THE NEW ZEALAND MEDICAL JOURNAL
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This Issue in the Journal

What Wellington region city councillors think of smokefree outdoor places
Sharon Tay, George Thomson

Some local councils in New Zealand have taken steps to encourage people to keep playgrounds and other outdoor places free of tobacco smoke. This study looked at what some city councillors in the Wellington region thought of such policies. Twenty-one councillors were interviewed. Most interviewees agreed that outdoor smoking would set examples to children and youth. There was most support for keeping playgrounds smokefree and least support for keeping some streets smokefree.

Comparison of New Zealand Cancer Registry data with an independent lung cancer audit
Wendy Stevens, Graham Stevens, John Kolbe, Brian Cox

Lung cancer is the commonest cause of cancer deaths in New Zealand. The New Zealand Cancer Registry (NZCR) is a national register which collects information on cancer, including lung cancer. Data collected includes information such as age, gender, and ethnicity as well as site and extent of disease. This information is used by clinicians, researchers, and policymakers. Information was compared between clinical databases and the NZCR database. Extent of disease was absent for 42% of the lung cancer cases in the NZCR and was more commonly missing for particular types of patients and extents of disease. Researchers using information from the NZCR should be aware of its limitations.

Transfusion-related acute lung injury (TRALI): a review of investigations by the National Tissue Typing Laboratory of cases reported in New Zealand since June 2004
Paul Dunn, Dorothy Dinesh

Transfusion-related acute lung injury (TRALI) is an uncommon but serious complication of blood transfusion. It is caused by a reaction between antibodies in the blood transfusion and a patient's white blood cells and results in leaky blood vessels in the lungs. TRALI causes breathing difficulty and fluid to accumulate in the patient's lungs. This study tested donors for white cell antibodies and confirmed that most cases are associated with females who have antibodies against white blood cells; these antibodies usually form following exposure to fetal cells during pregnancy or childbirth. The data can help us to develop strategies to prevent this complication of transfusion.

Smoking cessation competencies for health workers in New Zealand
Chris Bullen, Natalie Walker, Robyn Whittaker, Hayden McRobbie, Marewa Glover, Trish Fraser

Helping people who smoke to stop smoking is one of the most important tasks a health worker can do. We developed a set of competencies for health workers who provide smoking cessation advice, support and treatment in New Zealand. The competencies set the standard for knowledge and skills that health workers must have to deliver the key activities outlined in the Guidelines.

New Zealand smoking cessation guidelines (Special Article)
Hayden McRobbie, Chris Bullen, Marewa Glover, Robyn Whittaker, Mark Wallace-Bell, Trish Fraser

One in every two smokers will die as a direct consequence of smoking. Smoking cessation interventions are life-saving treatments and should be offered all people who smoke. The New Zealand Smoking Cessation Guidelines are a vital tool to help healthcare professionals help their patients who smoke to stop. A simple 3-step process is promoted in the new Guideline—"ABC"—to remind health workers to always *Ask* patients if they smoke, give *Brief* advice to stop and the assist them with *Cessation* by referral to services such as Quitline and Aukati Kai Paipa, or prescribe effective treatments.

Use of four major tobacco control interventions in New Zealand: a review (Review Article)
Nick Wilson, George Thomson, Richard Edwards

This article reviewed key tobacco control interventions being used in New Zealand. The review found that there is still substantial scope for New Zealand to catch up to OECD leaders in the key tobacco control areas of: price, controls on marketing, mass media campaigns, and smokefree environments regulations. In particular, there needs to be higher tax levels for loose tobacco (relative to factory-made cigarettes) and the elimination of residual marketing. There are also important gaps in exploiting synergies between interventions in this country.

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Tobacco control in New Zealand: top marks for new smoking cessation guidelines, must try harder elsewhere

Richard Edwards, Nick Wilson, George Thomson

We congratulate the authors of the new smoking cessation guidelines for New Zealand, which are summarised in this issue of the *Journal* by McRobbie and colleagues (http://www.nzma.org.nz/journal/121-1276/3117).

It is heartening to see guidelines developed through a rigorous, evidence-based approach; and which provide practical advice clearly and succinctly for all those engaged in smoking cessation support in New Zealand.

But, and there is always a but, the publication of the guidelines also underlines the need for public health decision-makers to adopt a determined, similarly rigorous, and evidence-based approach to the development and implementation of population-based tobacco control policies. The publication should also focus the minds of all organisations with an interest in health and social justice to support and participate in advocacy for effective tobacco control policies. This should, of course, include organisations which represent the medical profession and specialities.

We need to keep in mind the extent of the public health problem that tobacco represents for the people of New Zealand. In 2006, over 50 years after it became clear that tobacco smoking is a deadly carcinogen, almost a quarter (23.5%[1]) of the New Zealand population were still regular smokers, and over 4000 New Zealanders died from smoking-related diseases.

The rate of decline in the proportion of adults smoking regularly in the last two decades in this country has been very low, although evidence from the 2006/7 New Zealand Health Survey was more promising.[2] Other countries such as Canada and Sweden have achieved much greater reductions in prevalence.[3] Furthermore, the continuing very high prevalence of smoking and the resulting harm from tobacco to the health of Māori and Pacific peoples', and its contribution to health inequalities in New Zealand is a particular concern.[4]

Fortunately there has been some recent progress. There has been a successful new smokefree environments law [5] (*Smoke-free Environments Amendment Act 2003*), continuing development of the Quitline, and some innovative mass media campaigns. The introduction of graphic health warnings on tobacco products is underway. But the slow reduction in adult smoking prevalence suggests that much more is needed to make substantial progress.

First, health service policy needs to ensure that the new smoking cessation guidelines are fully implemented at every level of the health system. This requires planning, allocation of resources, training of staff, and appropriate performance monitoring or incentives.

It is not good enough that many patients with smoking-related diseases continue to be admitted to hospital, patched up, and then sent out until it happens again; without

receiving evidence-based smoking cessation interventions which are some of the most cost-effective medical interventions known. A particular priority is to ensure that all pregnant women smokers and the caregivers of any child with respiratory or ENT problems are identified and given maximal encouragement and support to quit.

But improving individually-focused cessation support is far from sufficient. Most smokers who quit do so in the community beyond the reach of the new smoking cessation guidelines, and without the benefit of structured cessation support or use of nicotine replacement therapy (NRT) or other cessation aids.

Quitting often occurs after multiple unsuccessful attempts. Many quit attempts are unplanned and spontaneous, frequently in response to motivational trigger events like price increases, new restrictions on smoking, and mass media campaigns.[6] Increasing the frequency of quit attempts within populations has been shown to have the greatest impact on increasing population quit rates.[7]

We therefore must aim to increase the total number of quit attempts by providing regular and intensive triggers to prompt quitting. We must also continue to implement policy measures to reduce the proportion of young people starting to smoke. Both will require addressing upstream factors, and crucially, rigorous implementation of evidence-based population orientated interventions.

Evidence-based reviews [8] stress the importance of the following interventions to reduce population smoking prevalence: increases in price of tobacco products; increases in the coverage of smoke-free environments; comprehensive bans on tobacco marketing; strong counter-marketing through mass media campaigns; and comprehensive smoking cessation support.

For each of these interventions much more could be done in New Zealand. For example: point-of-sale marketing could be banned and plain packaging introduced; smokefree laws could be extended to cover cars with child occupants; mass media campaigns could be much more extensive, more sustained, and far better resourced; and population level smoking cessation support (e.g. the Quitline) could be even more comprehensive and better funded. Additional effort could be made to ensure interventions are effectively targeted at and developed in partnership with priority groups such as Māori smokers.

Funding for tobacco control, while increased over the last 10 years, is still woefully inadequate in relation to the scale of the problem. For example, in relation to the number of premature deaths caused, national tobacco control health promotion campaigns are funded at a fiftieth or less of the rate for road safety campaigns.[9]

The record is least impressive recently for increasing the price of tobacco products. The current New Zealand Tobacco Control Strategy notes that tobacco taxation: "…is probably the most important single intervention to reduce smoking initiation" and "Strong scientific evidence supports the effectiveness of increasing the unit price for tobacco products"[10]. Yet, there has been no real increase in the level of tobacco taxation since 2001.

We need a tobacco tax strategy, with regular significant price rises, which are clearly presented and justified as a public health measure, and are accompanied by integrated media campaigns and increased cessation support to maximise their impact.[11]

Only a small fraction of tobacco tax revenue is allocated for tobacco control. Tobacco control spending, at under $45 million a year, is less than 5% of the tobacco tax revenue. Dedicating much of the additional revenue from price increases to tobacco control will increase support for the increase and ensure a robust funding stream.

As well as doing more of what we know works, and doing it better, we should also investigate more fundamental long-term solutions. One option is to introduce an autonomous Tobacco Control Authority.[12] Another is to revise the regulatory framework for nicotine delivery devices so that the level of regulation is in proportion to the hazard of the product. This would ensure that cigarettes are far more stringently regulated compared with less harmful products such as some oral tobacco products and NRT.[13 14]

Other proposals include progressively decreasing the allowable nicotine content of cigarettes and regularly decreasing tobacco product volume quotas for manufacturers and importers.[15] Finally, some commentators have gone further. They suggest that the ultimate vector for the tobacco epidemic is a profit-driven tobacco industry; and that whilst that remains the case, effective tobacco control policy will continue to be contested, delayed, diluted, or even destroyed. Solutions advocated include introducing a not-for-profit tobacco industry, or tobacco product distribution and retail network.[16 17]

This is election year in New Zealand. One goal that every health organisation can achieve is to actively support every political party having an evidence-based policy for tobacco control in its manifesto. Achieving commitments to improved tobacco control will do far more for public health than the usual election year focus on tweaking surgical waiting lists and health sector organisational issues.

Competing interests: All of the authors have previously undertaken work for the Ministry of Health or non-governmental agencies working to improve tobacco control.

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New Zealand's health system is subject to government rather than governance: inadequate representation of doctors in the health system elite

Des Gorman, John Scott

We were recently told that someone was unsuitable for a role in health system governance, in part, because he was a clinician. This caused us to reflect on the current low number of doctors of any ilk amongst the senior governors of the New Zealand public health system. The relevant consequent questions are what is the likely origin of this paucity, what are the consequences, and what is a desirable representation? Readers will quickly realise a semantic, operational, and perhaps deliberate, confusion of health system versus clinical governance, and of health system governance versus government.

As a preface, we will stocktake. The New Zealand Minister of Health at the time of writing is an Otago, Massey, and Harvard graduate in arts, social science, business, and economics and was a diplomat before he became a politician; his predecessor was a vet and his in turn was a dental nurse, who is generally well remembered by the profession.

The Chair of the Medical Council is a doctor (a geriatrician) who is a government appointee. The Chief Executive Officer (CEO) of the Ministry of Health and the Director General of Health, Stephen McKernan, is a well-respected career health system manager. Businessmen and women, farmers, and nurses are well represented among the District Health Board (DHB) Chairs and CEOs. Twelve of the 21 Chairs are businessmen and women, and 3 are farmers; 5 of the Chairs and CEOs are former nurses.

By contrast, doctors are almost non existent amongst this health system elite—the only medical representative at either level is Professor Gregor Coster, a general practitioner, who is the Chair of the Counties Manukau DHB.

Doctors "do slightly better" in aligned roles however. For instance, Dr Jan White, an Australian public health physician, is the CEO of the Accident Compensation Corporation (ACC), and Dr Robin Olds, a pathologist, is the CEO of the Health Research Council. Perhaps most telling in terms of the dearth of doctors in senior health management is that the Chair of the hugely important and recently configured Medical Training Board is Mr Len Cook, who is the former New Zealand Government (and UK Government) Statistician.

Our intent is not to be critical of the various incumbents. For example, we have met Mr Cook and he is impressive. The issue is the under-representation of doctors. It is easy to imagine the response of the more politically savvy legal profession to a "Legal Training Board" being established and the Chair not being one of their own. The message would be clear to them and should be to us.

The first matter is the origin of this divorce; we are a long way from the days of the "medical superintendent" and we are not convinced that the accessibility and quality of health services is much better as a consequence. On the basis of recent experience, it could be argued that doctors have been determinedly extracted from governance roles and or overlooked. Any such putsch could be dated to the ill-fated Gibbs Report,[1] of which one of us was an author.

The Gibbs Report identified operational and financial bases for a necessary reform of hospital system governance;[2,3] the recommendations were rejected by both mainstream political parties. It is somewhat ironic that the subsequent and relatively successful reformation of Middlemore Hospital, along shared governance lines, was very much in keeping with the proposed reform. Instead, a mandate was assumed by Government to "commercialise" the management of hospital services.

Such a process of misconstruction would have been made much easier for those with a pejorative view of medically qualified health managers by the systematic discrediting of the profession, which, in modern times for New Zealand, began in earnest after the Cartwright Report.[4] The bureaucratisation (corporatisation) of doctoring is very reasonably seen as one of the major factors responsible for the end of the "golden age of doctoring".[5] Among UK doctors who graduated in 1977, 37% intend to retire early and one of the major reasons for this determination is the "managerial" nature of the National Health Service (NHS).[6]

The extent of the divorce probably can only be rationalised if it is also accepted that doctors have distanced themselves from health management and managers. The latter are generally pejoratively viewed by clinicians and are not well paid relative to most procedural specialists.

A common viewpoint is that doctors who engage in management are "failed clinicians". Indeed, few of our graduates have an interest in health system management. Their status is poor, and attractive role models are few and far between. Qualitative assessment of doctors who are also managers in the UK show two major groupings; so-called "investors" who see management as an "escape" from clinical medicine, and "reluctants", who assume management roles so that they can protect their clinical disciplines and so on.[7]

The schisms within the health system go well beyond the division between clinically active doctors and nurses, and health managers.[8,9] In addition to these managers and loosely aggregated tribes of clinicians, there are also third and fourth major groupings of public health advocates and health funding agents, which in New Zealand for public health services is eventually the Treasury.

We have opined elsewhere, and will do so here, about the nonsensical perspective that an investment in preventive health measures is justifiable because it enables a disinvestment in clinical services. That is, these groupings are deliberately set against each other in the hope of some economy.

There is a lighter side to these schisms. A medical colleague pointed out to us that in the current environment of the active recruitment of senior New Zealand doctors to work in Australia (Queensland hospitals are regularly offering a doubling of salary) and elsewhere, he was not aware of any of our senior health managers being poached

by large multinational corporations—touché. We can think of exceptions, but, the point is made.

As we have already opined,[10] the ability of Australasian Governments to identify, fund, and deliver desirable health services will be increasingly challenged by an ageing population, escalating costs of health-related technology, and by increasing consumer expectations. A focus on clinical quality in this context might not only contain costs but might also improve patient well-being.[11]

Inevitably, escalating health costs must be curtailed. Doctors with training and attributes for effective clinical decision-making are best-prepared to assist with the difficult decisions regarding limiting applications of expensive health technologies. The ability of doctors above others to understand clinical uncertainty is also increasingly important in both health service planning and delivery.[12]

This is the milieu in which genuine clinical governance and or doctor involvement in health system governance needs to be seen. The potential utility of clinical governance in New Zealand has been appropriately championed in the *NZMJ*.[13]

The New Zealand Treasury (Long Term Fiscal Statement 2006) expects the current health budget (about NZD 2400 per capita) to double in the next 50 years. This has to be considered in the context of an ageing population and relatively fewer tax payers.[14] Although we are unable to find equivalent robust New Zealand data for the administrative or managerial element of this overall cost, such costs in the USA and in Canada are about 31% and 17% of total health care expenditure respectively.[15]

In the USA, there is also a strong argument that the elements of the healthcare system needed for future demands are already in place, but, that these are poorly aligned and subject to perverse incentives.[16,17] Arguably, the pharmaceutical industry already exerts undue influence on health service expenditure and professional judgment.[18 19]

Studies of doctor behaviour also show that while the medical profession believes that their decision-making is largely Bayesian, the opposite is often the case and most of the variance in some clinical decision making is explained by factors other than the patient's history, clinical findings, and investigation results.[20,21]

Some caution has also been recommended in the context of the burgeoning health quality reporting requirements for clinicians,[10] on the basis that not all best practice has high community and/or personal utility and can be influenced by factors other than healthcare intervention.[22]

The case for reform then is clear. Drs Scott, Poole, and Jayathissa[23] present just such an Australasian agenda for reform that is demonstrably "bottom up" and led by physicians as the only way in which medical error and sub-optimal care can be lessened.

