. It will also challenge Alzheimer’s New Zealand and other health and related organisations involved in chronic health care management and dementia support, to employ staff who are able to relate and communicate with Māori and other populations in the language of their choice.

Alzheimer’s New Zealand has estimated that in 2011, 48,182 (1.1%) of the New Zealand population had dementia. Of that population 4% were Māori and for Pacific nations as a group 1.9%. The number of Māori and Pacific people with dementia and is predicted to increase and the prevalence rate of dementia is anticipated grow. By 2026, it is predicted of those with diagnosed with dementia 5.7% will be Māori and 2.6% will be Pacific. These prevalence rates are likely to under report the real situation, as currently, only 60% of all cases of dementia are diagnosed. Without regular and ongoing cognitive assessment of people with frailty and complex chronic health conditions, early onset of dementia may be missed or ignored.

This situation has been found for other indigenous populations which share similar historical trauma as Māori. Accurate statistics of the incidence and prevalence of dementia is difficult to obtain in any country due to barriers to early detection, such as, reliability of cognitive assessment tools appropriate to the population concerned,
lack of community education and reluctance to give a diagnosis where limited support is available to those who have the condition.

Early diagnosis generally by a general practitioner or skilled primary health care practitioner is considered best practice and diagnosis early can help the individual, family and whānau concerned to understand what is happening, consider appropriate plans for the future and support which may be needed.17

**Neurological research**

Research is now being undertaken internationally and nationally in New Zealand to explore how the brain operates and pathways which lead to a brain disease. Research, is increasingly finding how adaptive the brain is to changing new circumstances. Alzheimer’s disease is now identified in New Zealand as the most common form of dementia for those over 80 years.

There is also recognition that there are other causes of dementia for those under 65 years which are related to cerebrovascular disease, such as Lewy Body disease, frontal lobe dementia and vascular dementia. Parkinson’s disease, multiple sclerosis, Huntington’s disease and Creutzfeldt-Jacob disease and significant mental health conditions as severe depression and schizophrenia.

Relationship of diabetes and dementia, high cholesterol, stroke and other cardiovascular conditions also affects how the brain functions.24 Other health behaviours such as the use of alcohol, illegal and legal drug and excessive gambling also impacts upon the brain. Individuals’ health and key relationships are often affected by these coping behaviours.25

Adverse impact of addictions on individuals, whānau and communities impacts on the quality of life of all involved especially vulnerable citizens as children and elders. Stress and adversity is increasingly being recognised and related to child abuse, domestic violence and elder abuse.2,26–29

**Recognition of dementia: implications for Tamaki Makaurau**

Recognition and diagnosis of the different types of dementia, the cause and when they can occur in people’s life is important. Diagnosis not only affects those with the condition but also those who are intimately connected and this has long term implications which then increases health, economic and social inequalities often for the whole whanau.30

Tamaki Makaurau (Auckland) is now home to the largest Polynesian population in the world. There is also a significant European population (56.5%) and a growing Asian population whom accounted for almost one in five (18.8%) also a small growing middle eastern population.

Changing demographic, ethnic, age and health status profiles of all five different ethnic populations’ resident in the Auckland region now increasingly need to be recognised, even if populations are encouraged to relocate for lack of employment, poor health, breakdown of family relationships or to re-establish if desired cultural or ancestral links.31 Considerable knowledge now exists in New Zealand in relation to ethnic disparities in health and their relationship to socioeconomic determinants of health.19,32–34
New Zealand is fortunate that it has an indigenous population which is maturing and is now negotiating increasingly for social, economic, cultural and political rights which are defined within Te Tiriti o Waitangi and now the United Nations Declaration of Indigenous Peoples’ Rights.\textsuperscript{35,36}

When Māori achieve their rights, they make changes in their families, whānau, and communities and this contributes to the development of hapu, iwi and other populations in New Zealand. Māori are also seen by other indigenous populations outside of New Zealand as a population constantly negotiating everyday their right to: good governance, self-determination or tino rangatiratanga and be treated equally the same as British subjects.

The Te Tiriti o Waitangi also provides the constitutional foundation for Māori as tangata whenua to be constantly in negotiation with the Crown and its agents to reclaim what they have lost and what they are entitled to expect as a treaty partner with the Crown. Changes that Māori achieve over time become available for other populations, such as the opportunity to speak one’s own native language in this country and for children to attend a Kōhanga Reo or language nest.

Being bilingual and bicultural are now increasingly being recognised as protective factors in supporting health, wellbeing and this includes brain function and therefore Māori is actively promoted as one of New Zealand’s official languages.\textsuperscript{6,37} Changes Māori make also allow the possibility for other ethnic populations to negotiate similar developments using their culture to support their wellbeing and unique place within a region and country.

**Health planning and decision-making**

Māori have the right to be treated the same as British subjects in the planning, delivery, implementation and assessment of outcomes from any health, accident or disability service and to achieve at least the same health outcomes as that population. Many health services have in their charter of operation recognition of the Te Tiriti o Waitangi yet they do not achieve the same outcomes for Māori compared to non-Māori.\textsuperscript{34,38}

When Māori present to health services at a primary health care level, they often do not get the same level of investigation or referral onto a specialist secondary, tertiary or outpatient services as Europeans which can delay diagnosis and treatment.\textsuperscript{34} Māori also experience twice the rate of health adverse events compared to the general population and a delay in diagnosis and treatment creates adverse events.\textsuperscript{39}

Responsibility is now placed on general and primary health care practitioners to be knowledgeable in the detection of dementia and ability to communicate and discuss this diagnosis with the person concerned, their family, whānau and significant others.\textsuperscript{18}

Primary health care workers also need to be able to develop relationships with other health, social, legal and other professionals to support their clients with changes that will occur over time.\textsuperscript{40,41} Waiting for significant memory loss may be too late to intervene to help individuals with the onset of dementia or to assist family members understand and respond to events which are occurring and are often ongoing until death.
Life expectancy

Throughout the health, disability, accident mental and justice systems Māori experience adversely the effects of socioeconomic determinants of health. This pattern is also now emerging for Pacific peoples. Normalisation and acceptance of health inequalities for Māori and other ethnic groups in New Zealand must stop as the ongoing costs are far too high.

On average, Māori die 8 to 10 years earlier than non-Māori in terms of gender comparison Māori men die on average at least 20 years earlier than non-Māori women. For Pacific peoples life expectancy is 6 to 7 years less than the total New Zealand population. This is a total loss of human potential, development and contribution to New Zealand and globally.

At a conference held in Auckland in 2011 regarding excellence in dementia care I proposed that this condition was not necessarily related to chronological age but socioeconomic determinants of health which underpins poor biological health linked to chronic health conditions. This theme was verified with a recent webinar held on dementia with health specialists in this area working with indigenous communities in Australia.

It was proposed that it is not enough to describe or research this issue, courageous decisions and practical actions needed to be taken now to where possible change the course of socioeconomic determinants of health for both Māori and Pacific populations to prevent the onset of multiple chronic health conditions and therefore, delay as long as possible the onset of dementia which is often associated with frailty or geriatric conditions.

The impact of diabetes is epidemic in New Zealand and amongst Māori and Pacific populations, has implications for the Auckland region, and it is only now being considered seriously the full impact across current and future generations, the financial costs involved and more importantly, loss of human potential.

Prevalence of diabetes from a study in Auckland involving an equal size sample of Māori and Pacific randomly selected from the community found that Māori had 2.8 times greater risk and Pacific 4.1 times risk of diabetes than Europeans. For every one European diagnosed with diabetes, just under one person was undiagnosed and for every three Māori diagnosed with diabetes, one person was undiagnosed and for Pacific, for every five persons assessed with this condition, just over one person is undiagnosed.

Poor health of specific populations and the neighbourhoods they live and or socialise in also affects their health. The relationship of diabetes, frailty and dementia as part of the life course of this condition is now being explored.