The question is if implementation of this agenda is possible given the "origins" of the current governors of the New Zealand public health system; Stephen McKernan insists that it is and cites the National Quality Improvement Committee, the primary care performance management program, the national quality plan for cardiovascular disease and diabetes, the work programme in mental health, and the system-wide development of headline indicators as being examples of clinician-led programs that are already in place.

Effective and genuinely shared health-system and clinical governance is seen by many as a likely saviour.[24] An excellent overview of the principles of clinical governance is provided by Braithwaite and Travaglia in a recent issue of the Australian Health Review.[25] Introducing such a system of governance will not be easy if the UK experience is considered; we have much to learn from their relative failure.

Clinical governance as a concept was introduced into the NHS in 1998, but has had mixed results and reception,[26,27] and has not resulted in the anticipated transformation of such things as the management of iatrogenic adverse events.[28,29] Audit of extant governance systems show an even greater shortfall to be that of actual patient involvement.[30]

Notwithstanding the generic problems of introducing meaningful shared clinical governance,[31,32] a key specific conundrum, which has yet to be fully resolved in the UK, is how to involve doctors in governance roles such that collective medical control over resource allocation is increasingly utilitarian and outcome- and cost-effective, without allowing undue management control of clinical decision-making.[33]

Critical reviews of the status quo in the UK show that hierarchical management frameworks persist,[34] and that there is widespread dissatisfaction amongst clinicians, which might exist in part because related human resources functions were not identified and implemented concurrently.[35] More likely is a fundamental political struggle for control, which is well summarised by Salter in the *Health Policy* journal:[36]

> For the state, clinical governance forms the lynchpin of its drive to increase managerial control over doctors and, for the profession, revalidation is seen as the means for ensuring the quality of medical performance whilst preserving medicine's historic autonomy.

By way of clarification, Evans distinguishes highly desirable governance (collective, autonomous self-regulatory processes) from highly undesirable government (externally-imposed mandatory regulation) and identifies many common health system qualitative "targets" as "new forms of management tyranny".[37] We agree with this perspective and would argue, using his definitions, that New Zealand largely has health-system government.

On the basis of our interviews of colleagues, the end result is that doctors do not see the necessity for their clinical decision-making to be accountable in the context of population health. At the least, this dislocation is expensive, and generates the secular rivalries, alluded to above, and consequent industrial problems, along with poor morale and emigration.

The latter exodus differs worryingly from the historical norm in the context of the departing junior doctors, who are increasingly commonly unmarried, indebted, and free of any land owning in New Zealand, and also in the context of the number of emigrating senior doctors (cited by some as one per week). We would argue that there is a decreasing likelihood of either group returning and that the reasons for this are self-evident.

We can summarise our views by way of the following generalisations. First, New Zealand's health system is subject to government rather than governance and this should be revised. Second, doctors need to become involved in a reformed system of health service governance. Third, New Zealand also would benefit from genuinely

shared clinical governance. It is time for these reforms and we can embark on this process adequately informed by the UK experience. The alternative is probably unpalatable.

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What Wellington region city councillors think of smokefree outdoor places

Abstract

Aim To explore the knowledge of and attitudes to outdoor smokefree policies expressed by city councillors in the Wellington region.

Method Out of 39 councillors in Lower Hutt, Porirua, and Wellington cities, face-to-face semi-structured interviews were conducted with 21 councillors (54%) during November–December 2007.

Results Most of the interviewees agreed that outdoor smoking would affect role modelling to children (86%) and create litter in public places (76%), whereas other impacts (pollution, health, annoyance, anxiety) attracted less agreement. Many interviewees had little knowledge about such impacts. There was very limited knowledge about existing outdoor smokefree policies elsewhere (38%) including knowledge of the smokefree parks policy in nearby Upper Hutt (19%). There was some support for both such policies (particularly for smokefree playgrounds) and for council intervention. Most councillors identified a range of potential obstacles to effective policy implementation. Some suggested that such obstacles could be overcome by education and advocacy to increase awareness and public support.

Conclusions Councillor acceptance of outdoor smokefree policies partly depends on demonstrated public support, and assessments of existing policies. There is a need for health advocates to better inform councillors of the successes of such policies internationally and in New Zealand.

Global advancements in awareness of the hazards of secondhand tobacco smoke have spurred the introduction of smokefree policies in many countries worldwide.[1] Within New Zealand, central government legislation to restrict tobacco smoking in indoor public places has received widespread acceptance and high compliance,[2–4] attributed to the increasing awareness by smokers[5] and non-smokers of the health hazards of indoor secondhand smoke.[6]

In addition to indoor smokefree policies, several international jurisdictions have enacted laws to enable outdoor smokefree public places—for example parks, playgrounds, and beaches in California,[7] Hong Kong, and New South Wales.[8,9]

In Singapore, comprehensive legislation prohibits tobacco smoking in outdoor public places—including dining facilities, bus-stops and taxi-stops, swimming and sports facilities, grounds of schools and healthcare establishments, and any area occupied by a queue of two or more people.[10] In Washington State in the United States (US), areas within 25 feet (7.62 metres) of public places and places of employment are required to be smokefree.[11]

Several New Zealand district councils—including Ashburton,[12] South Taranaki,[13] Queenstown Lakes, South Wairarapa, Carterton, Whanganui, New Plymouth, Rotorua, and Opotiki[14,15]—have educational policies that use signs and media

information (rather than bylaws) to encourage the public to keep outdoor parks, playgrounds, and sports grounds smokefree.

An educational policy introduced in 2006 for smokefree Upper Hutt city parks is the most comprehensive policy regarding smoking in outdoor public places in the Wellington region—it has received strong public support.[16,17] In 2002, the Wellington City Council enacted a bylaw to prohibit smoking in Cable Car Lane, a semi-enclosed area.[18]

When children see or know others are smoking, they are at increased risk of smoking and of continuing to smoke, because of the example and normalisation of smoking.[19–21] There appears to be a dose-response effect, so the more there is smoking around them, the more youth are at risk of smoking.[22,23] The risk is partly because perceived smoking prevalence indicates to children the social norms for smoking.[9,10]

Despite the role modelling for smoking from outdoor public smoking, there appear to be no relevant New Zealand government guidelines and little relevant legislation. The exception is the requirement for the grounds of schools and early childhood centres, and grounds used primarily by children from such centres, to be smokefree.[24] The notion of outdoor smokefree policies for public places in New Zealand is therefore anticipated to remain an area of controversy amongst the public and policymakers.

Furthermore, the development of such policies appears to have been little studied within New Zealand or internationally. A 2004 Minnesota (a US state) survey of city or county park and recreation directors found that those in places *without* policies expressed a range of concerns about possible implementation problems. Those in places *with* some sort of smokefree parks policies reported that some of the concerns were justified, however 90% of them would recommend the policy to other places.[25]

Generally, tobacco policy research has highlighted the complexity of policy,[26, 27] the importance of agenda setting,[28-30] and the way this increases the role of officials and advocates.[31] Theories of how tobacco control policies progress to the point of adoption suggest that effective lobbying can get laws adopted. Such lobbying needs to be accompanied by 'outsider advocacy', where public support for change is demonstrated by advertisements, demonstrations and referenda.[32,33]

The essential elements of advocacy include framing issues skilfully to facilitate understanding and resonance with wide concerns, ensuring media coverage of issues (sympathetic where possible)[34] and understanding the political context.[35] In New Zealand, much of the research on the policy process for tobacco control[36–40] has focused on the 1987–90 period and at the national level.

This study explored the current knowledge of and attitudes to outdoor smokefree policies expressed by city councillors in three cities in the Wellington region, so as to identify themes and implications for policy development. Councillors were chosen for this initial study so as to focus on the overt politics of outdoor smokefree areas. We recognise that the study of non-elected officials' knowledge and attitudes will also be valuable for the examination of institutional pathways for change.

Method

Over a 1-week recruitment period in November 2007, all councillors from the Hutt, Porirua, and Wellington city councils were invited to participate in the study. The councils were selected as those

near to a city (Upper Hutt) that had successfully implemented smokefree parks policies. Contact details of the councillors were obtained from their council websites. An information sheet and consent form was first emailed to each councillor with a request for an anonymous interview.

Follow-up telephone calls were made to establish whether or not each councillor wished to participate. Ethics permission was obtained through the University of Otago ethics process.

Semi-structured interviews (with both closed and open questions) were conducted in person with each participant, with notes taken by the interviewer. The interviews, lasting 15 minutes to 1 hour, were conducted across Lower Hutt, Porirua, and Wellington from 21 November to 7 December 2007. Interviewees were asked about their knowledge and views regarding outdoor smoking in public places, and regarding policies to limit this.

Responses were recorded by the interviewer (ST) and analysed for themes and ideas, using a mixed inductive and directed theoretical approach. The analysis used coding largely based on set questions, but allowed for the inductive development of themes from the responses to both set and open questions. Particular interest was given to how the councillors grouped and framed ideas for encouraging and facilitating policy change. Care was taken to ensure several and opposing viewpoints from the data.[41pp.18–19]

At the end of the project, the study results were sent to those councillors who had requested them.

Results

Sample—35 (90%) out of 39 councillors responded to the interview invitation; 26 (74%) agreed to be interviewed, but 5 were not able to be interviewed in the time available. Hence, 21 councillors (54%) were interviewed, comprising 10 females and 11 males.

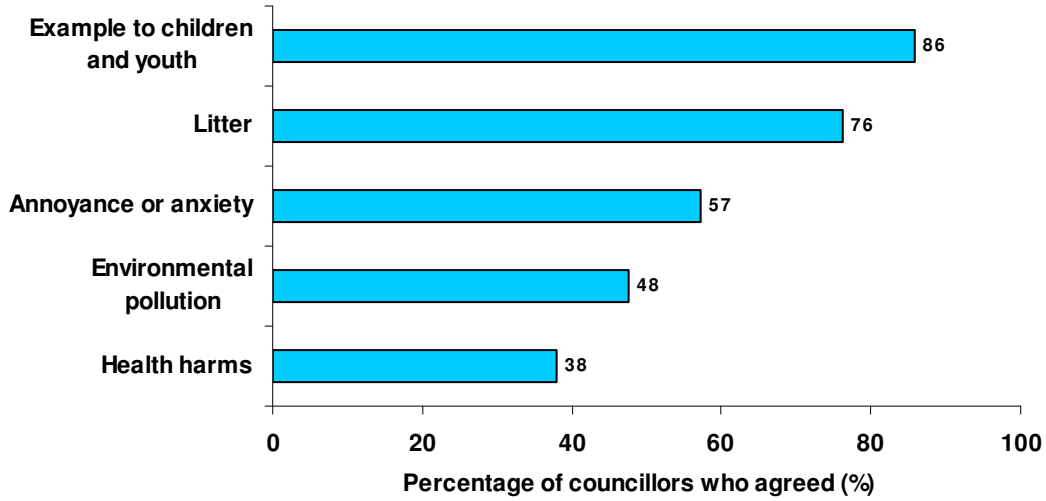
- All disclosed their smoking status: 2 were current smokers, 8 were ex-smokers, and 11 had never smoked;
- 9, 5, and 7 councillors were from Hutt, Porirua, and Wellington City Council respectively;
- 8 had been a councillor for 1–2 months, 3 for 1–5 years, 4 for 5–10 years, 3 for 10–15 years, and 3 for over 20 years.

Knowledge about existing outdoor smokefree policies—There was very limited knowledge about existing outdoor smokefree policies. Eight (38%) of the councillors interviewed were aware of outdoor smokefree public places in New Zealand or overseas, however 13 (62%) were not. Four cited Upper Hutt parks, two cited Manukau sports grounds, two cited Westpac stadium, and one cited golf courses and outdoor restaurants in the US city of Denver.

Four of the eight councillors who were aware of the policies elsewhere favoured these policies as they promoted a healthy climate, three believed that they were unenforceable and had dubious results, and one had no opinion. One councillor commented that smokefree Upper Hutt parks was "a bold initiative without central government direction and had been supported by the vast majority of the community."

Perceived impacts of outdoor smoking on the community—When asked to identify likely impacts of outdoor public smoking on the community, most participants agreed that it would set an example to children and youth (86%) and create litter (76%) (Figure 1). None explicitly disagreed that outdoor smoking would set an example. Annoyance or anxiety in non-smokers (57%), environmental pollution (including litter) (48%) and harm to others' health (38%) attracted less agreement.

Figure 1. Perceived impacts of outdoor smoking on the community



Responding to an open question about possible impacts, 10 (47%) of the councillors suggested further impacts of outdoor smoking. Negative impacts included the normalisation of smoking, nuisance to others, fire hazard, and damage to public assets (e.g. burn marks and discolouration). The potential for fires from discarded butts was described by one as a "huge problem."

Three councillors explicitly reiterated concerns about examples to children. One described public smoking as encouraging "self-centred, inconsiderate behaviour." Others mentioned that outdoor smoking was an "ongoing advertisement to others that smoking is still OK", gave a "bad impression to tourists and visitors", and "looks and smells bad in doorways."

Outdoor smoking was described as a nuisance to others because it made it "less pleasant to exercise outdoors", affected "seating in [outdoor areas of] restaurants and cafes" and produced a "noticeable impact of smoke from congregations of smokers."

A further councillor suggested positive impacts; role modelling of compliance with indoor smoking restrictions, and enhanced public safety through vigilance of outdoor smokers.

Two councillors identified the social segregation of non-smokers and smokers (through the association of smokers with outdoor dining places) as an impact.

Support for outdoor smokefree policies—There was some support for smokefree outdoor public places; 11 (52%) of the councillors thought it would be a good idea to limit outdoor smoking in some places, 5 (24%) disagreed, and 5 (24%) were uncertain.

Those in favour of limiting smoking in some outdoor places believed that this would reduce its negative impacts, denormalise smoking, reduce population smoking rates, and allow non-smokers to enjoy outdoor environments uncontaminated by smoke. Comments included "social smoke contamination is a major problem for non-

smokers—invading their personal space", "smoking outdoors has a wide range of negative impacts", "smoking should be limited everywhere, not just indoors", and "non-smokers have the right to a smokefree environment/fresh air outside buildings."

Those who disagreed felt that outdoor smokefree policies would marginalise smokers, be unenforceable, and create tensions within the public and that current indoor smoking restrictions are sufficient. Comments included "smoking in outdoors is a matter of choice for the individual", "limiting smoking marginalises smokers' human rights", and outdoor policies were "going too far—current smokefree policies for indoors are adequate" and an "infringement on smokers' rights. Policies would be impossible to enforce."

Those who expressed uncertainty were cautious about the outcome of such policies. They suggested the need to balance the rights of non-smokers and smokers by retaining places in which smoking would be permitted.