The New Zealand Medical Association (NZMA) in 2011 took a leadership role and released a health equity position statement recognising the importance of addressing socioeconomic determinants of health throughout the life course. It was identified then two pathways which poor health occurs from the beginning to the end of life. Research now shows good health occurs when parents are healthy, they plan their children, each child is nurtured in the womb and when each person arrives in a family their parents are loving and supportive of each other and the newborn.
Healthy families develop where members feel valued and have a positive sense of identity and self-esteem. Further, members through life have access to quality education, housing and meaningful jobs which enable individuals and groups to participate, and be involved in different aspects of society.

The second pathway, material deprivation has been identified by the NZMA as the major cause of poor health along with the social structure of any family, whanau, ethnic population or community in society generally. Social position a person, family or ethnic group occupies determines and influences their access to material resources and this influences health status.

Māori are often used as a population to scapegoat and are encouraged by current power holders not to feel aggrieved that through political power, legislation and greed by non-Māori that they have lost significantly their ownership of resources as guaranteed through the Te Tiriti o Waitangi.

Since the 1980s, many whānau, hapu and iwi have been in the process of negotiating for the return or compensation for the loss of their resources as part of an ongoing process to rebuild an economic base which then provides the means for material and social wellbeing.

Social costs of the loss of tribal resources have not yet been negotiated or compensated for; however, the visible effects are now becoming apparent, such as, the number of Māori who are under the supervision and custodial care of Corrections, the number who have mental health issues and now those with chronic health conditions which are life determining, have an ongoing process and are often badly managed.

Somewhere along the path, for many individuals dementia or neurological brain change occurs, often associated with poor health and is a loss of human potential.

The cost of negotiating for a proportional return of Māori and tribal material wealth to create an intergenerational base has been considerable. Along the way, it has been forgotten that the most important resource any nation can have is healthy people. Good health of people is a value that any Government, political party, hapu, iwi or society should aim to achieve and hold dearly as it has a “value”, it is an asset and if maintained it builds dividends for the next generation. This knowledge was known by ancestors who cited often the whakatauki:

“He aha te mea nui o te ao?
He tangata! He tangata! He tangata!
What is the most important thing in the world?
It is people, it is people, and it is people

Past treatment of Māori and other marginalised ethnic populations have left now a “brown legacy”. Māori and Pacific populations as described are both young and are ageing. Both populations now biologically age earlier due to poor health. Those who are members of these populations face on a daily basis, social and economic stress which then becomes the accumulative effects of poverty. These populations by way of family or whānau are also faced with the care and development of young children and adolescents, the need to support themselves and where possible, to provide help to those who are dependent upon them, often unwell, living close or far away.
As a consequence of the ongoing process of colonisation and globalisation, these populations are also exposed to many unhealthy products, such as tobacco and alcohol with minimum protections in place which result in addictions, which then lead onto chronic health conditions and then this affects all domains of their lives, whānau and social and economic networks.28,49–51

Dementia for Māori and Pacific populations is one of the outcomes of their experience of poverty and social marginalisation in New Zealand’s increasingly class structured society and in Auckland; it is particularly defined by way domicile of residence and home ownership.

**Recognition of the brown legacy**

There is now growing recognition of the current and future effects of a “brown legacy”.31,52,53 World-class brain research occurs in Auckland (at Centre for Brain Research – Rangahau Te Roro me te Hinengaro, University of Auckland) and provides new information on how different brain conditions develop and intergenerational patterns.

Research is important, interventions may be developed but often they mask or cover for a situation rather than change the socioeconomic determinants of health, such as immunisation to address a particular health issue. Every effort must now be directed to improve material and social deprivation for Māori and Pacific peoples’ populations so individuals, family and whānau have choices which most non-Māori accept as normal and their entitlement.

**Brown legacy pot of gold**

It is important to celebrate the development and growth of Māori and Pacific populations and the human potential these populations offer. With appropriate education and support both populations will be able to assist those in need, that is the rapidly ageing European population, contributing to the ongoing development of this country and providing essential funding required for those who are eligible and have the health status to reach government funded superannuation. This will not be automatic reality of achievement for many Māori and Pacific individuals and these will effects future generations of these populations.

**Planning of services**

To ensure that there is no colour blindness in Tamaki Makaurau and nationally, dementia needs to be seen and reframed as not being defined as related to chronological age but instead viewed as being related to poor biological health, which is often linked to the trajectory of one or more chronic health conditions.54

Dementia is now increasingly being recognised as of end of life, especially for non-Māori, predominantly, Europeans, for it is this population which has had the longest life expectancy in this country, and through the life course have enjoyed the benefits of both material and social wealth since their intergenerational settlement in New Zealand.

Caring for people nearing the end of their life create challenges in any family, whānau or social network, especially if they are involved in caring for one of more members.
of a family or whānau whom have ongoing cognitive changes which then affects their personality, ability to handle stress, employment and have developed new patterns of behaviour which may be addictive to cope with brain changes occurring such as, excessive spending, alcohol consumption or gambling. Western countries vary in their response as to who is responsible for the prevention, detection, treatment and long term management of people with dementia.

In any discussions regionally and nationally regarding dementia or end of life care Māori and Pacific must be involved, so that there is a clear focus and an understanding of the importance of prevention of communicable and non-communicable diseases, the early detection and treatment of health issues across the life course and where possible the delay of the onset of one or more chronic health conditions so as to delay the development of dementia.

**Whānau Ora**

Whānau Ora was introduced as a key policy of the Māori Party which has been supported by the National Party Government. A number of government agencies and organisations are now involved working together with Whānau Ora collectives. These collectives now employ specialist people, often called navigators, whom are tasked to work with whānau and to help whānau members develop and co-ordinate their own life development plans. These plans often include care of whānau members who are frail, unwell or may have a serious disability.

To support the ongoing development of this policy moving from a focus on individual care to engagement of a whānau three new commissioning agencies are now in the process of being tendered to create new structures to channel funds from government and non-government agencies to support whānau development.

In the Tamaki Makaurau region the following Whānau ora collective providers are: Ngati Whatua o Orakei Whānau Ora Collective, Kotāhitanga, Te Ope Koiora, Alliance Health Plus Whānau ora Collective, Pacific Safety Prevention Project, and the National Urban Māori Authority. These collective providers have spent considerable time in the establishment of an infrastructure to provide services which are focussed on whānau defining the outcomes they want achieved.

Professionals’ roles are changing as they become guides in supporting the development of whānau to address and manage their health and related issues and navigate and develop their own futures. (The author is a Ministerial Appointee to the Tāmaki Makaurau Whānau Ora Leadership Group.) Changes occurring within many whānau are also redressing intergenerational issues, such as, the loss of culture and language and responding to chronic health conditions, such as diabetes and cardiovascular conditions so that the next generation have better health and life circumstances.

The development of Whānau Ora as a model of care is indigenous and a Pacific home grown. As it develops now and in the future, it may provide a new model to support those whānau caring for a person(s) who have dementia including for non-Māori. The developments that are occurring for Māori and Pacific whānau are consistent with new developments occurring in such countries as in England which it has been
proposed the importance of personalised care and building a house of care around those who have chronic health conditions at home and in the community.\textsuperscript{55}

This concept of course was espoused by Māori in the 1980s in relation to the Te Whare Tapu Wha model of health in which it was developed to meet the needs of individuals within a group context which nurtured their physical, mental, emotional and family wellbeing.\textsuperscript{56} A connection also made to the importance of connection with whenua (land), te reo (language) and tikanga (customs) of the people involved.

**Conclusion**

Prevention of chronic health conditions should be a priority in all whānau. If health issues occur they should be detected early and managed well, so the ongoing process of chronic ill health disease(s) and frailty can be delayed as long as possible. Māori and Pacific populations often experience chronic health conditions early in life leading to premature death, with dementia being part of that process.

Dementia is often not diagnosed for Māori or Pacific but is normalised and perhaps seen as related to poor health and linked to the history of being tangata whenua New Zealand or populations who have experienced migration and marginalisation. Dementia services for Māori and Pacific populations must be planned and funded, especially in Tamaki Makaurau due to the population profiles of this region and knowledge known associated with socioeconomic determinants of health and health inequalities.