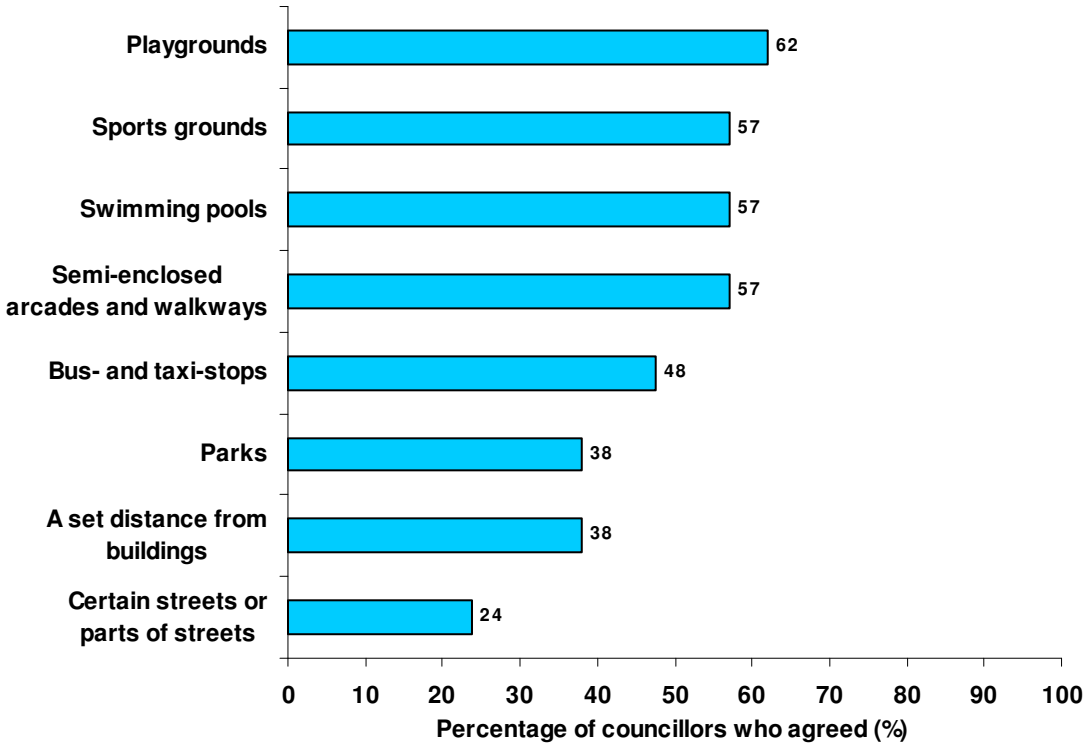
When asked if councils had a role in forming outdoor smokefree policies, there was less uncertainty. Eleven (52%) councillors agreed that councils should intervene to limit smoking in some outdoor public places, eight (38%) disagreed and two (10%) were uncertain. Those who favoured intervention were non-smokers who felt that councils should limit outdoor smoking for local benefit. Those who opposed council intervention were smokers and non-smokers.

Reasons cited by the councillors who were opposed were infringements on smokers' rights and disliking a "nanny state." Two suggested that such change would be "over-the-top—not part of council's role, and over-regulating people" and that it was "not the role of council to over-regulate people's lives."

The supportive councillors felt that a *national* outdoor smokefree policy was needed to avoid local inconsistencies, by moving from educational policies to legislation. One suggested that the move to outdoor smokefree policies could only be "only with the support from central government to enforce and coordinate policies and legislation nationwide."

There was a strong theme that "council has an obligation to undertake leadership role on behalf of the community", "council should intervene to break the cycle" and that "community leaders should set a good example." Similar comments were that councils have a role in "promoting public health", "protecting the community", and creating "policies that could benefit the community." Two felt that councils should "designate certain smokefree spaces", for instance sports areas, and "declare no-smoking events and where crowds are." A particularly interesting framing was that "smoking should be limited in the interest of civilians."

Figure 2. Opinions about which outdoor public places should be smokefree



There was greater support for particular smokefree recreational areas [playgrounds (62%), sports grounds (57%), swimming pools (57%)] and semi-enclosed arcades and walkways (57%). Only three councillors (14%) explicitly disagreed with smokefree playgrounds. There was less support for smokefree bus-stops and taxi-stops (48%), parks (38%), zones around doorways and windows of buildings (38%), and certain streets or parts of streets (24%) (Figure 2).

Eight councillors suggested other places that should be smokefree: outdoor cafés, beaches, scenic attractions, railway stations, the zoo, and the waterfront. One suggested as criteria for where there should be such policies as "essentially where people are in a confined space for a significant period of time and such smoke would create a nuisance."

Perceived usefulness and practicability of outdoor smokefree policies—Issues of usefulness and practicability concerned many of the councillors. Ten (48%) agreed that policies for smokefree outdoor public places were useful, but six (29%) disagreed. Only five (24%) agreed that such policies could be implemented effectively, whereas seven (33%) disagreed.

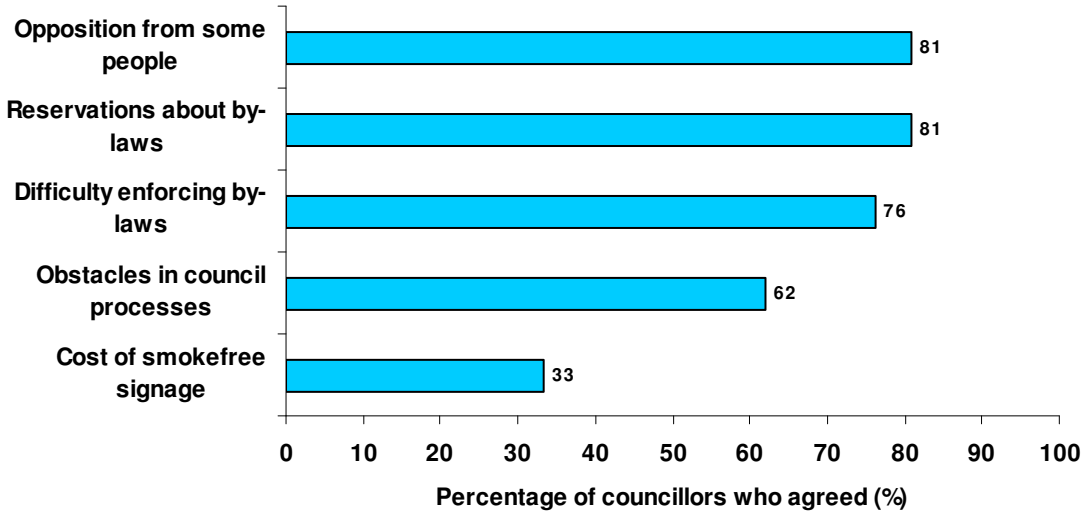
A supporting argument raised for the practicability of such polices was that the "public willingly accepted smokefree restaurants." Two councillors suggested preconditions for policy practicability, that policies have "wide public support" and "central government support." Another stated that the "effectiveness [of policies] depends on which outdoor areas are selected."

Although several councillors added that educational policies were unlikely to receive compliance, two believed that such policies could raise awareness. One commented that "educational policies and bylaws could complement each other—with education as a follow-up."

In contrast, higher proportions were convinced of the usefulness and practicability of bylaws for alcohol-free areas; 16 (76%) councillors felt that these were useful and 2 (10%) disagreed; 14 (67%) agreed that alcohol-free areas could be implemented effectively, but 3 (14%) disagreed. One councillor commented that there exists "a difference in the public mindset about the two substances": smoking outdoors is more normalised than alcohol consumption in outdoor public places.

Sixteen (76%) councillors cited potential difficulty in enforcing outdoor smokefree bylaws. Seven (33%) cited the cost of signage as an obstacle to implementation of outdoor smokefree policies, but 7 (52%) disagreed (Figure 3). Some suggested that the obstacles could be overcome through increasing awareness to gain widespread support from the public and policymakers. However, 17 (81%) councillors perceived that outdoor smokefree policies were likely to be opposed by certain groups, for example tobacco manufacturers and smokers.

Figure 3. Perceived obstacles to outdoor smokefree policies



Seventeen (81%) councillors anticipated reservations towards having outdoor smokefree bylaws due to enforcement difficulties. Thirteen (62%) anticipated obstacles in council processes: lack of support due to concerns about restricting freedom, competing priorities, limitations in monitoring compliance, expensive consultation processes required to develop outdoor smokefree policies, and perceptions that such policies required central coordination.

Eighteen (86%) councillors suggested other issues of cost and practicability, including: the cost of educational campaigns, limitations in monitoring compliance in

large areas, and competing priorities. One councillor suggested "visual pollution" from smokefree signs.

Fourteen (67%) councillors suggested obstacles, including: the conflict of bylaws with existing central legislation that permits outdoor smoking, perception by some people that indoor smoking restrictions are adequate, concerns about restricting freedom ("nanny state") and the potential backlash from smokers. Five cautioned that tobacco manufacturers would almost certainly lobby against outdoor smokefree policies due to commercial interest.

Suggestions for the development of outdoor smokefree policies—When asked to suggest ideas that health promoters could use to persuade decision-makers to develop policies to increase the number of smokefree outdoor public places, most (90%) councillors contributed ideas, ranging from general approaches and techniques to specific measures. The councillors' suggestions are mapped in Figure 4, giving the techniques needed for four development approaches and the suggested measures, indicators and evidence required.

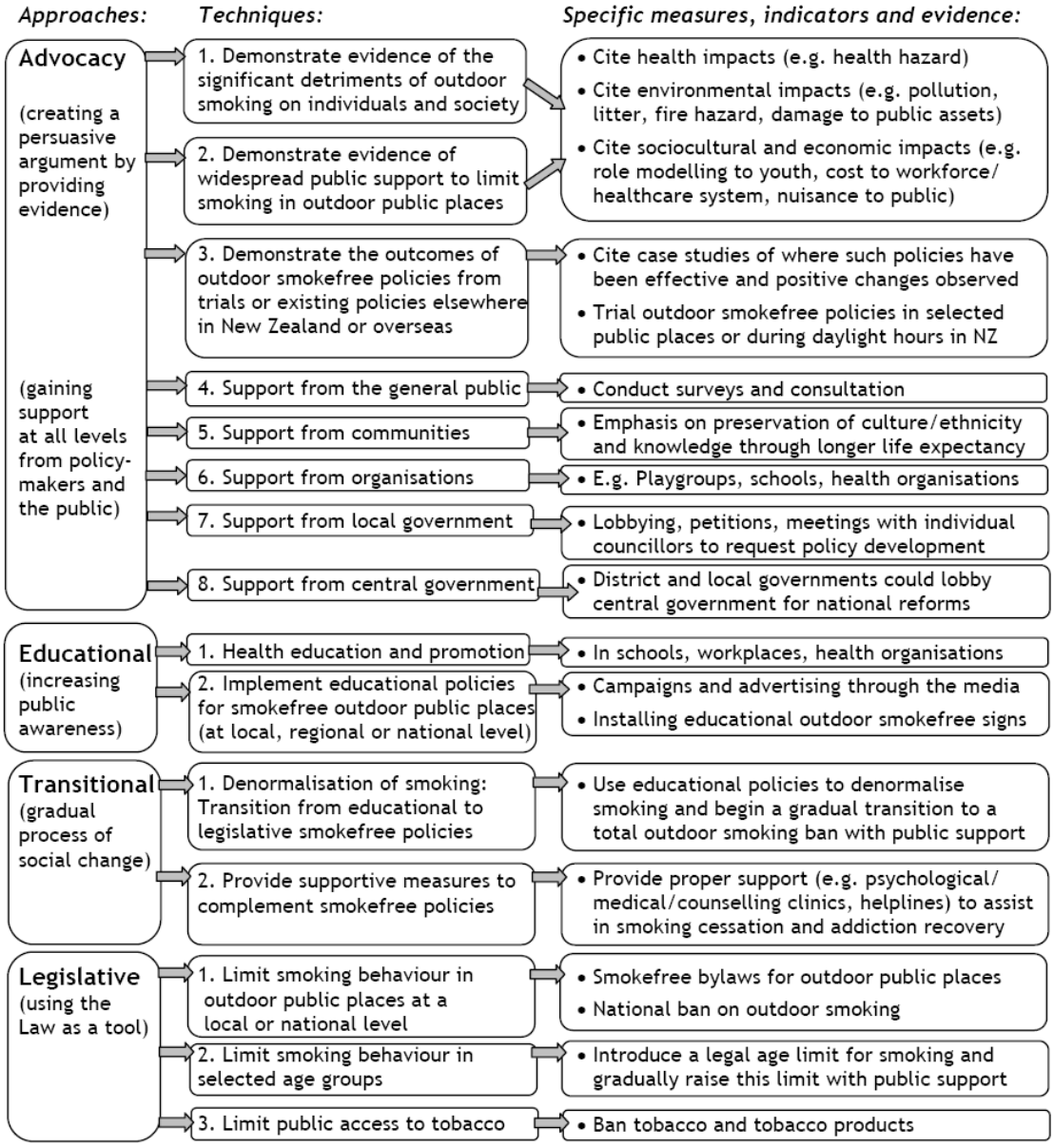
Many suggestions involved advocacy. Some suggested demonstrating with evidence the significant detriments of outdoor smoking, the public support to limit this, and the favourable outcomes of existing outdoor smokefree policies in New Zealand or abroad. A complementary approach would involve campaigns, lobbying and public forums to gain support from the public and policymakers.

Particular suggestions included creating "a logical, persuasive argument", emphasizing "the negative economic impacts of smoking outdoors", getting support from "health and community organisations to gather numbers", and precursor education "campaigns, for instance TV ads, to create awareness—especially on role modelling."

One suggested trialling "smokefree policies in selected parks—people are usually more willing to commit to a trial." Preliminary research on the problems from smoking in particular places was also suggested—e.g. a "selected park where smoking is a problem—interviewing park users and involving children." It was considered essential to "define carefully what [advocates] want from the council" and to "provide cost estimates."

An educational approach (using campaigns, advertising, and smokefree signs) was suggested and preferred by some councillors over a legislative approach (using bylaws, or a national policy on smoking or tobacco). Some councillors suggested a transitional approach whereby educational policies could be used to gradually denormalise smoking and maximise support for legislation. Some argued that supportive measures for smoking cessation and addiction recovery should complement smokefree policies.

Figure 4. Councillor suggestions for the development for outdoor smokefree policies



Discussion

Themes and policy implications—The research provided previously unrecorded information on councillor knowledge and attitudes, in a "policy frontier" area with major implications for health. It helps trace the emergence of the theme of "role modelling of smoking" as a driver for outdoor smokefree policy development, supplementing existing drivers such as direct health harm, litter, and public annoyance. It confirms, for the local government arena, the division of policymaker opinion between support for smokers' rights or "choice", and for a population's rights to be smokefree.[19–23,42]

The interviews revealed a range of opinions and knowledge amongst the interviewees regarding outdoor smokefree policies. Many councillors acknowledged a lack of information about the impacts of outdoor smoking, highlighting the need for demonstrable evidence of such impacts to be reported to the public and decision-makers.

The setting of negative examples to children and youth attracted the most agreement as an impact of outdoor smoking. While there is some research evidence on the example of smokers on smoking uptake risk,[9,10,19–23] this may be one of the first research descriptions of policymakers recognising this risk.

Negative role modelling and the normalisation of smoking appeared to be of greater concern than environmental or direct health impacts. There was clear support for smokefree policies for public playgrounds, sports grounds and outdoor swimming pools.

Aside from perceptions about the *impacts* of outdoor smoking, other factors critically influenced councillor support for such policies. Many councillors were concerned that smokefree outdoor policies be demonstrated to have widespread public support.

These councillors appeared unaware of New Zealand surveys of public attitudes. In 2007, 69% agreed with the statement "smoking should be banned in all outdoor places that children are likely to go,"[43p.10] and 76% said it was not acceptable to smoke at outdoor children's playgrounds. Fifty-one percent said that smoking at sports fields was "not at all" acceptable, with only 16% saying it was alright to smoke anywhere at sports grounds.[43p.10] Opinion on smokefree sports fields had changed since 2003, when the respective figures were 35% and 34%.[44p.58]

Perceptions differed about whether outdoor smokefree policies, if introduced, ought to be regulated by councils or the central government. Some councillors favoured nationwide coordination to avoid conflicts with central legislation. For some, the need to protect children's rights via policies for smokefree outdoor places, and the need to avoid restrictions on smokers' freedom, were in apparent conflict.

Smokefree playgrounds attracted the most support from the councillors, in line with majority concerns about role modelling as an impact of outdoor smoking. Smokefree sports grounds and swimming pools attracted some agreement, perhaps indicating some belief that unhealthy behaviours should be excluded from recreational places promoting a healthy lifestyle.

Knowledge about existing outdoor smokefree policies was generally limited. This highlights the need for studies of outdoor smokefree policies in New Zealand or overseas, and for outcomes such as smoking prevalence, compliance and public support to be measured. Trials of outdoor smokefree policies in selected places would be useful; moreover, it was suggested that the public might be more receptive to policies that had been trialled.