He kitenga kanohi, he hokinga whakaaro
To see a face is to stir a memory

**Competing interests:** Nil.

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Bisphosphonate-associated atypical subtrochanteric femur fractures in the older patient

Gopinath K Gopal, Khai L Tam, Shibu P Krishnan, Ian Maddern

Abstract

Bisphosphonates, drug of choice in the treatment of osteoporosis have been associated with unusual skeletal side effects such as osteonecrosis of jaw and atypical femur fractures in recent years. We report two older patients with bisphosphonate associated atypical femur fracture from a South Australian tertiary care hospital and a brief discussion of potential diagnostic complexities in this patient population.

Bisphosphonates—considered as first-line therapy in treating patients with osteoporosis—have proven efficacy in the prevention of vertebral, hip and non-vertebral fractures. However, concerns have been raised regarding rarer side effects including atypical femur fractures, osteonecrosis of jaw, oesophageal cancer and atrial fibrillation.

Atypical subtrochanteric femur fractures have been reported with bisphosphonate treatment but these are rare and the aetiology remains unclear.

We report two older patients with atypical femur fracture admitted to our general teaching hospital in South Australia over a 3-year period, both on long-term bisphosphonates, and discuss the potential diagnostic challenges in this age group.

Case 1

A 68-year-old Caucasian lady presented with new onset right hip pain for 3 weeks. X-ray (Figure 1) revealed an incomplete transverse subtrochanteric fracture in the medial aspect that was treated with intramedullary nailing. She denied any fall prior to onset of hip pain and had no significant comorbidities. There was no evidence of cognitive impairment (MMSE=27/30) and investigations for secondary osteoporosis were negative.

She was on long-term risedronate 35 mg weekly for 6 years with calcium/vitamin D based on previous bone density scans confirming osteoporosis with femur neck T score of -2.7.

She underwent a DEXA scan that showed a vertebral T score of -1.2 and femur neck T score of -1.3. Specialist endocrinology input concurred with the likelihood of an atypical femur fracture associated with bisphosphonates.

Bisphosphonates were ceased and strontium commenced, but prophylactic nailing on the left was declined by the patient prior to hospital discharge.

Case 2

A 73-year-old Caucasian lady presented with worsening yet unprovoked right hip pain for a month. Hip X-ray (Figure 2) confirmed right complete subtrochanteric
fracture involving the inferior margins of the lesser trochanter and she underwent intramedullary nail insertion. Past medical history included cerebrovascular disease, atrial fibrillation, gastroesophageal reflux and hypertension.

Her usual medications included flecainide, candesartan, dothiepin, lercanidipine, esomeprazole, folic acid, frusenide, warfarin along with alendronate 70 mg weekly and calcium/vitamin D for 9 years following a fragility fracture of the radius. She reported good adherence with all medications and there was no evidence of cognitive impairment (MMSE = 26/30). Investigations for secondary osteoporosis were unremarkable.

A DEXA scan revealed a vertebral T-score of -1.6 and femur neck T-score of -0.9. Following discussion with the patient regarding alendronate and its possible association with atypical fractures, she was switched to strontium in hospital prior to discharge.

**Figure 1. Hip and femur X-ray images illustrating relevant radiological major criteria**

(1) Fracture located along the femur distal to the lesser trochanter to just proximal to the supracondylar flare.

(2) Associated with no or minimal trauma, as in a fall from a standing height or less.

(3) Transverse or short oblique configuration.

(4) Non comminuted nature.

(5) Complete fractures extend through both cortices and may be associated with a medial spike; incomplete fractures involve only the lateral cortex.

(6) Localised periosteal or endosteal thickening of the lateral cortex is present at the fracture site (“beaking” or “flaring”).
Discussion

The above cases highlight a rare but well described atypical fracture in elderly patients on bisphosphonates, usually for more than 5 years, which may be overlooked by busy clinicians.

Both our patients were on bisphosphonates for more than 5 years and fulfilled all the recent mandatory criteria proposed by the task group for atypical fractures. Most of the minor features supportive in diagnosis were also present in both cases. These include generalized increase in cortical thickness of the femoral diaphysis, unilateral or bilateral prodromal symptoms such as dull or aching pain in the groin or thigh, bilateral incomplete or complete femoral diaphysis fractures and delayed fracture healing.

Our second patient was on long-term esomeprazole which has been associated with an increased risk of atypical femur fractures when prescribed along with bisphosphonates. Proton pump inhibitors interfere with absorption of calcium and bisphosphonates thus affecting their anti-fracture efficacy and have been incriminated in osteoporotic fractures.

The time interval from the onset of pain and diagnosis of an atypical femoral fracture varies from 1 week to 2 years. Possible mechanisms involve reduced toughness due to accumulation of microdamage and lack of effective remodelling within the bone leading to failure in areas with high tensile force such as the subtrochanteric region.

Management strategies for these patients have included cessation of bisphosphonates, protected weight-bearing and prophylactic intramedullary rod insertion. Use of anabolic bone agents like teriparatide appear promising though not yet translated to standard clinical practice due to cost and license implications.

Intriguingly, not all atypical fractures are associated with bisphosphonate use or prolonged duration and it is unclear whether a drug holiday could definitely prevent the occurrence of these fractures. Moreover, the overall incidence and risk of osteoporotic fragility fracture in the elderly outweighs this relatively uncommon condition.

Association of age and atypical femur fracture is unclear. In one large case series by Girgis and colleagues, there was an increased likelihood (odds ratio= 3.6) of an atypical fracture in patients less than 65 years of age.

A recent case control study by Erviti and colleagues showed that elderly women are at a higher risk for bisphosphonate-associated atypical fractures (adjusted odds ratio=4.3). Our local atypical fracture incidence rate in the above 65 year olds at 0.5% is lower than the current overall reported incidence of atypical fractures which is around 1% of all femur fractures.

We believe this may be due to underreporting as besides radiological diagnostic difficulty, a significant proportion of elderly patients with femur shaft fracture are not reviewed by an orthogeriatrician or metabolic bone disease specialist.

Diagnosis in the elderly with increasing prevalence of osteoporosis can be difficult. Atypical subtrochanteric fracture may be falsely classified as osteoporotic fragility...
fracture and bisphosphonate treatment continued exposing them to a higher fracture risk.

Also in the elderly, cognitive impairment and delirium may make it difficult to elicit a thorough history leading to the fracture masking the true clinical diagnosis. Moreover elderly patients with a higher falls risk due to comorbidities may actually sustain a fall secondary to thigh pain leading to a wrong diagnosis of osteoporotic fracture unless a complete and detailed history leading to the fall is elicited.

Thus in older patients, a much higher index of suspicion is required to recognise bisphosphonate associated atypical fractures with important implications for clinical practice.

Greater awareness of this condition would help optimise clinical management and minimise risk of further debilitating fractures in vulnerable older patients.

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Acrokeratosis paraneoplastica with in-situ squamous cell carcinoma

Su Y Lau, Kareeann SF Khow, Tuck Y Yong

A 75-year-old man presented with a 2-month history of swelling, dryness and cracking of his fingers and toes (Figure 1). The nails of both fingers and toes became ridged and cracked. He also had ulcerations and crusts affecting his vermillion and mucosa of his lips consistent with acrokeratosis paraneoplastica. All his initial investigations, including computed tomography imaging from head to pelvis and panendoscopy, did not reveal any neoplasm.

Figure 1. Photographs of the patient’s condition

Cutaneous manifestations of acrokeratosis paraneoplastica: (A) and (B) show the scaly and hyperkeratotic changes (arrows) on the fingers; (C) and (D) show dystrophic changes in the nails (arrows); and (E) and (F) show widespread ulcerations (arrows) affecting the lips and tongue.
In the absence of an identified malignancy, he was monitored closely. A year after his initial presentation, repeat investigations were all normal but a review by the otolaryngologist revealed a small ulcer on his right buccal mucosa. This area was biopsied and in-situ SCC was detected with evidence of ulceration. He then underwent wide excision of surrounding fields which confirmed in-situ SCC but no invasive malignancy. After resection of the SCC, his skin lesions resolved but the nail changes persist.

In acrokeratosis paraneoplastica, cutaneous eruptions can predate clinical evidence of cancer by several months or even years. Therefore any clinical sign that is consistent with acrokeratotic paraneoplastic should be followed by screening of the upper aerodigestive tract. If initial investigations are unrevealing, patient should be followed up to identify any early manifestation of an underlying neoplasia.

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A rare case of cardiac arrest in a young healthy male

Laura Preston, Walid Al-Deeb

A 21-year-old man was admitted after a ventricular fibrillation cardiac arrest that occurred whilst jogging. Spontaneous circulation was restored after shocks by the paramedic team. He had previously been fit and well with no other medical problems. There was no family history of cardiac problems. Cardiovascular examination was normal but ECG showed ST elevation in leads II, III and aVF. Troponin Ts were elevated, confirming an inferior ST-elevation myocardial infarction.

Coronary angiography subsequently revealed an aberrant origin of the right coronary artery arising from the left sinus of Valsalva (Figure 1). This is a rare congenital abnormality, which makes the aberrant artery prone to compression between the aorta and pulmonary artery. This can cause angina, myocardial infarction and sudden cardiac death, in the absence of atherosclerosis.

He underwent surgery for re-implantation of the right coronary artery and has made a full recovery.

Figure 1. An axial CT angiogram image at the level of the aortic root, showing the aberrant origin of the right coronary artery from the left sinus of Valsalva (arrow). Also shown are the left main coronary artery (x) and the normal origin of the right coronary artery is shown (star)
Learning points

- Atherosclerosis accounts for the majority of myocardial infarction, even in younger patients.
- In young, otherwise healthy individuals without risk factors for atherosclerosis, a high clinical suspicion for underlying congenital cardiac abnormalities is essential.
- Congenital coronary artery anomalies account for approximately 20% of sudden cardiac deaths but may also present with angina or exertional syncope. Many are completely asymptomatic.
- There are a wide variety of abnormalities, and CT angiography is useful to clarify the exact anatomy.
- Definitive management involves surgical intervention but this must be balanced against risk, particularly for asymptomatic patients.

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Asymptomatic body packer

Hossein Sanaei-Zadeh

Clinical—A 28-year-old drug-addicted male presented with the complication of injection into his groin area (deep vein thrombosis). He was detained by law enforcement officers while referring to our centre.

After admission to the hospital, he confessed to ingestion of about 40 pellets of opium. His abdominal X-ray is shown in Figure 1.

How should this patient be managed?

Figure 1. The patient’s plain abdominal X-ray shows multiple foreign bodies (stars). A thin, lucent rim of air (double-condom sign) outlines many packets (arrows)
Answer and Discussion—A body packer is an individual who ingests drugs of abuse (cocaine, heroin, marijuana, opium, crack, and ecstasy) in wrapped packets for the purpose of smuggling.1–3

Asymptomatic body packers usually present to medical services when arrested or taken into custody by law enforcement officers. Management of asymptomatic body packers has not been rigorously evaluated to date.

Treatment by the administration of activated charcoal and whole bowel irrigation with poly ethylene glycol has often been advocated.1–5 Surgical intervention is indicated for the patients with ileus, perforation, or acute cocaine, marijuana, crack, and ecstasy poisoning. Also, it is indicated if the patient clinically deteriorates despite conservative management or when packets fail to progress through the gastrointestinal tract.1–5

We administered poly ethylene glycol lavage solution to the patient at a rate of 1 L/h for 8 hours under constant police surveillance. Customs agents collected 42 intact packets of opium. Repeated plain abdominal X-ray 24 hours later confirmed complete decontamination.

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Twenty percent tax on fizzy drinks could save lives and generate millions in revenue for health programmes in New Zealand

High sugar intakes are linked to obesity, type 2 diabetes and cardiovascular disease; a strong case can, therefore, be made for efforts to reduce consumption. There is particular concern about sugar-sweetened beverages because they are nutrient poor, and energy from beverages is less satiating than that obtained from solid foods, resulting in increased consumption.

Almost one-fifth of the total sugar intake of New Zealand adults (17%) comes from non-alcoholic beverages. Younger people in particular derive a substantial proportion of their sugar intake from non-alcoholic beverages; 27–29% of total sugar consumed by 15–18 year olds comes from these drinks versus 7–8% in those aged 71+ years. Younger children (5–14 years) obtain nearly a quarter (24%) of their daily sugar intake from beverages. Randomised controlled trial data have shown convincingly that consumption of sugar-sweetened beverages leads to weight gain in children.

Taxation has been proposed to reduce sweetened drink consumption and counteract obesity, and a number of countries have implemented taxes on soft drinks or sugar-sweetened beverages.

Research published recently in the British Medical Journal (BMJ) reported that a 20% sales tax on sugar-sweetened drinks could reduce the prevalence of obesity in the UK by 1.3% (around 180,000 people) and reduce the prevalence of overweight by a further 0.9% (285,000). A health impact assessment of a proposed 10% tax on sugar-sweetened beverages in Ireland found it could reduce prevalence of obesity by 1.3% and prevalence of overweight by a further 0.7%. Our review of the international evidence supports these findings; despite heterogeneity in tax rates and effect sizes, the pooled evidence suggests taxes on carbonated (fizzy) drinks would be associated with beneficial dietary change, and potentially improved health.

As part of a larger study examining the effects of a range of health-related food taxes and subsidies on population health (full methods and results to appear in publication elsewhere), we estimated the effects of a 20% tax on fizzy drinks (both sugar-sweetened and artificially sweetened varieties) on mortality from non-communicable diseases in New Zealand.

A macrosimulation model based on household food expenditure data and demand elasticity was used to estimate the effects of such a tax. The same model was used for a similar purpose in the UK. We used price elasticity data for major commonly consumed food groups in New Zealand, and food expenditure data from national Household Economic Surveys. Population demographics were obtained from the 2006 New Zealand Census of Population and Dwellings. Population disease-specific mortality rates by age, sex, income and ethnic group were obtained from national mortality data for 2009.
We estimate that a 20% tax on carbonated drinks would reduce daily energy intakes by 0.2% (20kJ/day) and avert or postpone 67 (95% uncertainty interval, 60 to 73) deaths from cardiovascular disease, diabetes and diet-related cancers. This equates to 0.2% of all deaths in New Zealand per year, comparable to the number of annual deaths from cervical cancer (average 58 per year, 2001–10). Furthermore, the impact would likely be larger amongst Māori and Pacific consumers due to their greater responsiveness to changes in food prices, and amongst children and young people due to their higher consumption of such drinks. Finally, there would be parallel positive impacts on morbidity (i.e. diabetes, obesity).

Data on national sales of soft drinks are commercially sensitive and difficult to access. However, we previously reported that carbonated drinks account for 1.8% of average household food expenditure in New Zealand (approximately $166/year based on 2009/10 data). Given there are 1.55 million households (2013 census data) total national expenditure on carbonated drinks is in the region of $257 million each year. A 20% tax on these drinks could therefore generate up to $40 million revenue per year (even allowing for reductions in consumption due to tax) if applied to all carbonated drinks, or about $30 million if applied only to sugar-sweetened varieties (calculations available from authors on request). Note, however, that if non-carbonated drinks high in sugar (e.g. cordials and fruit juices) were included in the tax, then tax takings would increase. Revenue from such a tax could be invested in programmes to improve population health, e.g. food in schools.

Our results are subject to some limitations. Selection of the tax scenario for modelling was constrained by data available. The national food expenditure datasets we used to calculate price elasticities combine all carbonated beverages (sugar-sweetened and artificially sweetened) in one category, meaning we could model a tax on all carbonated beverages, but not the more ideal scenario of a tax on sugar-sweetened beverages. Our modelling also underestimated uncertainty (e.g. no uncertainty in price elasticities was propagated through modelling, which would probably lead to up to a doubling in our 95% uncertainty intervals).

 Nevertheless, our findings align with those of international studies, and suggest that a fizzy drink tax would improve health and probably reduce inequalities. Practically, it is also more likely than other taxes e.g. on saturated fat, to be a politically viable first step. Given its cost-effectiveness, a 20% tax on carbonated drinks could be a simple, effective component of a multifaceted strategy to tackle New Zealand’s high burden of diet-related disease.