Of the arguments available for advocates of smokefree outdoor places, those that focus on children may be the strongest. Besides the evidence above of public support for smokefree playgrounds and other places where children are likely to go, virtually no parents and few smokers want children to start smoking. What may need to be

demonstrated to some is the extra risk of such smoking uptake, when there is normalisation due to public outdoor smoking.[9,10]

A multifaceted approach to policy development—Based on the themes and issues raised by the councillors, it is suggested that a combination of approaches could be incorporated in developing outdoor smokefree policies. Crucial elements of advocacy and education include, for example: evidence of normalisation to children from outdoor smoking; favourable outcomes of trials or existing policies in New Zealand and abroad; campaigns, lobbying, petitions, and the evidence of public and community organisation support—as shown in Figure 4. This broad policy development approach[45] is supported by empirical evidence from health advocacy efforts.[46,47]

In light of anticipated opposition to the implementation of outdoor smokefree bylaws and the preference indicated by some for educational policies over legislation, a transitional approach could be incorporated. This would involve the gradual denormalisation of smoking through education, so as to maximise support for existing smokefree legislation to be extended to outdoor places.

Limitations and future research—The study had some limitations. Due to the nature of the opportunistic sampling, only 21 councillors from three councils were interviewed. The sample size may have limited the range of opinions and knowledge, hence the results may not be generalisable to councillors in the region or in New Zealand.

For further research, the sample could be extended to include local and national policymakers across New Zealand. Moreover, future research could further explore the views and knowledge of the public about outdoor smokefree policies, and assess the outcomes of trials of such policies in New Zealand or overseas.

Conclusion

Most councillors interviewed wanted smokefree playgrounds and agreed that outdoor smoking sets an example to children. A combination of advocacy, educational, and legislative approaches to the development of outdoor smokefree policies appear to be needed to advance the denormalisation of outdoor public smoking in New Zealand. Further research would help establish local and national support for a variety of outdoor smokefree policies for use across New Zealand.

Competing interests: None known.

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Comparison of New Zealand Cancer Registry data with an independent lung cancer audit

Wendy Stevens, Graham Stevens, John Kolbe, Brian Cox

Abstract

Background Despite the importance of New Zealand Cancer Registry (NZCR) data to research and healthcare decision-making, there has been no previous assessment of the accuracy of NZCR data since mandatory reporting commenced in 1994.

Aim To assess the completeness and accuracy of NZCR lung cancer data.

Method An audit of secondary care management in Auckland and Northland of lung cancer patients diagnosed in 2004 provided the opportunity to compare data from regional databases (RD) with NZCR data.

Results Of 565 audit cases, 66 cases (12%) were not included on the NZCR listing. The NZCR listing included 9 eligible cases not identified by RD, 1 duplicate registration and 78 (13%) ineligible cases. Few differences occurred in demographic or tumour details for the 490 cases common to both listings. Tumour staging was available for 97% of cases in RD, and disease extent was recorded for 58% in the NZCR. The latter was more likely to be missing for cases with locally advanced disease ($p<0.001$), older age ($p<0.001$), or comorbidity ($p<0.001$).

Conclusion Use of the NZCR alone would have reduced accrual by 12%; disease extent was absent for 42% with a systematic bias towards being unknown for cases with locally advanced disease. Use of NZCR data without recognition of this bias could lead to inappropriate conclusions. Those using NZCR data should be aware of its definitions, methodology and limitations.

The New Zealand Cancer Registry (NZCR) is a population-based register which collects information on all primary malignant disease diagnosed in New Zealand (NZ), excluding squamous cell and basal cell skin cancers.[1] Data collected on each cancer case includes demographic information such as age, gender, and ethnicity, and tumour information such as cyto-histopathology, site, and extent of disease.[1]

The NZCR obtains information from laboratory reports, discharge summaries from public and private hospitals, death certificates, and autopsy reports.[1] The NZCR is administered by the New Zealand Health Information Service (NZHIS) as a national resource, available to researchers, epidemiologists, managers, and policymakers.

Since 1994 the reporting of tumour pathology by laboratories has been mandatory and there has been the assumption that reporting is essentially complete.[1] Despite the importance of NZCR data in research and healthcare decision-making, there has been no previous assessment of the completeness or accuracy of these data with respect to lung cancer. There has been only one published evaluation of NZCR data, which related to childhood cancer prior to mandatory reporting (1990–1993).[2]

An assessment of the accuracy and completeness of adult NZCR data is essential to inform researchers and policymakers about whether NZCR data will fulfil their requirements.

Lung cancer is the commonest cause of cancer death in NZ, accounting for 19% of all cancer deaths and approximately 10% of all cancer registrations.[3,4] An audit of secondary care management of lung cancer in Auckland and Northland in 2004, carried out to inform Phase I actions of the NZ Cancer Control Strategy, provided the opportunity for an independent assessment of NZCR data.

The Auckland-Northland region comprises the four District Health Boards (DHBs) of Auckland (ADHB), Waitemata (WDHB), Counties Manukau (CMDHB), and Northland (NDHB) and constitutes a single regional oncology service. In 2004, this region encompassed 1.5 million people (37% of the NZ population).

The specific aim of the current study was to determine the concordance of lung cancer cases and information between NZCR data and that obtained from a detailed and comprehensive review of regional databases (RD) in a large region of NZ.

Methods

Secondary care audit of lung cancer cases

Briefly, a retrospective review of all patients in the Auckland and Northland region diagnosed with lung cancer in 2004 was undertaken.[5] A total of 565 eligible patients were identified and information on each case was obtained from the clinical records. The study investigated the entry, transit, and management of lung cancer patients through secondary care to the initiation of anticancer treatment or until the decision to provide supportive care alone. Approval for the study was obtained from the Northern Ethics Committee.

Eligibility criteria for the lung cancer audit—The three criteria for entry to the lung cancer audit were:

- A diagnosis of primary lung cancer (ICD-10 33 or 34),
- Date of diagnosis during the calendar year 2004, and
- Receipt of any component of initial secondary care management of lung cancer in the Auckland-Northland region.

The date of diagnosis was defined as follows. For cases with a cyto-histopathological diagnosis, the diagnosis date was defined as the date of issue of the first report confirming malignancy. For cases with cyto-histopathology suggestive but non-diagnostic of malignancy, the date of issue of the final report was used. Finally, for cases without cyto-histopathological evidence of malignancy, the diagnosis date was taken as the date of the first documentation of the clinico-radiological diagnosis of lung cancer in the clinical records.

Patients who moved into, or out of, the defined region were included in the study for that component of management received within the region. Patients who were managed entirely within primary care were excluded, as were patients with a post-mortem diagnosis of lung cancer.

Identification of cases from the regional databases (RD)—Cases with a diagnosis of lung cancer were identified from a wide range of regional databases (RD) (Table 1). These included hospital admissions and discharges, laboratory databases, regional oncology, and surgical databases. To maximise the capture of eligible cases, all listings covered the 18-month period from 1 January 2004 to 30 June 2005.

Approximately 2700 patients recorded as having lung cancer were listed as having used the regional secondary care services over this period. The medical records of each case were accessed and checked for eligibility according to the above criteria. The majority of these cases were ineligible because their lung cancer was not diagnosed in 2004; a minority were ineligible as the ICD code 33 or 34 had been

incorrectly assigned (for example: some patients with mesothelioma or lung metastases from another or unknown primary cancer had been assigned the ICD code for primary lung cancer).

Uncertainty regarding inclusion was resolved by discussion among the investigators. The investigators decisions were guided by the opinion of the treating doctors as documented in the clinical records. Cases were included if they were diagnosed and managed as primary lung cancer, even if this diagnosis was revised subsequently (4 cases).

Table 1. Regional databases (RD) used for (a) the accrual of study cases and (b) the acquisition of clinical information

(a) Databases*	**Accessed from:**
Admissions & discharges	ADHB, CMDHB, WDHB, NDHB**
Radiation Oncology Database#	ADHB
Palliative Care Database	ADHB
Hospice Databases	South Auckland Hospice Charitable Trust St Joseph's Mercy Hospice North Haven Hospice
Pathology – public	ADHB, CMDHB, WDHB, NDHB
Pathology - private	Diagnostic MedLab
Multidisciplinary Lung Cancer Meeting#	ADHB
Cardiothoracic Surgery Database#	ADHB
Bronchoscopy List	NDHB
Private Specialist Records	Private specialists in the region
(b) Clinical Databases	**Accessed from:**
CRIS (Clinical Record Information System)	ADHB
Concerto	ADHB, CMDHB, WDHB
ihealth	NDHB
Sysmex Éclair	ADHB, CMDHB, WDHB
WEB 1000	ADHB, CMDHB, WDHB
Paper medical records	CMDHB, WDHB, NDHB Private specialists

*All these databases were accessed from January 2004 to July 2005; **ADHB: Auckland District Health Board; CMDHB: Counties Manukau District Health Board; WDHB: Waitemata District Health Board; NDHB: Northland District Health Board; #This facility (at ADHB) provides this service for all 4 DHBs in the Auckland and Northland region. The multidisciplinary meeting is a formally convened meeting which includes respiratory physicians, cardiothoracic surgeons, medical oncologists, radiation oncologists, and radiologists.

Data collected for eligible cases—Data for eligible cases were accessed from the electronic and paper medical records (Table 1). Data collection included the National Health Index (NHI), which is a unique identity number for all individuals using the public health system in NZ, demographic information, details of presentation to secondary care, comorbidities, tumour characteristics, diagnosis, and management details.

Tumour information included histopathological type and subtype, clinical tumour stage at diagnosis, and the pathological tumour stage for cases with tumour resection. Stage was assigned by one author (GS) following a retrospective review of the reports of staging investigations (mainly chest X-ray, CT scan, bronchoscopy, mediastinoscopy). Radiological images were not reviewed. SCLC was staged according to the standard definition of limited or extensive disease.[6] All other cancers were staged according to the UICC/AJCC TNM definitions.[6,7] To reduce bias, clinical tumour stage assignation was made without knowledge of the identity or subsequent management of the case, or the pathological stage where available.

Diagnostic information included basis of diagnosis (cyto-histopathology or clinico-radiological), method of diagnosis (bronchoscopy, biopsy of primary tumour, biopsy of metastasis), date of cyto-histopathology specimen collection and date of cyto-histopathology report; and in the absence of a histological diagnosis, the date of first documentation of a diagnosis of lung cancer in the clinical records.

Table 2. Definitional differences between the regional databases (RD) and the New Zealand Cancer Registry (NZCR)

Variables	RD	NZCR[1]
Auckland-Northland (4 DHBs)	Patients were included in the study if any initial secondary care management of their lung cancer occurred within ADHB, CMDHB, WDHB, or NDHB. Some of these cases lived in the catchment area of another DHB, or lived overseas. DHB designation was based on the residential address recorded on the hospital registration form, irrespective of which DHB provided care. For the small number of cases without a local address, the DHB which provided care was assigned.	Based on the usual residential address at the time of cancer registration. "For retrospective cancer registrations the domicile code is assigned from the appropriate census code table relating to the year of diagnosis. In such cases, the domicile code may not truly represent the domicile at the time of diagnosis, as the address at the time of diagnosis may not be reported."
Cases	People with primary lung cancer diagnosed in 2004 who received some component of initial management in secondary care within ADHB, CMDHB, WDHB, or NDHB. Cases diagnosed post-mortem or managed entirely within primary care were excluded.	All cases of primary lung cancer diagnosed in 2004. Multiple registrations: although all tumours are registered, for tumours of the same morphological type only the earliest is reported.
Boundary Suburb (Otahuhu)	All cases from Otahuhu were assigned to CMDHB.	All cases from Otahuhu were assigned to ADHB.
	(Otahuhu is a borderline suburb of ADHB and CMDHB)	
Date of Diagnosis	i) For cases with confirmatory cyto-histopathology, the diagnosis date was defined as the date of issue of the first report confirming malignancy. ii) For cases with suggestive but non-diagnostic cyto-histopathology, the date of issue of the final report suggesting invasive malignancy was used. iii) For cases with a clinico-radiological diagnosis of lung cancer, the first documentation of the diagnosis of lung cancer in the clinical records was used as the diagnosis date. Cases were included if the date of diagnosis occurred between 1/1/04 and 31/12/04 (excluding those diagnosed at autopsy and those managed solely in primary care).	i) The date of operation or biopsy ii) The date of admission iii) The date of death if diagnosed at autopsy. iv) If the only notification of a cancer comes from the death certificate, the diagnosis date is estimated from the 'approximate time between onset and death' as reported by the certifying doctor on the death certificate.
Ethnicity	The ethnicity documented on the hospital registration form.	The ethnicity recorded on the cancer registration.
Stage of Disease	i) NSCLC, carcinoid tumours and those diagnosed on clinico-radiological evidence were staged using the standard clinical/pathological TNM staging system (I – IV). ii) SCLC was staged as either limited or extensive disease. Staging performed at diagnosis.	The extent of disease was classified as: A. In situ B. Localised to organ of origin C. Invasion of adjacent tissue or organs D. Regional lymph nodes E. Distant metastases F. Not known Staging performed up to 4 months after diagnosis.

Assessment of completeness and accuracy of NZCR lung cancer data

To check the reliability of the NZCR, cases identified from the RD were compared with cases on a listing obtained from the NZCR. The accuracy of case finding was assessed, as was the accuracy of demographic details and tumour information for the 490 cases common to both the RD and NZCR listings.

Listing from NZCR—A listing of lung cancer cases was purchased from the NZCR. The requested criteria for searching the NZCR were ICD-10 33 or 34, date of diagnosis in 2004, and domicile in any of the four DHBs listed above. The NZCR listing covered multiple data fields including NHI, age, gender, ethnicity, NZ deprivation index (NZDep), date of birth, date of death, DHB of domicile, date of diagnosis, basis of diagnosis, extent of disease, and tumour morphology. Differences in the definition of some of these parameters existed between the RD and the NZCR, and these are briefly described in Table 2.

The NZCR listing was compared with RD data. Subsequently, additional information was requested from the NZCR in order to explain the absence from their listing of some lung cancer cases identified by the RD.

Comparison of histopathology and tumour spread—To enable comparison of histopathological subtypes, all histopathology was coded according to ICD-O definitions.

As tumours in the secondary care audit were staged at diagnosis according to the UICC/AJCC TNM definitions, comparison with NZCR required conversion of these tumour stages into the closest matching extent of disease category according to the NZCR Data Dictionary (Table 3). This conversion differed from the more complex conversion detailed in the Surveillance, Epidemiology and End Results (SEER) Staging Manual,[8,9] as it was not possible to follow the SEER transformation, which subdivides T stages of the TNM system into different "extent of disease" categories. Limited stage SCLC was converted to "regional" extent of spread and extensive stage SCLC was converted to "metastatic".

The RD data for all cases with differing extents of disease between the NZCR and RD were reviewed to determine possible reasons for the discrepancies. Also, the factors associated with unknown extent of disease in the NZCR were explored by univariate and multivariate logistic regression. Factors included in the multivariate model included age, gender, ethnicity, level of comorbidity, tumour type, extent of disease in the RD and anticancer treatment with curative intent.

Table 3. Conversion of the clinically used 'TNM' staging system to the New Zealand Cancer Registry (NZCR) 'extent of disease' classification

Tumour Type	RD[6,7]	NZCR[1]
NSCLC	$T_{1,2}$ N_0 M_0	B - Limited to organ of origin
	$T_{3,4}$ N_0 M_0	C - Extension to adjacent organs
	T_x N_{1-3} M_0	D - Extension to regional lymph nodes
	T_x N_x M_1	E - Distant Metastases
	TNM → Stage $T_1N_0M_0$ IA $T_2N_0M_0$ IB $T_1N_1M_0$ IIA $T_2N_1M_0$ or $T_3N_0M_0$ IIB $T_{1-3}N_2M_0$ or $T_3N_1M_0$ IIIA $T_xN_3M_0$ or $T_4N_xM_0$ IIIB $T_xN_xM_1$ IV	
SCLC	Limited stage	D - Extension to regional lymph nodes
	Extensive stage	E - Metastases

T = tumour; N = nodes; M = metastases; $_x$ = any

Results

Numbers of cases accrued in RD and NZCR

There were 556 cases eligible for inclusion in the audit identified from the total of approximately 2700 cases listed in the RD. An additional 9 cases were identified from the NZCR, to give the total of 565 cases.

Reasons for the omission from the RD of 4 of these additional 9 cases were apparent: 1 was diagnosed outside the region, 1 case was subsequently shown not to have lung cancer, and unknown primary cancer could not be excluded in 2 cases. (The last 3 cases were included in the audit as they were all initially diagnosed and managed as primary lung cancer and therefore fulfilled eligibility criteria.)

The reason for omission from the RD of the other 5 cases (4 from NDHB and 1 from WDHB) was unclear, although all were diagnosed shortly before death and received supportive care alone.

The NZCR listing provided a total of 578 cases, which included 28 cases listed as having been diagnosed post-mortem. Based on the RD clinical records, 78 of the NZCR cases were ineligible for inclusion in the secondary care audit for the following reasons: 19 cases only were diagnosed post-mortem; 34 were not diagnosed in 2004 (32 were diagnosed prior to 2004 including 3 diagnosed overseas; 2 were diagnosed in 2005); 11 did not have primary lung cancer; and for 13 cases, no information relating to lung cancer could be found in the medical records. It was unknown if the 13 cases for which there was no information in the RD were managed entirely within primary care or if they were managed at another DHB.

Diagnostic uncertainty surrounded the 11 cases considered clinically not to have primary lung cancer; 2 were ultimately diagnosed with non-malignant conditions (aspergilloma, scarring) and the other cases were considered to have pulmonary metastases from another or unknown primary tumour. When ineligible cases (78) were excluded from the NZCR listing, and a duplicate NHI was removed, there were 499 eligible cases remaining.

There were 66 eligible cases (565 minus 499) in the RD listing that were not included in the NZCR listing. Additional information was requested from the NZCR to determine reasons for their omission. Such reasons related to the timing of diagnosis (9 cases were registered as diagnosed prior to 2004 and 14 after 2004); to diagnostic uncertainty (14 cases were listed as having an unknown or another primary; 6 cases had a previous history of lung cancer; 3 cases were registered as carcinoma *in situ*); 7 cases lived elsewhere but were treated within the Auckland-Northland region; 3 cases were initially treated as lung cancer (and therefore eligible for the study) but were later found not to have lung cancer; and 10 cases were not registered by the NZCR at the time the list was compiled (May 2006). Of these 10 cases, 5 had been registered subsequently and 5 remained unregistered (February 2007).

There were 490 cases in common between the RD and NZCR lists for which demographic and tumour related data were compared.

Comparison of demographic data

There was close concordance between the RD and NZCR listings for demographic parameters of the 490 cases. There were no differences in gender, there were 4 differences in date of birth suggestive of typographic errors, and 16 differences (3%) in recorded ethnicity. Of the differences in ethnicity, 6 cases that were recorded as Maori in the RD were listed as European (3), Pacific (1), and unstated (2) ethnicity in the NZCR; 2 Pacific people in the RD were listed as European (1) and unstated (1)

ethnicity in the NZCR; 4 European in the RD were listed as other or unstated in the NZCR and 4 other in the RD were listed as 2 European and 2 unstated in the NZCR.

There were 22 differences (4%) in the DHB of domicile between the two lists, of which 10 lived close to the boundary between adjacent DHBs. To what extent the other 12 discrepancies were due to a change of address during or following diagnosis of the lung cancer is unknown.

Comparison of tumour-related data

Tumour-related parameters comprised the date of the diagnosis of cancer; the basis of the cancer diagnosis (cyto-histopathological report, clinical diagnosis, or death certificate); tumour type and histopathological subtype; and tumour stage. Comparison between RD and NZCR was complicated by differences in the definition of parameters between the RD and NZCR (Table 2). Differences applied particularly to the date of diagnosis and to the reporting of tumour stage (RD) or extent of disease (NZCR).

Date of diagnosis—The same date of diagnosis was recorded for 288 of 490 cases (59%). For 159 cases, the diagnosis date was earlier in the NZCR than in the RD (mean 9 days earlier; SD 10 days) mainly due to differences in the definition of diagnosis date (Table 2).

The diagnosis date in the NZCR was later than in the RD for 43 cases (mean 56 days later; SD 67 days). For the 22 of these 43 cases with a diagnosis based on histological confirmation of lung cancer, the diagnosis date was later by a mean of 25 days (SD 28 days). For the 19 cases recorded as having been diagnosed on the basis of clinical investigation, diagnosis was later by a mean of 87 days (SD 81 days). For the remaining 2 cases whose diagnosis was based on the death certificate in NZCR, 1 case was diagnosed 15 days later and the other 171 days later than recorded in the RD.

Basis of diagnosis—There were 21 differences (4%) between RD and NZCR with respect to the basis of diagnosis. For 17 cases with the basis of diagnosis recorded as clinical investigation in the NZCR, 8 had confirmatory histology and 9 had suggestive histology in the RD. For 4 cases diagnosed on the basis of a death certificate in NZCR, 1 had confirmatory histology, 1 had suspicious histology and 2 had a clinico-radiological diagnosis prior to death in the RD. All cases recorded as having a histologically confirmed diagnosis in the NZCR were also so recorded in the RD.

Tumour type—Tumour type (SCLC, Carcinoid, NSCLC) matched closely, with only 5 discrepancies. Of these, 4 had histopathology suggestive of SCLC in the RD but were listed as malignant neoplasm or carcinoma not further specified in the NZCR. One SCLC case in the NZCR was considered to have NSCLC in the RD, and underwent surgery with curative intent (lobectomy). Discrepancies between tumour sub-types predominantly related to the sub-type not being further defined in one listing but classified in the other.

Stage and extent of disease—Information on staging (RD) or extent of disease (NZCR) was available for 97% of audit cases in the RD (unknown for 15 cases) compared with 58% in the NZCR (unknown for 205 cases). As the NZCR records

'extent of disease' rather than the 'TNM' tumour staging used clinically, the latter was converted into extent of disease categories according to Table 3.

Table 4 indicates the numbers of cases within each extent of disease category as classified by the RD and the NZCR. Of the 279 cases with known disease extent in both listings, 216 (77%) had matching extent of disease.

Table 4: The number of cases in each extent of disease category as recorded by the New Zealand Cancer Registry (NZCR) and as staged at diagnosis by the investigators using information contained in the clinical records from the regional databases (RD). (The numbers on the diagonal in bold represent cases with matching extent of disease.)

NZCR	RD Extent of Disease					
Extent of Disease	Localised to organ of origin (B)	Invasion of adjacent tissue/organ (C)	Regional lymph nodes (D)	Distant metastases (E)	Not known (F)	Total
Localised to organ of origin (B)	**30**	1	0	-	1	32
Invasion of adjacent tissue or organ (C)	8	**2**	-	-	-	10
Regional lymph nodes (D)	2	-	**32**	4	-	38
Distant metastases (E)	3	16	29	**152**	5	205
Not known (F)	47	14	72	63	**9**	205
Total	90	33	133	219	15	490

There were 63 cases for which the NZCR and RD extent categories differed; the majority being of less extensive disease in the RD. The RD staging data for all 63 cases were reviewed in an attempt to explain the discrepancies. In 48 of these 63 cases, the NZCR extent category was distant metastases while the RD categorised these as non-metastatic.

The differences were attributed to the down-staging in the RD of uncertain metastatic lesions (usually on CT scans) in 12 cases, and to the classification of malignant pleural or pericardial effusion as invasion of adjacent tissues in the RD and as metastatic disease in the NZCR in 17 cases. For another 17 cases there was no evidence in the clinical records of metastases at the time of presentation or diagnosis.

However, as the NZCR permits the extent of disease to be assigned for 4 months following diagnosis (personal communication NZHIS), metastatic disease may have become evident during this period. The clinical records confirmed this in some cases.

For the remaining 2 cases, 1 had direct invasion of a thoracic vertebra by tumour rather than metastatic spread, and 1 case was considered clinically to have synchronous primary tumours.

Table 5. Characteristics of cases with known or unknown extent of disease in the New Zealand Cancer Registry (NZCR)

Characteristic		NZCR Disease Extent			
		Known (285 Cases)		Unknown (205 Cases)	
		N	Row %	N	Row %
Age					
<60 yrs		77	75	26	25
60-69 yrs		94	64	53	36
70-79 yrs		80	51	75	49
≥80 yrs		34	40	51	60
Gender					
Male		158	58	114	42
Female		127	58	91	42
NZ Deprivation Index:					
1-2 (least deprived)		42	65	23	35
3-4		47	61	30	39
5-6		46	60	31	40
7-8		65	57	50	43
9-10 (most deprived)		84	54	71	46
Ethnicity					
European		190	59	134	41
Maori		51	60	34	40
Pacific People		27	55	22	45
Asian		10	50	10	50
Other		3	60	2	40
Unstated		3	50	3	50
Number of Comorbidities					
0		79	79	21	21
1		79	59	54	41
2		69	57	53	43
≥3		58	43	77	57
Tumour type					
NSCLC		204	58	149	42
SCLC		45	67	22	33
Carcinoid		7	100		
Clinico-radiological diagnosis		28	45	34	55
Anticancer Treatment with Curative Intent					
No		206	53	180	47
Yes		75	78	21	22
District Health Board:					
ADHB		66	57	50	43
CMDHB		98	62	61	38
WDHB		73	55	61	45
NDHB		47	59	33	41
Disease Extent in the Regional Databases					
Localised to organ of origin	B	57	54	49	46
Invasion adjacent tissue/organ	C	18	58	13	42
Regional lymph nodes	D	50	41	71	59
Distant metastases	E	154	71	63	29
Not known	F	6	40	9	60

Of the remaining 15 cases for which extent of disease differed between the NZCR and RD, the NZCR extent of disease category appeared to be increased from 'localised to the organ of origin' to 'invasion of adjacent tissue or organ' because of extension of the tumour to the visceral pleural or to other intrapulmonary structures. Such extension was classified by the RD as localized to the organ of origin (Table 3).

The characteristics of cases with known and unknown extent of disease in the NZCR are shown in Table 5.

Cases with unknown disease extent were not distributed evenly across stage categories in the RD. The proportion of patients with metastatic disease in the RD with unknown disease extent in the NZCR was 29% compared with 59% unknown disease extent for those with locally advanced disease (regional lymph node involvement) ($p<0.001$).

Factors associated with an increased likelihood of unknown disease extent in the NZCR included increasing age (>70yrs $p=0.007$, >80yrs $p=0.002$), comorbidity ($p=0.001$), and locally advanced stage of disease ($p<0.001$).

After adjusting for age, gender, ethnicity, comorbidity, tumour type, and treatment, cases with locally advanced disease were over 4 times more likely to have unknown disease extent in the NZCR than cases with either localised or metastatic disease. Cases managed with curative intent had an increased likelihood of known extent of disease in the NZCR ($p=0.001$).

Gender, ethnicity, NZ deprivation index, DHB and tumour type were not associated with whether extent of disease was known or unknown in the NZCR.

Discussion

The NZCR collects information on all primary malignant disease diagnosed in NZ and is a widely used national resource. Mandatory reporting of cancer to the NZCR, coupled with the assignment of a unique NHI to users of the public health system, provide the potential for a powerful and comprehensive database to facilitate research and inform policy in the health sector.

Although the NZHIS is explicit regarding the attributes and limitations of the NZCR dataset,[1] independent evaluation of completeness and accuracy is essential in order for users to have confidence in the quality of NZCR data.

Considering the important uses of NZCR data, it is surprising that there have been no studies of the accuracy of NZCR data in recent times. This is especially the case for lung cancer, which is the leading cause of cancer deaths in NZ.[3,4]

A review of lung cancer in a large region of NZ, undertaken to assess initial secondary care management in 2004, provided an independent, parallel dataset for comparison with the NZCR. To our knowledge this is the only such comparison since the introduction of mandatory reporting in 1994.

The previous assessment on paediatric cancer data in the NZCR (1990–93) found completeness of registration was high, but errors in registrations (such as incorrect dates of birth and duplicate registrations) were ‘more common than expected’.[2] This contrasts with the results of the current assessment in which few such errors were identified. Comparison of the demographic and tumour characteristics of the 490 cases common to both the NZCR and the RD generally revealed high concordance, indicating accuracy of NZCR data. The major discrepancies in the current assessment related to case identification and disease extent.

After exclusion of cases diagnosed post-mortem and a duplicate NHI, the NZCR identified 558 potential cases compared with 556 cases identified by the RD. However, only 88% of cases were common to both listings; 12% of cases differed.

Many of the eligible cases not included on the NZCR listing were registered with a diagnosis of lung cancer in the NZCR but with a different diagnosis date or DHB of domicile, or were registered subsequently. Others were not registered as lung cancer, due to diagnostic uncertainty regarding the primary tumour site.

Whether such differences in case finding are important will depend on the nature of the research. More importantly, the systematic omission of cases with metachronous primary lung cancer (6 cases) and registration of carcinoma *in situ* instead of invasive cancer (3 cases) could bias study results and conclusions.

Late cancer registrations, late dates of diagnosis, and the absence of some histological information suggested that all available diagnostic information in the RD had not been incorporated into the NZCR. Very late cancer registrations occurred for 10 cases (5 of which were still unregistered at the time of writing), and there were 19 cases with histological evidence of malignancy in the RD with a basis of diagnosis in the NZCR of either 'clinical investigation' or 'death certificate'. Following further correspondence with NZHIS, the NZCR data of 17 cases have been amended, 6 further cases are under review, and 5 late registrations have been added.

The other major issue resulting from this comparison were the potential implications relating to unknown extent of disease for 42% of NZCR cases. Extent of disease (staging) information is not only of vital importance at the individual level for appropriate management decisions and prognosis, but also at the population level to facilitate resource allocation and survival analysis.[10] Collection of such data by cancer registries is however problematic, and the NZCR is one of the few cancer registries worldwide to collect extent of disease data at a national level.[10]

The non random nature of the missing extent of disease data was of particular concern. Older patients, those with comorbidities, those with locally advanced disease, and those managed with palliative intent were less likely to have stage recorded than younger, healthier cases, those treated with curative intent or those with localised or metastatic disease.

This systematic bias in the recording of disease extent in the NZCR could significantly influence the results and conclusions of studies using NZCR extent of disease data.

Also, the NZCR allows amendment of staging information up to 4 months post-diagnosis. For rapidly progressive cancers, such as many lung cancers, NZCR extent of disease may not be a reliable indicator of tumour extent at the time of diagnosis, and may lead to spurious conclusions, especially if linked to management decisions. Progression of disease with stage migration has been reported in potentially curable lung cancer patients on a treatment waiting list.[11]

The extent of disease classification used by the NZCR is not specific to lung cancer and is difficult to convert to the clinically-used TNM staging system. Thus NZCR extent of disease data should be used cautiously in assessing the appropriateness of clinical decisions and determining resource allocation.

This is the first independent evaluation of the accuracy of NZCR lung cancer data. As comparison was made with clinical data from a large region encompassing 37% of the NZ population, the findings are likely to be relevant nationally. Considering the high incidence of lung cancer, it is likely that findings of this assessment may be relevant to NZCR data as a whole. A particular strength of this comparative study was the 97% complete RD staging information.

Cases diagnosed post-mortem (19 cases) and those managed entirely within primary care (<13 cases) were excluded. Exclusion of these cases could bias results as these cases could differ in systematic ways from those cases managed within secondary care; although the number of excluded cases was small. Retrospective reviews are limited by the extent and quality of the recorded information.

Tumour staging was performed using information recorded in the clinical records, and not from review of radiological images. However, this situation is common in clinical practice, in which the clinician is guided by the radiologist's report. Staging was carried out by a single author to provide consistency, although this may have resulted in some bias.