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Alcohol and youth: a response to Professor Casswell’s letter

Dear NZMJ,

I note with interest Sally Casswell’s letter in the most recent NZMJ.¹ She writes:

“Which brings me to a final relevant issue in the media coverage of this story: while there were no comments from the vested interest groups, producers or retailers, one NZ Herald story did quote Dr Eric Crampton, a University of Canterbury economist, who said the video was shocking because ‘rare and sad events are shocking’. He also said ‘while several prominent anti-alcohol commentators have used this tragic case to argue for higher alcohol prices and broader restrictions on where alcohol can be sold, the overall statistics on youth drinking suggest that things are improving’.

Dr Crampton was referring a decrease in the proportion of young drinkers classified as hazardous drinkers or binge drinkers in recent surveys. The Ministry of Health (MoH) NZ Health Survey for example, reported 1 in 5 of those aged 15–17 years were hazardous drinkers (down from about 1 in 4 in 2006/7). There is no doubt there is some improvement but whether enough to argue against improved alcohol control policies is another question.

The University press release and NZ Herald story did not contextualise this ‘expert’ opinion, but in a recent news item it was announced that Dr Crampton and the University of Canterbury had accepted 3 years of funding from the Brewers Association of New Zealand.”

Here’s some context, if your readers would be interested.

The University of Canterbury’s media person contacted me requesting a press release on this issue. I was not inclined to comment on the case, knowing nothing of the circumstances of the 9-year-old in the video. But I was then disappointed to hear repeated instances of anti-alcohol commenters suggesting that this case served as exemplar of a worsening trend in youth drinking. I consequently wrote a release focusing on results from the most recent Ministry of Health and Auckland Youth ’12 data that show that youth drinking has been decreasing.

I also insisted that the last line of the press release note what might be perceived as a conflict of interest. It reads, “Dr Crampton is a senior lecturer in economics at UC. He also advises the Brewers Association of Australia and New Zealand on alcohol economics and policy.”² I forwarded a copy of the release to the Brewers Association as a courtesy; it was the first time that I had talked with them about the matters discussed in the release. They did not request or initiate the release.

It is strictly incorrect for Casswell to insinuate that I was hiding any potential conflicts; they’re noted in the press release. My full disclosure statement has been up on my blog, Offsetting Behaviour,³ since the University entered into this arrangement with the Brewers to facilitate my work, and were also announced in a separate press release in December. It is also incorrect to suggest that my press release pointing to the actual statistics on youth drinking were in any way motivated by this arrangement.

I just get annoyed when policy activists try to mislead the public about the underlying statistics. And I continue to be amazed by those who think tax increases are the appropriate way of dealing with those adults who think it hilarious to get 9 year olds drunk.
Eric Crampton  
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2. The full release is archived at Scoop: http://www.scoop.co.nz/stories/AK1401/S00225/video-showing-a-drunk-nine-year-old-shocking-for-good-reason.htm  
3. My disclosures statement is here: http://offsettingbehaviour.blogspot.com/2013/12/alcohol-work.html
Does cost drive primary care patients to New Zealand’s Emergency Departments? Authors’ reply to letter from Dr Ben Gray

Thank you for the opportunity to reply to a critique of our recent paper in the Journal by Dr Gray.¹

Dr Gray believes that the conclusion of our systematic review² is flawed due to the source studies for the review spanning the length and breadth of New Zealand over almost 50 years. We take the alternative view that as the studies are remarkably consistent regardless of era and location, the conclusion is more robust not less.

From our review it was clear that the cost of primary care is a factor for only a small minority of patients presenting to New Zealand’s emergency departments (EDs). Subsequent to the completion of our study the Ministry of Health published the results of a survey of current ED use among 12,000 adults and 4000 caregivers of children in 2011/12. The results mirrored our review findings exactly: only “One in 40 adults used an emergency department because of cost”.³

We agree with Dr Gray that the ED is not a good place to provide primary care. EDs in New Zealand provide acute medical and surgical care, not primary care. The vast majority of patients presenting to EDs in New Zealand are not primary care patients which is why reducing cost barriers to primary care is unlikely to lead to a reduction of acute demand (ED presentations), at least in the short term.

Whether improved access to primary care leads to reduced acute demand in the long term is a different question altogether and one deserving of further research.

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References:
Low prevalence of anti-HCV antibody reactivity in antenatal blood samples from the Auckland community

Chronic hepatitis C virus (HCV) infection causes liver damage and can lead to cirrhosis and hepatocellular carcinoma. Transmission of HCV is via parenteral routes (blood transfusions, shared ‘dirty’ needles, sexual intercourse, and vertical).

In New Zealand (NZ), the epidemiology of HCV infection has not been well studied. It is estimated that approximately 50,000 people are infected and the majority are unaware of the infection.1

Worldwide, injecting drug use is the main source of transmission of HCV. A 2006/7 survey of drug use in NZ found that overall 1.4% of 16–65 year olds surveyed admitted to injecting drug use and rates were highest among respondents aged 45–54 years.2 Needle exchange programmes and reduced prevalence of injecting drug use in NZ should have led to a reduction in new cases of HCV infection via this route. Vertical transmission is now thought to be an important source of new HCV infections.

Screening for HCV antibodies is not part of NZ’s antenatal screening; most countries recommend targeted screening of pregnant women but acknowledge varying sensitivity of this approach.3

The aim of this study was to anonymously test 1000 antenatal bloods at Labtests, Auckland’s community laboratory, to determine the rate of HCV antibody reactivity among pregnant women in Auckland.

Anti-HCV antibody testing was performed using the ADVIA Centaur HCV assay (Siemens Healthcare Diagnostics Inc. Tarrytown New York). Samples with an index value of ≥1.0 are considered reactive. Samples were identified by rubella serology requests (almost always performed as part of antenatal screening) on females. Samples a pregnancy panel (a computer code added for antenatal patients) were processed for anti-HCV antibodies.

NHIs were obtained from the laboratory request number and sent without any laboratory data to the Ministry of Health (MoH) for ethnicity. The MoH analyst then removed the NHIs before sending the data back; laboratory data and age was combined with the ethnicity data using the laboratory number which was then removed. The only data saved contained age, ethnicity, and HCV antibody result. Data were not saved on the instrument or the laboratory information system.

A grant from the NZ Hepatitis Foundation funded this study. Ethics approval was discussed with the NZ Ethics Committee and was determined not to be required as the study methods maintained anonymity and so the study was low risk.

In total 1173 samples were tested for anti-HCV antibodies; of these 915 were from women known to be pregnant. Of these 915 women, the median age was 30 years (range 14–46). A range of ethnicities were seen including NZ European (275, 30%), Asian (138, 15%), Pacific (137, 15%), NZ Māori (95, 10%), Indian (94, 10%), other
European (80, 9%), Cook Island Maori (27, 3%), and other (22, 2%). Ethnicity data were unavailable for 47 (5%) due to either no NHI or MOH not having the data.

In total there were three anti-HCV antibody reactive samples (0.3%) of samples tested from pregnant women. The three positive tests were from women aged 23, 28, and 42 years, and of NZ European, Indian, and Asian ethnicity. Two samples were strongly reactive while one was low level reactive (just above the cut-off).

A past review of HCV antibody reactivity and HCV RNA positivity in our laboratory demonstrated that low level reactive results are commonly associated with either past cleared infection or false reactivity of the assay.

These data are reassuring. The prevalence of anti-HCV antibody reactivity among our cohort of pregnant women in the Auckland community was low at 0.3%. It is likely that at least one of these women does not have active HCV infection (with low-level reactivity). In addition, it is possible that the other two women may have spontaneously cleared their infection.

Overall approximately 25% of acute infections clear spontaneously; however, women are more likely to clear than men, as are younger people (<40 years). Thus, it is possible that less than 0.3% of our cohort have active infection that would pose a potential risk of vertical transmission to their baby. Unfortunately we were not able to test for HCV RNA positivity in our samples.

In summary, we have shown that HCV antibody reactivity is very uncommon among pregnant women in the Auckland community. NZ’s current antenatal screening policy of not routinely testing for HCV is appropriate.