Differences in the definitions used in the audit to those used by the NZCR hampered direct comparison, especially with respect to diagnosis date and tumour staging, which were the two areas of greatest interest and concern.

Conclusions

The NZCR is a valuable resource for researchers. There are, however, limitations which should be recognized by potential users. In the case of the lung cancer audit, the NZCR failed to identify 12% of eligible cases based on audit criteria. Extent of disease was absent for 42% of cases in the NZCR, with a systematic bias towards unknown disease extent for cases with locally advanced disease.

Use of such data without consideration of possible bias could lead to inappropriate conclusions regarding disease extent, survival analysis, and the appropriateness of clinical decisions and resource allocation. The adequacy of the NZCR to provide accurate and reliable information to be used alone, in the absence of independent data, will depend on the particular research being conducted.

Researchers should ensure that they are aware of the definitions used by the NZCR, and of the limitations of the data with respect to their study.

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Transfusion-related acute lung injury (TRALI): a review of investigations by the National Tissue Typing Laboratory of cases reported in New Zealand since June 2004

Paul Dunn, Dorothy Dinesh

Abstract

Aim To review investigations of reported cases of Transfusion-Related Acute Lung Injury (TRALI) performed by the National Tissue Typing laboratory since 2004.

Method Donors associated with reported cases of TRALI are recalled for white cell antibody tests. A donor is implicated if found to have neutrophil or HLA antibodies with specificity against one of the recipient's HLA antigens, or a positive white cell crossmatch. A retrospective review of investigations performed by the Tissue Typing Laboratory on TRALI cases from June 2004 to June 2007 was undertaken.

Results Seventeen cases of TRALI had tests performed by the Tissue Typing Laboratory over the 3-year period. A total of 67 donors were tested. Twenty-nine donors had a positive HLA-antibody screen and the majority of these were female (86%, with fresh frozen plasma (FFP) the commonest component type (41%). In 15 (88%) cases, HLA antibodies were found in donor sera and nine of these had specificity against patient HLA antigen or a positive crossmatch.

Conclusion Preliminary data on TRALI investigations concur with overseas studies. Raising awareness of this hazard of transfusion and a consistent approach in investigation of TRALI will allow us to gain further insight into this complication in New Zealand and consequently explore strategies to prevent such adverse transfusion reactions.

Transfusion-related acute lung injury (TRALI), although rare, is the most common severe transfusion reaction, sometimes fatal. It occurs within 6 hours of a transfusion and is observed as acute onset of hypoxaemia with bilateral infiltrates on frontal chest X-ray[1–5]. It cannot be diagnosed where there is evidence of circulatory overload or pre-existing lung injury.[3]

Although there is a greater understanding of the cause of TRALI, it is widely felt that it remains an under-diagnosed condition.[1–5]. In New Zealand, hazards in transfusion are monitored, subject to diagnosis and reporting by local clinicians. The monitoring programme, "Haemovigilance", has been in operation in New Zealand for approximately 2 years and 16 cases of TRALI were reported over the initial 15-month period.[6]

Although TRALI does not require serological confirmation for diagnosis, investigation to identify any donors who may be implicated in TRALI is needed to prevent subsequent cases. All donors associated with reported cases that meet the definition criteria of probable or possible TRALI,[6] are investigated.

The National Tissue Typing Laboratory in Auckland was established in May 2004 following closure of tissue typing laboratories located in other New Zealand cities. Donor antibodies against recipient leucocytes is recognised as the most frequent cause of TRALI[7] and antibody screening of donors is the first line of testing as a way to manage the donors and determine if deferral (exclusion from further blood donation) should occur.

In the immune-mediated pathogenesis of TRALI, donor-derived HLA or neutrophil antibodies in blood components, particularly plasma rich components, react with recipient neutrophils and cause leukoagglutination in the pulmonary microvasculature. The activated neutrophils lead to endothelial cell injury and exudative pulmonary oedema.

Donors implicated in TRALI are usually multiparous women who have formed leukocyte antibodies as a result of exposure to paternally derived fetal antigens during pregnancies. HLA antibodies are found in 10–20% of female donors.[3]

During pre-donation health checks in New Zealand we do not question donors about their parity or history of blood transfusion, unless this relates to travel to a variant Creutzfeld-Jakob disease (CJD)-risk country or surgical procedure within the last 12 months.

The aim of this study was to review all tests relating to TRALI cases, performed by the Tissue Typing Laboratory, New Zealand Blood Service, Auckland, since 2004 to gain insight into the aetiology of TRALI in New Zealand.

Method

The New Zealand Blood Service protocol for investigation of TRALI was implemented in October 2006. For confirmed cases, all associated donors of fresh components transfused in the 6 hours preceding the onset of the reaction are identified and taken off service.

During the investigation they can donate plasma for fractionation (i.e. their plasma is pooled with a large number of units of plasma from other donors) for manufacture into concentrated plasma products, however fresh blood components such as red cells, fresh frozen plasma and platelets cannot be used.

Fractionated plasma products have not been implicated in TRALI, possibly because of the large-scale dilution of individual plasma units that may contain white cell antibodies. The donors associated with TRALI are recalled and their serum collected for HLA and Human Neutrophil Antigen (HNA) antibody screening tests. The recipient is typed for class I and II HLA.

Once all the donors have provided samples, a further sample is collected from the recipient for crossmatch against serum from donors with HLA antibodies. A donor is implicated if they have an antibody with specificity against a recipient antigen, the crossmatch is positive or there is an HNA antibody that shows specificity.

Once testing is complete all donors are contacted. If their tests are negative they are reinstated; however if a donor is implicated, they are permanently deferred from donating again. A report is provided to the clinician although the investigation can take many months to complete and occasionally donors will not respond to requests for further samples for testing. Prior to the availability of the protocol, there may have been considerable variation in TRALI investigations and testing may have been selective—e.g. only restricted to plasma or platelet donors or only female donors etc. There was no consensus regarding the management of donors previously.

In this retrospective review, the Tissue Typing Laboratory results, donor gender, blood component type, and donor outcome were analysed. TRALI patients and associated donors from June 2004 to June 2007 were identified through a search of Histotrac (System Link Inc USA), the tissue typing software system, and also through an audit of internal charges for antibody screen tests.

Patient HLA typing was carried out by DNA-based techniques. Antibody screening was performed and HLA-antibody specificities were determined. Cross matching was performed using patient's separated T and B lymphocytes and donor serum by the microlymphocytotoxicity assay. Neutrophil-antibody screening was carried out by the ARCBS Reference Laboratory in Brisbane, Australia, using two methods: granulocyte agglutination test (GAT) and granulocyte immunofluorescence test (GIFT). Donor sera were frozen and sent to Brisbane in batches. Neutrophil crossmatches were not available, as the cells do not survive long after collection.

Information regarding donor gender, blood component type and donor outcome was derived from Progesa, the National Blood Management System Database. Data on patient outcome were not available.

Results

There were 17 patients with TRALI whose cases were investigated by the Tissue typing laboratory over the 3-year period. Table 1 shows the results for the patients and donors and the outcome for the donors. A total of 67 donors were tested, and 29 (43%) had a positive HLA-antibody screen (25 females and 4 males). Fifteen of the 17 cases (88%) had donors with a positive HLA-antibody screen.

Fresh frozen plasma (FFP) was commonest type of component transfused (12/29) from donors with a positive HLA-antibody screen, as shown in Table 2. Twelve donors were highly HLA alloimmunised, demonstrating both class I and II HLA antibodies.

In 9 of the 17 cases (53%) there was a positive crossmatch or the specificity of the antibody was directed against an antigen present in the recipient. However there may have been up to 5 more cases confirmed by investigations: in 4 cases either the patient had not been typed or a crossmatch not done and in 1 case (patient 10) was typed but the specificity of the antibodies had not been determined.

Three donors found to have a weak positive neutrophil antibody screen but in each case this positive result was removed by pre-absorption with a platelet pool implying the presence of a non-specific antibody. No neutrophil-specific antibodies were demonstrated in samples sent to Brisbane.

Of the 29 donors with a positive HLA-antibody screen, 14 (48%) were retired from donating blood, 5 (17%) were reinstated (able to resume blood donation), 4 (14%) were able to donate plasma for fractionation only, and 6 (21%) are awaiting action or further tests.

Table 1. TRALI investigation results (17 patients)

Patient	Patient's HLA type	No. donors tested	Donors with HLA antibodies	Sex/blood component type	Crossmatch	Neutrophil antibody screen	Donor outcome
75 year old M	–	2	1. Class II positive	F, FFP	negative	negative	plasma for fract only
49 year old M	–	11	1. Class I & multispecific class II	F, FFP	positive (T & B cell)	negative	permanent deferral
			2. Class I & II positive screen, ID negative	M, buffy coat for platelet pool	–	negative	reinstated
54 year old M	–	2	–	both F, RBCs	negative	negative	both reinstated
36 year old F	HLA-A1,30; B44, 57	2	–	both M, RBCs	negative	1. weak positive*	both reinstated
52 year old M	HLA-A01, 23; B58,75; DR13,17	6	1. Class I & multispecific class II	F, FFP	T cell negative B cell positive	negative	reinstated
			2. Class I & II positive screen, ID negative	M, cryoprecipitate	T cell negative B cell positive	negative	reinstated
81 year old F	–	6	1. Class I positive screen, ID negative	M, RBCs	–	negative	reinstated
			2. Class I & class II	F, cryoprecipitate	–	negative	plasma for fract only
			3. Class I	M, cryoprecipitate	–	negative	reinstated
			4. Class I & II positive screen, ID negative	F, RBCs	–	negative	plasma for fract only
66 year old M	–	12	1. Class I & II	F, RBCs	–	negative	permanent deferral
			2. Class I & II	F, FFP		negative	permanent deferral
			3. Weak positive class I, ID negative	F, plasma & buffy coat M, RBCs	–	negative	reinstated
			4. –		–	weak positive*	plasma for fract only
65 year old M	HLA-A2, 24; B7, 40; DR4, 15	1	Class I & class II	F, platelets	T cell positive	negative	plasma for fract only
25 year old M	WBC too low	1	Weakly positive class I, ID negative	F, FFP	–	negative	awaiting action
38 year old F	HLA-A2, 68; B50, 61	4	1. Class I positive	F, FFP	–	negative	permanent deferral
			2. Class II positive	F, FFP	–	weak positive*	await ID/PRA
	needs class II typing		3. Weak positive class I, ID negative	F, FFP	–	negative	reinstated
			4. Class I & II	F, platelets	–	negative	await ID/PRA
39 year old F	HLA-A3, 11; B18, 44; DR4, 14	7	1. Class I & II	F, RBCs	–	–	permanent deferral
			2. Class II	F, RBCs	–	–	permanent deferral
			3. Class I positive, ID negative	F, RBCs	–	–	awaiting action
51 year old M	–	4	1. Class I & class II	F, FFP	–	–	permanent deferral
			2. Weak positive class I, ID not determined	F, FFP	–	–	permanent deferral
59 year old M	HLA-A2, 68; B15, 44; DR4, 13, 52, 53	2	1. Class I & II	F, platelets	–	negative	permanent deferral
67 year old M	HLA-A2, 24; B18; DR4, 17	2	1. Class I & class II (multispecific)	F, FFP	positive	negative	permanent deferral
15 year old M	HLA-A1, 24; B8, 39; DR14, 15	1	1. Multispecific class I & II, highly sensitized donor	F, FFP	–	–	permanent deferral
75 year old M	HLA-A1, 68; B8, 44; DR11, 17, 52	3	1. Class I	F, RBCs	–	–	permanent deferral
			2. Class I	F, RBCs	–	–	permanent deferral
41 year old F	HLA-A2, 68; B61, 44; DR4, 11	1	1. Class I & class II	F, RBCs	positive	–	permanent deferral

fract=fractionation; F=female; FFP=fresh frozen plasma; M=male; PRA=% panel reactivity;
*non-specific antibody removed by platelet absorption.

Table 2. Component type transfused from donors with positive HLA-antibody screen

Component type	Number
FFP	12
RBC	9
Platelets	5
Cryoprecipitate	3
Total	**29**

Discussion

There were 10 cases of TRALI reported to the New Zealand national Haemovigilance programme in 2006 (unpublished). It is probable that such reactions are under-reported and until recently, not consistently investigated.

This review provides preliminary data on New Zealand TRALI investigations and concurs with overseas studies, in that the majority of cases are associated with donor-derived leukocyte antibodies, most donors are female, and plasma is the most common blood component implicated.

It would be useful to have data on patient outcomes and the Haemovigilance programme is likely to provide this information in the future. The TRALI investigation protocol implemented in late 2006 should establish consistent investigation and donor management.

This review has highlighted several areas of improvement within the protocol—e.g. for each TRALI investigation the coordinator should provide a list of donors to the Tissue Typing Laboratory so that the laboratory know how many samples to expect for each case and so it can arrange a crossmatch using stored frozen lymphocytes when all the donor sera are obtained. This allows the laboratory to link the donor to the patient as the donor sample request forms cannot contain information about the recipient that would compromise their privacy.

In the past few years there has been a heightened interest in TRALI amongst blood services internationally. Clinicians are encouraged to report such adverse reactions so that appropriate investigations are carried out.

Since 2003 the United Kingdom have endeavoured to provide male-only fresh frozen plasma for transfusion. This approach had resulted in a significant reduction in TRALI caused by FFP and platelets in both the numbers of reports and mortality.[8]

Consequently the New Zealand Blood Service is assessing the feasibility of male-donor FFP whilst maintaining self-sufficiency.

With the established Haemovigilance programme and TRALI investigation protocol, it is expected that we will continue to accumulate useful data, which in turn will enable us to explore other strategies to prevent this serious complication of transfusion.

Competing interests: None known.

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Smoking cessation competencies for health workers in New Zealand

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Abstract

Aim To outline competencies to guide smoking cessation delivery by health workers in New Zealand.

Methods The cessation competencies were developed from a literature review of competencies measurable and relevant to New Zealand, the evidence for effectiveness of different interventions from the 2007 New Zealand Smoking Cessation Guidelines, and consultation with an expert group and smoking cessation providers throughout New Zealand.

Results The literature review identified only a handful of relevant documents on smoking cessation workforce competencies. Thirty-nine skill and knowledge-based competencies, based on three standards from the 2007 New Zealand Smoking Cessation Guidelines were identified. Each competency has been assigned a level (core, generalist, and specialist) depending on the provider's role.

Conclusions The New Zealand smoking cessation competencies provide a basis for guiding expectations of the measurable knowledge and skills all workers providing smoking cessation should attain. Their utility should be evaluated and reviewed after at least a year.

Despite encouraging evidence of a decline in the prevalence of current smokers over the past few years,[1] tobacco smoking is a leading cause of preventable premature death, disability, and health inequalities in New Zealand.[2] Smoking cessation interventions—asking about smoking status, giving brief advice, and providing support such as pharmacotherapy (e.g. nicotine replacement therapy, NRT)—are one of the most cost-effective interventions available to health workers.[3] Such interventions are effective at increasing the proportion of smokers who stop smoking successfully. However, despite an increase in the availability of smoking-cessation services in recent years, there is recent evidence that the level of service is still below the optimum.[4]

This paper outlines the development of the first set of smoking cessation competencies for health workers in New Zealand. Competencies have been defined as "the set of abilities, skills, knowledge and attitudes needed to conduct the tasks and functions in a particular job".[5] They provide standards against which an individual practitioner can assess their own level of competency, can be converted into learning outcomes for training,[5] and provide a basis for planning ongoing professional development.[6] Competency standards also help to maintain public confidence and give workers a clearer understanding of their work and what constitutes good practice.[7]

Since the introduction of the *New Zealand Health Practitioners Competence Assurance Act 2003* there has been considerable activity in the development of national workforce competencies in a range of areas in New Zealand. However, until recently, there has been no set of shared competencies to guide smoking cessation delivery in New Zealand despite smoking cessation being a key element in the national tobacco control strategy and offering both individual and population health benefits.[8]

As a consequence, the provision of cessation support varies widely in quality across the country and between the many professional groups involved in providing services. Not only does this place clients at risk of receiving inappropriate management and therefore experiencing suboptimal outcomes, it is an inefficient use of limited healthcare resources. Having competencies could in theory improve the effectiveness of publicly funded smoking cessation expenditure.