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References:


Disappointing performance of rapid antigen detection tests for group A streptococcus in the Auckland school-based sore throat programme

In 2011 a pilot study at a South Auckland primary school demonstrated the feasibility of school-based sore throat clinics for the purpose of identifying and treating children with group A streptococcus (GAS) pharyngitis and at risk of acute rheumatic fever.¹ Since then, clinics have been introduced into over 200 schools in New Zealand (NZ). In 2013, a total of approximately 170,000 throat swab cultures were performed at Labtests, the Auckland community laboratory.

While throat swab culture is the gold standard, it is relatively costly and turn-around-time can be up to 72 hours. Thus, rapid antigen detection tests (RADTs) are an attractive alternative. Test performance varies in the published literature with sensitivities between 70 and 90%, and specificities greater than 95%² Widespread use of RADTs has been hampered by concern regarding lack of sensitivity compared with culture which is thought to be due to low numbers of organisms picked up on the swab.³

Using a flocked (rather than conventional rayon) swab to sample the throat may improve sensitivity as flocked swabs have been developed to enhance the release of organisms into transport media, making greater numbers of organisms available for culture and other testing (e.g. RADT and molecular testing).⁴ We sought to investigate the applicability of a RADT using flocked swabs in the school-based sore throat programme. The RADT kit used (ulti med, Deutschland, Germany) was chosen because it demonstrated equal or superior performance when four kits available in NZ were compared for sensitivity in vitro.⁵ The study was approved by the Southern Ethics Committee. Kits were provided free of charge by the NZ distributor (Ngaio Diagnostics) and a NZ Heart Foundation Project Grant funded the study.

Study participants were those children at the South Auckland primary school who assented and whose parents/guardians consented to the study, and who, on questioning, self-identified to the public health nurse as having a sore throat. All participants had a dual throat swab collected: either a dual conventional-conventional (C-C) swab or a dual conventional-flocked (C-F) swab. Study participants were randomly swabbed with either a C-C or a C-F swab combination.

Following same-day transportation to Labtests, the conventional swab from each patient was cultured for GAS by standard laboratory methods. The second conventional swab (in C-C arm) or the flocked swab (C-F arm) was tested by RADT by a trained laboratory technician, according to the manufacturer’s instructions. RADTs were performed and read in real time (before culture results were available).

The kit’s positive and negative controls were tested before each run and there were no quality control failures. In addition, 30 culture swabs were incubated for an additional
48 hours in an enrichment broth to enhance the sensitivity of culture (to exclude the possibility that positive rapid tests and negative cultures were due to lack of culture sensitivity); however, this did not alter the culture results (i.e. no further positive cultures were identified after enrichment).

An interim analysis was performed after 298 consecutive throat swabs were tested. Of the 61 (20.5%) swabs were that were culture positive for GAS, 22 (36%) were RADT positive, and of the 237 swabs that were culture negative for GAS, 200 (84%) were RADT negative. RADT performance for both conventional and flocked swabs is outline in Table 1.

Table 1. RADT performance compared with culture of flocked and conventional swabs for GAS pharyngitis

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<th>Conventional swab</th>
<th>Flocked swab</th>
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<tr>
<td>RADT result</td>
<td>Culture positive</td>
<td>Culture positive</td>
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<td></td>
<td>(n=23)</td>
<td>(n=38)</td>
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<td>Positive</td>
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<td>RADT sensitivity (%)</td>
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<td>RADT PPV (%)</td>
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<td>41</td>
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<td>RADT NPV (%)</td>
<td>86</td>
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The heaver the culture growth the more likely that the RADT was positive, p=0.002 by Cochran-Armitage trend test.

On the basis of the poor performance of the RADT the study was terminated. We do not have a satisfactory explanation for our findings. The poor PPV (<50%) may have been impacted by the population studied (children well enough to be at school and self-identifying with a sore throat).

In contrast, the published experience focuses on throat swabs collected from patients presenting to the Emergency Department or their primary care doctor with sore throat, often accompanied by fever and cervical adenopathy. The sensitivity in our study was also worse than expected. While the culture detected GAS in 20.5% of children, in some this may have represented colonisation rather than infection, with coinciding low bacterial burden impeding detection by a non-culture method. Differentiation between infection and colonisation was not possible here as serology was not collected for streptococcal antibody titres.

The sensitivity of RADT on flocked swabs was higher than on conventional swabs (42%) compared (26%); however, this is still too low for utility and the accompanying NPV of 86% for flocked swabs is not high enough such that RADTs could be used to reliably rule out GAS.

We conclude that the test performance of this RADT is insufficiently robust for inclusion in the NZ school-based sore throat clinics.
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5. Upton A. In vitro comparison of four rapid antigen detection tests for group A streptococcus detection. [Article in progress].
Response to ‘Evaluation of New Zealand’s bicycle helmet law’ article

In a recently published *NZMJ* article, Clarke claims the New Zealand (NZ) mandatory bicycle helmet law (MHL) halved the amount of cycling usage and contributed to 53 premature deaths per year.\(^1\) However, no statistical analyses such as hypothesis testing or computing confidence intervals are performed in reaching the above conclusion.

Olivier,\(^2\) in a commentary regarding Clarke’s study, also noted the author failed to meet any of the Bradford-Hill minimal criteria to provide minimal evidence of a causal relationship between NZ MHL and 53 premature deaths each year. This letter critically evaluates the study’s methods and choice of data used to support the author’s conclusions.

A major weakness in this study is the lack of cycling exposure data in a 6-year window around the helmet law. Hours travelled by bicycle was taken from Land Transport Safety Authority surveys collected for the periods 1989–1990, 1997–1998 and 2003–2006 and the Ongoing New Zealand Household Survey for the period 2006–2009. As a result, injury rates relative to the amount of cycling are only estimable during those years. Since the NZ MHL went into effect on 1 January 1994, this study sheds no light on the cycling environment in a 6-year window around the MHL.

Helmet laws are enacted to increase helmet-wearing in an attempt to mitigate bicycle-related head injuries and do not offer injury protection to other body parts. The author, however, did not analyse head injury separately and instead combined all cycling-related injuries. In fact, there was a 67% decline in serious traumatic brain injury (TBI) comparing data for the years nearest the helmet law (1988–1991 vs. 1996–1999).\(^6\) Further, when contrasted with increases in helmet-wearing, there is a decline in both serious injuries overall (Abbreviated Injury Score, AIS≥3) and serious TBI alone.

While there is an increase in serious cycling injury comparing 1996–1999 and 2003–2007 periods, there is only a slight increase in TBI. During this period, estimates of helmet-wearing in NZ have remained steady indicating any changes in the injury trends are unlikely to be related to changes in helmet-wearing and, therefore, the helmet law.
For injury assessment, Clarke argues the NZ MHL is associated with an increased injury risk of 20% by comparing overall injury (per million hours cycling) in the periods 1988–1991 and 2003–2007. However, when available pre-law injury data is compared to a period that is more relevant to MHL, i.e., 1996–1999, there is a substantial decline in cyclist injuries overall (-17%) and serious injuries (-53%). These declines are relative to cycling exposure and the time period corresponds to an increase in helmet-wearing as shown in Figure 1.

Further, Clarke notes overall cycling injuries more than doubled compared with pedestrians from 1988–1991 to 2003–2007. However, the author fails to mention the ratio of cyclist to pedestrian serious injuries dropped 28% (4.9 to 3.52) 2 years after MHL.

To analyse the effect of a policy intervention, it is important to effectively estimate the trend before and after the intervention in order to assess whether or not any observed increase/decrease around the time of the intervention is part of a longer upward/downward trend. Hence, it is important to account for the background trend and the estimation of trends cannot be achieved by simply comparing two points in time on either side of the law, as was done in Clarke’s study. In fact, previous studies have noted a decline in ridership back to 1986 for commuters, which began long before the helmet law in 1994 and before the substantial increase in helmet-wearing that began in 1990. This downward trend is not in any form captured in the author’s analysis.

Tin Tin et al list several reasons apart from the helmet law for declines in cycling rates and increases in cycling injuries. These include the lack of cycling focus in the New Zealand road safety agenda, an increase in children being driven to school due to parental concerns of safety and an already existing pre-law decline in cycling rates.
Clarke, however, does not address these possible confounding factors and attributes all declines in cycling rates and safety to the helmet law.

In conclusion, due to weakness in the analysis and choice of data—particularly the 6-year absence of cycling exposure data around the time the helmet law was introduced, the original conclusion that the MHL halved the amount of cycling usage and contributed to 53 deaths each year is highly questionable, if not misleading.

In fact, when data nearest the helmet law, and therefore most relevant, is coupled with helmet use surveys, there is a population-level benefit to helmet-wearing on lowering head injuries.

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A case of X-ray dermatitis

Excerpt from a case report written by Dr P. Clennell Fenwick (Christchurch Hospital) and published in NZMJ 1911 May;10(38):14–19.

The points of interest in this case may be briefly summarised:—

1. The extent of the wound.—The original wound required a dressing 11 inches square. At present date, 17 months after the injury, it measures 3½ by 2 inches. The point of greatest injury is that part of the skin which was directly opposite the anti-kathode, the rays here being of maximum intensity. This area has always been the deepest part of the ulcer, and will be the last to heal.

2. The intractable nature of the wound.—Time after time the ulcer appeared to be on the point of healing, and as often it "broke back" and returned to its original character. Hall Edwards mentions a case in which, after two exposures of 30 minutes each for renal skiagraphy, a patient developed an ulcer which has remained unhealed for eight years.

3. Nervous phenomena.—On several occasions I noted that the least exposure to air or touching the surface of the wound produced contractions of the recti abdominis muscles, of such violence that the patient was bent double. I have never before seen such violent muscular spasms. The general nervous system was undoubtedly affected. On more than one occasion the patient was delirious.

4. Treatment.—My treatment was strictly limited to the use of the high frequency effleuve. The first application of 15 minutes’ duration caused relief from pain, and patient slept well for the first time for months. After a very few applications, he gave up the use of cocaine, although he had been re-dressing the wound with this as often as 11 times a day and several times each night. After he had left me the pain returned, so that he had recourse to the cocaine once more, but while he was under treatment with the effleuve he always did without this drug. The second action which I can claim for the effleuve was that of increasing the blood supply to the diseased area. The margins of the wound became more congested, and red granulation points appeared all over the surface of the ulcer. It was by the junction of these granulations that the bridges of tissue were formed, and these have increased in size and gradually filled the cavity of the wound.

Without trespassing longer on your time, I would suggest that the publication of this case, which is only one among several that I have seen in New Zealand, should act as a caution to medical men who require a skiagraph of a patient. We can hardly avoid moral responsibility in the event of an accident to a patient unless we have previously warned a patient that a danger of dermatitis does exist, and unless we have taken precautions that no undue exposure to the rays shall be given.
Antismoking national media campaign in the United States

The authors of this report state that every year in the USA cigarettes kill more than 440,000 people and cost US$96 billion in direct medical costs and $97 billion in lost productivity.

In 2012, through the ACA, the US Centers for Disease Control and Prevention (CDC) launched the first, federally funded, national, anti-smoking, mass-media education campaign—Tips From Former Smokers (Tips).

This campaign cost US $54 million and this paper reviews its effects. Apparently it reached 80% of US smokers and calls to quit line increased by 132% during the campaign. There was a 12% relative increase in quit attempts among smokers and the prevalence of abstinence at follow-up was 13.4%. Overall it was estimated that more than 100,000 were likely to have been sustained quitters. The conclusion—“expanded implementation of similar campaigns globally could accelerate progress on the WHO Framework Convention on Tobacco Control and reduce smoking prevalence globally.”


Cancer risk among children born after assisted conception

Since the introduction of in vitro fertilization (IVF) in 1978, the number of children born after assisted conception have increased annually, and currently there are more than 5 million such persons worldwide. There is a documented risk for low birth weight, prematurity and congenital malformation and it has been suggested that such children may have an increased risk of developing cancer.

This report is derived from data from the United Kingdom National Registry of Childhood Tumours to determine the number of children in whom cancer developed before 15 years of age.

The cohort consisted of 106,013 children born after assisted conception in Britain between 1992 and 2008. The average duration of follow-up was 6.6 years. The researchers conclude that there was no increase in the overall risk of cancer in children born after assisted conception.


Tamsulosin treatment for benign prostatic hyperplasia (BPH) and risk of severe hypotension

BPH is an unwelcome consequence of ageing in men. The unpleasant lower urinary tract symptoms can be alleviated by the use of alpha blockers but their use is limited by associated hypotension. Finasteride, a 5-alpha reductase inhibitor and tamsulosin, an alpha-1A adrenoreceptor blocker are now more commonly prescribed.
Apparently tamsulosin dominates the market globally because of its “lower frequency of associated orthostatic hypotension.” This report concerns a trial comparing the use of tamsulosin and a 5-alpha reductase inhibitor.

Tamsulosin resulted in a roughly doubled risk for hypotension needing hospital admission during the first eight weeks after tamsulosin initiation and first weeks after restarting tamsulosin treatment.

Patients should be warned of this risk.

BMJ 2013;347f6320.
Doctor failed to comply with employer’s chaperone policy

Charge—Dr Gopalrao Chebbi, registered medical practitioner of Auckland, (the Doctor) was charged with professional misconduct by the Director of Proceedings (DP).

The charge alleged that the Doctor conducted an intimate examination on a patient without first offering the patient a chaperone in the context of: Previous Medical Council of New Zealand (MCNZ) requirements for him to use a chaperone;

- A previous voluntary undertaking to the Medical Council that he would use a chaperone;
- A recommendation from the Medical Council that he use a chaperone and/or;
- His obligation in his contract with his employer that he comply with reasonable directions policies and instructions and/or his employer’s chaperoning policy.

Finding—The hearing proceeded on the basis of an Agreed Summary of Facts. The Tribunal found the Doctor guilty of professional misconduct adding that professional propriety, especially between a male doctor and female patients, must always be observed. The Doctor failed to observe the requirement which had been imposed on him since 2006.

Background—In June 2005, following a complaint regarding an unchaperoned breast examination that the Doctor had performed, the MCNZ imposed a condition on the Doctor’s practice that he not see any female patients without a third person being present and that he have a chaperone (who was to be a health practitioner) present during any intimate examinations of female patients.

In December 2006 at the Doctor’s request, the MCNZ removed the requirement to have a third person present during consultations with female patients. In March 2007 the MCNZ placed further conditions on the Doctor’s practice following termination of his employment at a medical centre because of a complaint from a female patient on whom he had performed an unchaperoned breast examination. On 9 May 2007 the Doctor entered into a contract for services with Te Puna Hauora (the Employer) and was required to comply with the Employer’s directions policies and instructions in relation to the performance of his services. When the Doctor commenced work the Employer also put in place a chaperone policy for the organisation which the Doctor was made aware of and directed to comply with. In May 2008 following an application by the Doctor, the MCNZ removed all conditions on the Doctor’s practice but required the Doctor to sign a voluntary undertaking to use a chaperone for every intimate examination on female patients and to display a chaperoning notice in the waiting room and to notify his employers of this. The voluntary undertaking was removed by the MCNZ in May 2009 after the Doctor applied for its removal. The Doctor was strongly advised by the MCNZ to continue using a chaperone. The Employer’s chaperone policy remained in place. On 15 February 2011 a female patient
saw the Doctor for the first time complaining of sore, aching breasts, stabbing pains where her ovaries were, had missed her period and had been vomiting. She thought she could be pregnant but a pregnancy test was negative. The Doctor undertook an abdominal examination without first offering the Patient a chaperone. The Doctor then examined the Patient’s breasts, again without first offering the Patient a chaperone. During the breast examination the Patient became upset although the Doctor did not interpret this at the time. After leaving the consultation room the Patient appeared upset, and after discussion with staff, made a written complaint to the Employer. The Doctor learned of her complaint shortly after the consultation and apologised to the Patient that she had felt upset. The Doctor’s contract with his Employer was terminated on 16 February 2011 for breaching the chaperoning policy. The Doctor accepted that the charge amounted to professional misconduct.