The competencies described in this paper were developed to help advance the overall goal of improving and enhancing the quality and consistency of smoking cessation support given by health workers in New Zealand. During the latter quarter of 2006 and first quarter of 2007, a consortium of agencies revised smoking cessation guidelines for New Zealand. In February 2007, the Ministry of Health commissioned several groups within this consortium to develop smoking cessation workforce competencies relevant to New Zealand.

Method

Literature review—The process of developing the competencies began with a literature review of other smoking cessation workforce competencies. The review question was *What documents are available that will help in the development of the core competencies required for people providing evidence-based treatment of tobacco dependence in New Zealand?*

The international cessation competencies accepted by the Association for the Treatment of Tobacco Use and Dependence (ATTUD)[9] in April 2005 were used as the starting point, with more recent and more specific literature then investigated to ensure competencies were measurable and relevant to New Zealand.

A variety of databases were searched for this review, using the following search terms: "smoking cessation", "workforce competency", "clinical competence", "professional competence", "competency-based education", and "competency". The databases included: Medline, Embase, Cinahl, AMED, PsycINFO, PubMed, EBM Reviews – Cochrane Database of Systematic Reviews, EBM Reviews – Database of Abstracts for Reviews of Effectiveness, EBM Reviews – ASP Journal Club, EBM Reviews – Cochrane Central Register of Controlled Trials, and Centre for Reviews and Dissemination. A variety of other sources were searched for information, including the reference lists of all obtained articles, key websites, and by asking key informants for relevant documents.

All studies that focussed on smoking cessation competencies were sought, irrespective of study design, type of participants, sample size, or outcome measures. Only English language publications were sought. The search was restricted to literature published from 2005 onwards, that is, after the international cessation competencies developed by ATTUD were approved. The final literature search was completed on 7 March 2007. A narrative review of the literature was undertaken.

Competency development—A project team from the University of Auckland's School of Population Health developed a draft set of smoking cessation competencies based on information obtained from:

- The literature review;
- The 2007 New Zealand Smoking Cessation Guidelines;[10] and
- Consultation with an expert group comprising 14 people from throughout New Zealand selected for their expertise in cessation service provision and/or training.

The group covered a range of disciplines and health occupations including education, community psychology, addiction medicine, psychiatry, physiotherapy, mental health, nursing, public health medicine and general practice. The major publicly funded smoking cessation training provider organisations were represented as well as one private training provider. There was also representation by Māori and Pacific cessation trainers, by academics, and by the Ministry of Health.

A face-to-face meeting was followed by emailing drafts to the expert group, with feedback sought as drafts progressed from this group as well as from the wider cessation provider community, who were identified using established tobacco control email lists and the extensive networks of the advisory group members and project team.

An overarching aim of the health and disability sector in New Zealand is to improve Māori health outcomes and reduce Māori health inequalities. Furthermore, Māori in particular (but also Pacific peoples, pregnant women, and people with mental illnesses) stand to benefit the most from good cessation practice due to the high level of smoking prevalence in these groups. Therefore it was important that the competencies took into account the needs of these priority population groups. A further requirement was that they should be developed primarily for health workers, not organisations, although clearly the latter must also be 'competent' to support workers and their ongoing training and development.

Training others in smoking cessation involves proficiency in a separate set of skills and knowledge of adult education so training was also determined to be outside the scope of this work.

Finally, to be readily measurable (for example, via a practical test or observation of practice skills, or using written assessments of knowledge), it was decided that competencies be primarily knowledge- or skill-based, rather than based on attitudes or values.

Results

Literature review—The literature search identified only two documents published since 2005 on smoking cessation workforce competencies.[9,11] No reports linking the introduction of competencies with improved cessation outcomes were identified. A report from England on smoking cessation workforce competencies was included due to its comprehensive nature.[7] An Australian document was located that provided information on competencies related to two training courses specific to workers in the smoking cessation field.[12]

The Alcohol and Liquor Advisory Council (ALAC) report *Practitioner Competencies for alcohol and drug workers in Aotearoa-New Zealand*[2] contained useful 'generic' and 'foundation' competencies, as did ALAC documents specific to Māori and Pacific alcohol and drug treatment practitioners.[13,14]

No documents were identified that specifically focussed on cessation workforce competencies related to other ethnic groups (e.g. Asian peoples) or vulnerable population groups (e.g. pregnant women and young people).

Competencies—The first output was a set of competence 'levels' (Table 1), defined as the *core*, *generalist* and *specialist* levels of competence that may be required of health workers in different roles.

Table 2 shows the competencies, arranged under 'standards' that align with the 'ABC' steps in the 2007 Guidelines: Asking about current smoking, giving Brief advice to stop, and arranging or providing Cessation support.[6] Each standard is followed by a list of the competencies framed as either knowledge or skills. The competencies within each standard specify the competence level (core, generalist, specialist) expected but not the items of knowledge or skills for a particular worker in a particular environment, as these may vary widely.

Table 1. Competence levels

Description of level	
Core	The competencies that *all health workers in any role* should have. This includes all registered health professionals and those health workers not in a vocationally registered grouping such as community health workers and some complementary therapists.
Generalist	The competencies required of workers who provide cessation services *as one of several roles* they have, dependent on their time available and skill, generally in a supervised or supported environment. These Generalist competencies build upon the Core competencies.
Specialist	The competencies that those who provide smoking cessation services as their *main or sole role* should have. These people often work independently without supervision. These Specialist competencies build upon the Core and Generalist competencies.

Table 2. Smoking cessation competencies for New Zealand

Standard 1: Ask smokers if they are currently smoking*		
1.1	Ask about and document a client's current smoking status and relevant details.	Core
1.2	Access reliable information about tobacco dependence, in particular the current 'New Zealand smoking cessation guidelines'.	Core
1.3	Demonstrate knowledge of tobacco dependence as a chronic relapsing condition.	Core
1.4	State the prevalence and patterns of tobacco dependence in New Zealand, in particular among Māori, Pacific peoples and pregnant women.	Core
1.5	Demonstrate awareness of the historical, political, social and economic factors that promote and maintain tobacco dependence, in particular among Māori and among Pacific peoples.	Core
1.6	State the major harmful health effects of tobacco smoking on individuals, pregnant women and their babies, whānau (families) and the wider community, and the health benefits of stopping smoking.	Core
1.7	Identify the importance of complete cessation from as early in pregnancy as possible for pregnant women who smoke.	Core
1.8	Ask all people documented as smoking, at each admission to hospital and each presentation to a primary care setting, if they are still smoking.	Core
Standard 2: Give brief advice		
Is able to:		
2.1	Give brief advice clearly and convincingly, and document that this has taken place.	Core
2.2	Demonstrate knowledge that giving brief advice to stop smoking is an effective and cost-effective strategy to promote quit attempts.	Core
2.3	Demonstrate knowledge that brief advice can be given to people who smoke often and at any time, regardless of the client's readiness to stop smoking.	Core
2.4	Demonstrate knowledge that giving brief advice can be anything from 30 seconds to a few minutes.	Core

Standard 3: Provide cessation support		
Is able to:		
3.1	Assess a client's interest in receiving cessation support.	Core
3.2	Refer clients to the Quitline, Aukati Kai Paipa, a medical practitioner or other specialist cessation support if appropriate.	Core
3.3	Identify common myths about nicotine, nicotine dependence, smoking and its treatment.	Core
3.4	Understand the need for medications to deal with the symptoms of nicotine dependence	Core
3.5	Assess the level of nicotine dependence using 'time to first cigarette', and use this to help plan treatment.	Generalist
3.6	Demonstrate knowledge of the characteristics (types, costs, sources, doses, actions, effectiveness and side-effects) of effective stop-smoking treatments available in New Zealand.	Generalist
3.7	Identify complementary therapies for stop-smoking treatment and understand their effectiveness.	Generalist
3.8	Negotiate cessation goals and strategies with clients, including setting a Target Quit Day.	Generalist
3.9	Demonstrate knowledge of or ability to use an effective behavioural support method.	Generalist
3.10	Offer nicotine replacement therapy (NRT) and understand the use of higher doses and combinations of NRT (e.g. patches and gum) when appropriate.	Generalist
3.11	Refer to a medical practitioner for prescription-only medications such as nortriptyline, bupropion, varenicline and other forms of NRT (e.g. inhaler) when appropriate.	Generalist
3.12	Arrange follow-up support during treatment.	Generalist
3.13	Identify the common symptoms of nicotine withdrawal.	Generalist
3.14	Identify the common cues that trigger urges to smoke.	Generalist
3.15	Demonstrate knowledge of common smoking compensation behaviours.	Generalist
3.16	Demonstrate knowledge of basic relevant anatomy and physiology, particularly the areas of the brain involved in reward and dependence, the lungs and cardiovascular system.	Generalist
3.17	Verify self-reported abstinence using a range of methods where available and feasible.	Generalist
3.18	Understand, measure and document treatment endpoints, in particular 7-day point prevalence and continuous abstinence.	Generalist
3.19	Work with clients using appropriate strategies to help them maintain abstinence.	Generalist
3.20	Demonstrate ways in which services can be promoted and delivered to attract and be effective for Māori and Pacific peoples.	Generalist
3.21	Demonstrate awareness of the need to seek expert advice for managing complex cases, such as clients with mental health illness, concurrent alcohol and other drug dependence problems or a co-existing medical disorder.	Generalist
3.22	Conduct a risk–benefit assessment with pregnant women who smoke to help determine safe and effective treatment.	Generalist
3.23	Use stop-smoking medications in clients with cardiovascular disease and other co-existing medical conditions, pregnant women, and users of mental health and addiction treatment services, especially those with complex psychological disorders.	Specialist
3.24	Identify the effects of smoking on the metabolism of various medications (e.g. those used to treat people with mental illness, asthma and diabetes), and the changes seen when stopping tobacco use.	Specialist
3.25	Follow and document steps in dependence assessment and treatment planning, and collect/collate data on the cessation service provided to allow standard monitoring of clients and service effectiveness.	Specialist

* Asking about smoking status may at times be appropriately undertaken by receptionist or clerical staff who would not be expected to do more than this without specific training.

Discussion

This paper presents a set of competencies for health workers providing evidence-based treatment of tobacco dependence in New Zealand. The competencies utilise information taken from previous literature in the area, and were developed through a relatively short but wide consultation process. The literature search did not identify

any research or evaluations of existing competencies that demonstrated a benefit in terms of quality of service provision or other outcome measures. Therefore, these competencies, as with many others, are based on expert opinion and not on evidence. Nevertheless, they have been constructed around evidence-based smoking cessation guidelines published in 2007 and form a companion document to these guidelines. They may be viewed therefore as the competencies required to deliver these evidence-based guidelines.

One of the key messages in the 2007 Guidelines is that *all* health workers should be both confident and competent in asking about smoking, giving brief advice and advising where to seek further help.[10] There is strong evidence for the provision of brief advice[11] and a growing recognition that a range of health workers have a role to play in providing brief advice and arranging for referral and support.[15–18]

With few exceptions (e.g. prescribing medications) traditional professional categories are largely irrelevant in smoking cessation practice. Workers should not be restricted by their professional grouping. Rather, it is the level of competence that is important. Nevertheless, there is a case to be made for some occupational groups having a more active role than others. For example, given the high cost-effectiveness of cessation in pregnant women who smoke, midwives should be encouraged to become more active and competent in cessation advice.[4,19]

Similarly, since smoking increases the risk of post-surgical complications surgeons, anaesthetists and other hospital staff interacting with people on waiting lists should be vigorous in giving brief advice and referring to cessation support.[20]

It could be argued that competencies for ethical practice, cultural safety, professional development, and communication should have been included with these cessation competencies. Rather than include these, we recommend instead reference to information on ethical and professional standards from appropriate professional bodies or employers.

Excellent cultural competencies apply to all health workers in New Zealand and are also readily available. Other documents developed in New Zealand for the alcohol and drug dependence workforce[6,13,14] and mental health workers[21,22] cover such competencies in some detail, and were developed after a robust and extensive consultation process.

In the same way, supervision and ongoing professional development are a 'given' as part of good professional practice in New Zealand.[6] Where workers in the smoking cessation field may not have knowledge of ethical practice or cultural competencies they should be offered training in these areas when they attend a course to become a 'quit card' (subsidised nicotine replacement therapy exchange card) provider.[23]

Good communication skills are vital to effective cessation practice but the type of communication that occurs in cessation practice is no different to that already widely practiced in day-to-day health work, with the exception of the small group of workers who provide highly specialised services such as Quitline advisors or those providing group treatment sessions.

No particular method of cessation advice or support (e.g. specific behaviour change methods such as motivational interviewing) or mode of delivery (e.g. telephone

counselling, or conducting group sessions) was specified, as there is no evidence to support the superiority of one method over another,[24,25] and competence in such processes generally involves additional specialised training.

It is important that the competencies are not used merely as a checklist, as each competency relates closely to another (for example, asking about current smoking often leads to giving brief advice) so they should be considered together.

Finally, the utility and uptake of these competencies by health workers and cessation trainers should be evaluated after they have been in use for at least a year, especially among priority workforce groups.

In summary, this paper outlines the smoking cessation workforce competencies required to deliver the 2007 New Zealand Smoking Cessation Guidelines. The competencies not only outline a clear and achievable standard for health workers receiving cessation training, but they will be invaluable when appointing health workers who are working in the cessation field and when undertaking research and evaluation of worker efficacy. They should be viewed as 'foundation' competencies: they represent the first attempt to define good smoking cessation practice in New Zealand.

The New Zealand Smoking Cessation Guidelines will need to be revised within the next few years to reflect changes in the scope of practice and to incorporate new evidence from the research and evaluation literature on what works in smoking cessation. It would be appropriate to review the competencies at the same time.

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New Zealand smoking cessation guidelines

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Abstract

Aims To summarise the key recommendations made in the 2007 New Zealand Smoking Cessation Guidelines.

Methods A comprehensive literature review of smoking cessation interventions was undertaken in November 2006. Recommendations were formulated from the findings of the literature review in line with the methods recommended by the New Zealand Guidelines Group.

Results The Guidelines have been structured around a new memory aid (ABC) which incorporates and replaces the 5A's (ask, advise, assess, assist, arrange). ABC prompts healthcare professionals to *ask* about smoking status; give *brief* advice to stop smoking to all smokers; and provide evidence-based Cessation support for those who wish to stop smoking. Healthcare professionals should briefly advise all people who smoke to stop smoking, regardless of whether they say they are ready to stop smoking or not. They should then offer smoking cessation support which includes both behavioural (e.g. telephone and face-to-face support) and pharmacological (e.g. nicotine replacement therapy, nortriptyline, bupropion, or varenicline) interventions. Recommendations were also formulated for priority populations of smokers: Māori, Pacific, pregnant women, and people with mental illness and other addictions.

Conclusions These guidelines will assist healthcare professionals in providing evidence-based smoking cessation support to people who smoke. To be effective, the ABC model needs to be integrated into routine practice.

Stopping smoking reduces smoking related disease and premature death and is a key health improvement objective in many countries, including New Zealand.[1] Smoking cessation guidelines contribute to achieving this high-priority objective.

The New Zealand Guidelines for Smoking Cessation were first published in 1999 and later revised in 2002.[2] A 2003 survey of guidelines users undertaken by the New Zealand Guidelines Group (NZGG) found that the 2002 guidelines needed to be updated.[3] Considerable change has occurred even since 2002, with the emergence of new evidence, pharmacotherapies and other treatments, as well as further amendments to smokefree legislation.

This paper summarises the 2007 guidelines,[4] including a description and summary of the evidence base for the main recommendations, the evidence base, and contains information about their application to priority population groups, such as pregnant women, people who use mental health and addiction services.