**Penalty**—The Tribunal imposed a 6-month term of suspension but deferred the suspension for one year pending any further complaint concerning inappropriate intimate examinations.

The Tribunal also ordered that the Doctor:

- Be censured;
- Be fined $1,000;
- Pay 25% of the costs of and incidental to the prosecution, investigation and the hearing amounting to approximately $12,500; and
- For 36 months from the date of the decision, conditions were imposed that the Doctor have a female chaperone present when seeing female patients for any intimate examination; he notify any current or prospective employer of this condition; that his future employment (or place of work) be approved by the Medical Council’s Registrar and Medical Advisor; At all times a notice is to be shown in both the waiting room and the Doctor’s consultation room informing patients of the chaperone requirement; and at the discretion of the Medical Council a random audit be undertaken, including checking for appropriate chaperone notices and a review of the notes of female patients who have undergone intimate examinations. The Doctor is to meet the cost of this audit.

The Tribunal directed publication of its decision and a summary of the decision on the Tribunal’s website and in the New Zealand Medical Journal.

The full decisions relating to the case can be found on the Tribunal web site at [www.hpdt.org.nz](http://www.hpdt.org.nz)

Reference No: Med12223D
Lindo Ferguson
CBE, K.St John, LLD, FRCS, FRACS, FRANZCO, JP (1923–2014)

Dr Lindo Ferguson died peacefully on 19 January 2014 at the age of 90 years.

Lindo was born in an historic home on his parents’ dairy farm at Waimate North. He was educated by a governess until the family moved to Dunedin during the 1929 depression when he was aged 7. He attended John McGlashan School in Dunedin, Christ’s College in Christchurch, and the Otago Medical School. He graduated MBChB in 1947 and won the Ardagh Memorial Prize for Clinical Medicine. Lindo’s ophthalmology training was at the famed Moorfields Eye Hospital in London.

He returned to New Zealand in 1952, set up a private practice in Auckland, and was subsequently appointed as a part-time visiting ophthalmologist to Auckland Hospital.

In ophthalmology, Lindo was the initiator and organiser of the first part one examination course for the FRACS in ophthalmology in Auckland and was convenor for the ophthalmology training scheme for New Zealand.

He was President of the Ophthalmological Society of New Zealand in 1980. He was Chairman of the Auckland committee of the Royal Australasian College of Surgeons from 1978 to 1980 and was a member of the Board of Examiners of the Royal Australasian College of Surgeons from 1972 to 1982.

Lindo, with Professor John Parr of Dunedin, led negotiations with the Royal Australian College of Ophthalmologists in the 1980s to allow trainees in New Zealand to take the examinations of the Australian College after the Royal Australasian College of Surgeons had ceased examining in ophthalmology.

This was a milestone towards full specialist training in ophthalmology in New Zealand and Dr Ferguson and Professor Parr were both awarded honorary fellowship of the Royal Australian College of Ophthalmologists in 1982. Their efforts led ultimately to a full merging of the Ophthalmological Society of New Zealand with the Royal Australian College of Ophthalmologists to form the Royal Australian & New Zealand College of Ophthalmologists.

Of interest, Lindo’s grandfather, Sir Lindo Ferguson, was New Zealand’s first fully trained ophthalmologist, who arrived in Dunedin in 1883. In 1909 he was appointed Professor of Ophthalmology, more because of his personal attributes than the
importance of ophthalmology at that time. Subsequently he was appointed Dean of the Otago Medical School, and to this day is New Zealand’s longest-serving medical Dean, 23 years, from 1914 to 1937.

Lindo’s involvement in public affairs started in 1952 when his love of heritage was elevated to activism by the recent demolition of Partington’s Mill, in Symonds Street, Auckland, which had been a very prominent city landmark since 1850. Its demolition, Lindo said, was merely to provide two car parks for Seabrook Fowlds Motors. Lindo put pamphlets into letterboxes, and was elected to the Auckland City Council on a platform of heritage protection. This launched his massive involvement in civic affairs.

In local government Lindo was on the Auckland City Council from 1968 to 1977 and Deputy Mayor of Auckland from 1971 to 1977. He was Deputy Chairman of the Auckland Regional Authority from 1980 to 1983 and 1985 to 1986, and Deputy Chairman of the Auckland Regional Council from 1988 to 1992. In these posts he took the initiative in the acquisition and restoration of Ewelme Cottage, Kinder House, and Highwic, and in the rescue of the old Customs House.

In community affairs Lindo was President of the Auckland Institute and Museum Council and was made an honorary life member and Companion of the Auckland Institute and Museum Council in 2002. He was Chairman of the Auckland Regional Committee for the Order of St John and was made Knight of St John in 1994. He was Chairman of the Youthslink Family Trust, Deputy Chairman of the New Zealand Retirement Life Care Residencies Trust, member of the MacKelvie Trust Board, member of the Auckland Heritage Trust, member of the New Zealand Police Centennial Trust, member of the Board of Management of the Auckland Art Gallery, and was made an honorary member of the Rotary Club (Auckland).

He was co-Chairman of the Orakei Marae Development Council, which was responsible for the development of the marae. He was President of the Northern Club and also a Trustee of the Club, and was a Director of R & W Hellaby Limited and of Ports of Auckland. One of his greatest loves was his long-standing membership of the Cornwall Park Trust Board, and his Chairmanship of the Logan Campbell Residuary Estate for 16 years. The Lindo Ferguson Education Centre in Cornwall Park perpetuates his contributions.

Lindo became a member of the University of Auckland Council in 1977 and was Chancellor of the University of Auckland from 1981 to 1987. He was a promoter of tertiary education for Maori.

In 1970 Lindo and Laetitia purchased a 28-hectare property on the shores of Mangonui Harbour in Northland. The property included an historic house built by a whaler, Captain Butler, in 1847. Lindo and Laetitia thoroughly restored the house and furnished it in its period, and it was joint winner in the domestic building section of the Historic Places Trust/Placemakers-sponsored building restoration competition in 1985.

Also on the property are an historic cemetery, and a Maori Pa, which the Fergusons maintain in conjunction with Northland Maori. Lindo built up an extensive museum of whaling.
Their beautiful property with its Pa, cemetery, historic house, whaling museum, and extensive gardens, has been much visited, especially by Northland school groups on educational trips.

Laetitia, his widow, has also done significant community work, which has included the Orakei Marae, the St Stephens and Queen Victoria Schools Trust Board, the Prisoners Aid home visiting team, and Vice-President of New Zealand Riding for the Disabled.

Lindo was a natural, thoughtful leader, who became chairman of most organisations to which he belonged. He was a generous, able, and unassuming man, who made wide-ranging contributions to our nation. Lindo was awarded the Queen’s Silver Jubilee Medal in 1975, an honorary Doctor of Laws from The University of Auckland in 1986, and the CBE in 1987. That Lindo was never knighted remains beyond belief to all those who knew him. He and his grandfather Sir Lindo Ferguson were two great New Zealanders.

Lindo is survived by his wife Laetitia, son William and daughter Jan, and grandchildren Daniel, Miles, Anna, and Harrye.

Honorary Associate Professor Bruce Hadden CNZM (Department of Ophthalmology, University of Auckland) wrote this obituary.
# 2014 NZMJ Publication Dates and Themes

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<th>2014 Publication Dates (NZ Medical Journal)</th>
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<td>June 6</td>
<td>Cancer</td>
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<td>July 4</td>
<td>Child Health</td>
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<td>August 1</td>
<td>Stroke</td>
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<td>September 12</td>
<td>Maori &amp; Pacific Health</td>
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<td>October 17</td>
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<td>November 7</td>
<td>Lifestyle Illnesses</td>
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<td>December 19</td>
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</table>
The Editorial Board (F Frizelle, T Buckenham, R Mulder, L Beckert, J Connor, J Reid) and Editorial Team (F Frizelle, B Edwardes, S Cuzens) thank all those who generously gave their time and expertise in reviewing papers for the New Zealand Medical Journal in 2013. (We apologise to anyone whose name has been inadvertently omitted from the following list.)

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Barclay M
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Wilson W
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