Method

Guidelines development process—The guidelines were commissioned by the Ministry of Health in mid-2006 and developed by a guidelines development group with expertise in smoking cessation and specialist advisory groups comprising academics, researchers, community, medical and nursing practitioners, and providers and trainers with representation also from members of priority population groups.

The process followed as closely as possible the steps recommended in the internationally recognised Appraisal of Guidelines for Research & Evaluation (AGREE) tool.[5] Underpinning the guidelines was an updated literature review, undertaken from 2002 (the date of the previous literature review) to March 2006. The key sources of data were relevant systematic reviews published by the Cochrane Collaboration and a systematic review undertaken by the US Department of Health and Human Services to inform the US Treating Tobacco Use Guidelines.[6] These were supplemented with findings from other systematic reviews and randomised controlled trials (RCTs). The quality of all the reviews and trials was assessed using standard appraisal methods.[7]

Analysis—Recommendations were then formulated from the findings of the literature review. Each recommendation was assigned a grade based on the level of empirical evidence from the literature review, using the New Zealand Guidelines Group (NZGG) system as follows: **A:** The recommendation is supported by good (strong) evidence. **B:** The recommendation is supported by fair (reasonable) evidence, but there may be minimal inconsistency or uncertainty. **C:** The recommendation is supported by expert opinion (published) only. **I:** There is insufficient evidence to make a recommendation. ✓ Good practice point (in the opinion of the guideline development group). More detailed explanation of this grading system can be found in the NZGG Guidelines Handbook.[8]

Findings

Key changes from previous guidelines—Two key changes from previous guidelines are noted in the 2007 smoking cessation guidelines. First, reference to the 'Stages of Change' model[9] has been removed. The usefulness of this widely used model for smoking cessation treatment has recently been challenged.[10] Although many practitioners may continue to use the model, we considered this insufficiently supported by evidence to include in the guidelines. Second, we have structured the guidelines around a new, simplified memory aid to guide practitioners, that incorporates and replaces the widely used '5As' (ask, advise, assess, assist, arrange).[2] 'ABC' is a far simpler and thus more easily remembered mnemonic that prompts healthcare professionals (HCPs) to **A**sk about smoking status; give **B**rief advice to stop smoking to all smokers and offer evidence-based **C**essation support. The key recommendations are listed in Table 1.

Ask about smoking status—All people attending any healthcare service should be asked if they smoke tobacco, and their smoking status should be recorded in their clinical records. The records of anyone who smokes, or has recently quit, should be updated regularly—ideally, once a year.

Brief advice to stop smoking—Brief advice to stop smoking can be provided in as little as 30 seconds.[11] When given by a doctor brief advice increases long-term abstinence by approximately 2.5% compared to no advice at all.[12] Despite few studies investigating the effect of brief advice delivered by other HCPs,[13-15] it is highly likely to be beneficial.

Brief advice appears to work by triggering people to make a quit attempt rather than by increasing the chances of success of a quit attempt.[16] It also seems to have its greatest effect on less dependent smokers.[12] For more dependent smokers (such as

those whose time to the first cigarette of the day is within 30 minutes of waking), it is important that brief advice is followed by an offer of cessation support.

Table 1. Key recommendations

- The full set of recommendations can be found in the NZ Smoking Cessation Guidelines (www.moh.govt.nz)
- See text for explanation of grading (A, B, C, I, ✓)

ASKING ABOUT SMOKING STATUS

Ask about and document smoking status for all patients. For people who smoke or have recently stopped smoking, the smoking status should be checked and updated on a regular basis. Systems should be in place in all healthcare settings (medical centres, clinics, hospitals, etc.) to ensure that smoking status is accurately documented on a regular basis. [A]

BRIEF ADVICE TO STOP SMOKING

All doctors should provide brief advice to quit smoking at least once a year to all patients who smoke. [A]
All other HCPs should also provide brief advice to quit smoking at least once a year to all patients who smoke. [B]
Record the provision of brief advice in patient records. [C]
HCPs should seek appropriate training to enable them to provide brief advice. This training should include providing the healthcare worker with information on available evidence-based smoking cessation treatments. [B]

CESSATION SUPPORT

Telephone support

Offer telephone counselling as an effective method of stopping smoking. People who smoke can be directed to Quitline (tollfree: 0800 778 778). [A]

Face-to-face support

Providing face-to-face smoking cessation support either to individual patients or to groups of smokers is an effective method of stopping smoking. [A]
Aim to see people for at least four cessation support sessions. [A]
HCPs providing evidence-based cessation support (that is, more than just brief advice) should seek appropriate training. [C]
HCPs trained as smoking cessation providers require dedicated time to provide cessation support. [C]

Pharmacotherapy

Nicotine replacement therapy (NRT), bupropion, nortriptyline and varenicline can be routinely offered as effective medications for people who want to stop smoking. [A]
The choice of product should be guided by the person's preference and any contraindications and precautions for use. [✓]
Combining two NRT products increases abstinence rates. [A]
NRT can be used to encourage reduction prior to quitting. [B]
People who need NRT for longer than 8 weeks (for example, people who are highly dependent) can continue to use NRT. [C]
NRT can be provided to people with cardiovascular disease. However, where people have suffered a serious cardiovascular event (for example, people who have had a myocardial infarction or stroke) in the past 2 weeks or have a poorly controlled disease, treatment should be discussed with a physician. Oral NRT products are recommended (rather than longer-acting patches) for such patients. [B]

SPECIAL POPULATIONS

Smoking cessation interventions for Māori

Offer Māori who smoke cessation support that incorporates known effective components (such as medication). [✓]

Where available, offer culturally appropriate cessation services to Māori. [C]

HCPs should be familiar with the cessation support services for Māori that are available in their area (such as local Aukati Kai Paipa providers) and nationally (such as Quitline) so they can refer appropriately. [✓]

HCPs providing cessation support to Māori should seek training in how to deliver smoking cessation treatment to Māori. [✓]

Smoking cessation interventions for Pacific and Asian people

People who smoke should be offered smoking cessation interventions that incorporate known effective components. [✓]

Offer culturally appropriate services where available. [C]

HCPs providing cessation support to Pacific and Asian people should seek training in how to deliver smoking cessation treatment appropriately to these groups. [✓]

Smoking cessation interventions for pregnant women

Offer all pregnant and breastfeeding women who smoke multi-session behavioural smoking cessation interventions from a specialist/dedicated cessation service. [A]

All HCPs should briefly advise pregnant and breastfeeding women who smoke to stop smoking. [A]

NRT can be used in pregnancy and during breastfeeding following a risk-benefit assessment. If NRT is used, oral NRT products (for example, gum, inhalers, microtabs and lozenges) are preferable to nicotine patches. [C]

Smoking cessation interventions for young people

Offer smoking cessation interventions that incorporate known effective components (such as those identified in the previous sections) to young people who smoke. [✓]

NRT can be used by young people (12–18 year olds) who are dependent on nicotine (that is, NRT is not recommended for use by occasional smokers) if it is believed that NRT may aid the quit attempt. [C]

Smoking cessation interventions for people who are hospitalised or awaiting surgery

All hospitals should have systems set up for helping patients to stop smoking. This includes routinely providing advice to stop smoking and either providing a dedicated smoking cessation service within the hospital or arranging for smoking cessation treatment to be provided by an external service. [B]

Cessation support should include multi-session treatment and medication ongoing for at least 1 month after discharge. [A]

Advise parents and family members of hospitalised children to stop smoking and offer support to help them. [✓]

Smoking cessation interventions for people with mental health illness and people who use addiction services

Offer smoking cessation interventions that incorporate known effective components (such as those identified in the previous sections) to people with mental health disorders who smoke. [✓]

People with mental health disorders who stop smoking while taking medications for their illness should be monitored to determine if dosage reductions in their medication are necessary. [A]

Smoking cessation interventions for people who have been unsuccessful in quitting in the past

Offer smoking cessation interventions that incorporate known effective components (such as those identified in the previous sections) to people making another quit attempt. [A]

Services should be able to offer support to people who have relapsed as soon as they request support. [✓]

Figure 1

Source: New Zealand Smoking Cessation Guidelines Liftout. Ministry of Health, August 2007. http://www.moh.govt.nz/moh.nsf/pagesmh/6663/$File/nz-smoking-cessation-guidelines-insert.pdf

Advice can be strengthened if it can be linked to a smoker's existing smoking related medical condition or to protecting children and young people from exposure to secondhand smoke.[17] An example of how to give brief advice to stop smoking is shown in Figure 1.

Cessation support—There are many different ways of providing cessation support. However, the two key components that have been shown to be most effective are multi-session support and pharmacotherapy.[6] The support that individual HCPs can offer will depend upon their smoking cessation knowledge, skills and available time. For those who have little time to spare referral to services that provide effective interventions (e.g. Aukati Kai Paipa or the Quitline) should be made.

Proactive *telephone support* for smoking cessation increases long-term abstinence rates compared to brief advice.[18] Adding telephone support to medication increases short-[19] and long-term[20] abstinence rates over that of medication alone. There is no advantage in adding telephone support to face-to-face support.[18] However, when the intensity of face-to-face counselling is low, such as providing a single counselling session for hospital in-patients, additional follow-up with telephone counselling has been shown to have a positive effect.[21]

Face-to-face cessation support, delivered individually or in a group setting, has been shown to be more effective than brief advice.[6,22,23] There is no evidence that any one effective behaviour change method (e.g. cognitive behavioural therapy, motivational interviewing, withdrawal-oriented treatment) is superior to another. More intensive support (relating to the frequency and duration of contacts with smokers) is generally associated with higher abstinence rates.[6,24,25] The professional background of the HCP does not appear to influence smoking cessation outcome.[6] Cessation rates are generally higher when medication is used in combination with face-to-face support.

Nicotine replacement therapy (NRT) approximately doubles the chances of long-term abstinence compared with placebo.[26] It appears to be as effective as bupropion and nortriptyline, but as yet there are no published studies comparing NRT to the recently registered smoking medication, varenicline. NRT's main mechanism of action is to reduce the severity of withdrawal symptoms associated with smoking cessation.

There are six different NRT products (patches, gum, sublingual tablets, inhalers, lozenges, and nasal spray) that deliver nicotine in different ways but they appear to be equally effective. At the time of writing, only the first four products are available in New Zealand and only patches and gum are currently subsidised in New Zealand via the *Quit Card* NRT exchange card system. Product selection can be guided by client preference, however more dependent smokers benefit from higher dose products.

NRT products should be used for 8 to 12 weeks, but a small number of smokers may need to use it for longer.[27] There is a moderate advantage to using a combination of NRT products over just a single product.[26] There are no safety concerns with long-term or combination NRT use and NRT is safe to use by people with cardiovascular disease (CVD).[28] There is a small potential risk to the fetus when using NRT in pregnancy however this risk is many times less than continued smoking.[29]

Oral NRT products (e.g. gum, inhaler, microtab, and lozenge) are preferable to patches in pregnancy and in people with unstable CVD.[28 29] There is insufficient evidence that the use of NRT by young people who smoke improves continuous 6-

month abstinence rates. Nevertheless, expert opinion is that NRT may be considered for use by dependent adolescents who want to stop smoking.[30]

Bupropion (Zyban™) is an antidepressant medication that doubles the chances of long-term abstinence compared with placebo.[31] Bupropion acts to reduce the severity of withdrawal symptoms, but it may also have other actions that help people stop.[32] It appears to be as effective as NRT and nortriptyline, but is less effective than varenicline.[33,34] There is insufficient evidence to recommend combining bupropion with any other smoking cessation medications, to recommend its use by pregnant women and adolescents who smoke, or its use in preventing smoking relapse. Bupropion has a number of contraindications and cautions for use but can be used by those with stable cardiovascular and respiratory disease.[31]

Nortriptyline is a tricyclic antidepressant that is also effective in aiding smoking cessation. Like NRT and bupropion, nortriptyline approximately doubles the chances of long-term abstinence compared to placebo.[31] The main advantage is its low cost. Nortriptyline is currently regarded as a second-line therapy by some smoking cessation guidelines[6] and is not mentioned at all by others, partly due to higher side effect profile compared to other smoking cessation medicines.[35] There are a number of contraindications and cautions for use that are well documented elsewhere.[36]

Varenicline (Champix™) is a partial agonist of the nicotinic acetylcholine receptor and reduces the severity of tobacco withdrawal symptoms whilst simultaneously reducing the rewarding effects of nicotine. It approximately triples the chances of long-term abstinence compared to placebo.[37] To date, Varenicline has demonstrated a good safety profile, with transient nausea being the most commonly reported side effect. There are no known clinically significant drug interactions.

Smoking cessation interventions for specific groups—*Māori* have a high smoking prevalence (46%) with particular sub-groups such as Māori women of childbearing age (15–39 years) having smoking rates of up to 61%.[38] Interventions that work in the general population (for example, support and medication) appear to be at least as effective for Māori.[39]

Aukati Kai Paipa, a smoking cessation approach developed by Māori for Māori is predominantly delivered by Māori health organisations as well as other hospital and community-based clinics. It is whānau-focused, operates in a Māori setting utilising strong local ties, and adopts a holistic approach to health. Smoking cessation components typically combine NRT with support, a Māori health approach addressing all elements of wellbeing, and regular follow-up. An evaluation of this service showed positive results.[39]

An evaluation of the Quitline services also showed telephone support to be effective for Māori who want help in stopping smoking.[40] Finally, these evaluations are supported by a RCT that showed bupropion to be effective in assisting Māori to stop smoking.[41]

Smoking cessation is also a priority in *Pacific people* (39% of males and 33% of females are current smokers[38]). There are limited data regarding the efficacy of smoking cessation interventions in Pacific populations, although there is no reason to expect that interventions known to work in the general population would be any less efficacious for them. However, such interventions need to be tailored to be maximally

effective, and culturally appropriate models of delivery may increase acceptance of treatment. This also applies to people from other ethnic groups who smoke.

Pregnant women who smoke should be encouraged to stop at anytime throughout a pregnancy, although the greatest benefits are gained from early cessation (within the first trimester).[42] There is modest evidence for the effectiveness of intensive smoking cessation support delivered to pregnant women.[43] The evidence for the effectiveness of NRT in helping pregnant women stop smoking is limited. However, expert opinion is that NRT can be used in pregnancy [intermittent dosing forms (e.g. gum, inhaler, microtab] are recommended over patch) if an assessment of the various risks and benefits to the mother, pregnancy, and baby is favourable.[29]

HCPs should balance the significant risks of continued smoking against the risks of providing NRT to help a pregnant woman stop smoking (more information on these risks can be found in the guidelines document).

Young people (15–29 years) have high rates of smoking relative to other age groups.[38] There is insufficient evidence to confirm the effectiveness of cessation interventions specifically aimed at helping young people stop smoking, or to recommend that any particular models be integrated into standard practice.[44] Given the lack of clear evidence on specific interventions for young people, it is recommended that interventions be based on those that are known to be effective in helping adults.

The *hospital* and *preoperative* environment offers an opportunity for HCPs to help people stop smoking. Admission to hospital with a smoking related illness provides a "teachable moment" and may be a particularly effective time to intervene. However, all smokers regardless of reason for admission should be advised to quit and offered cessation support. Preoperative smoking cessation decreases the risks of wound infection, delayed wound healing, and postoperative pulmonary and cardiac complications[45] and so should be recommended to people awaiting surgery.[46] To be effective smoking cessation interventions provided in hospital need to include at least 1 month of out-patient follow-up contact.[47]

Smoking is common in people with *mental illnesses* and they are typically also highly dependent.[48–51] More intensive smoking cessation interventions appear to be beneficial in this group. Such interventions should include multi-session support and medication. Most people with mental health disorders do not experience a worsening in the symptoms of their illness when they stop smoking.[52] Smoking cessation can precipitate a relapse of depression in some people, but this is rare[53] and is does not justify not supporting them to stop smoking. Rather, it warrants closer monitoring of their mental health status. Smoking cessation can affect the metabolism of some medications, including those used to treat mental illness,[54] so dosage adjustments may occasionally be required.[55]

In New Zealand, approximately 56% of non-institutionalised people with *substance use disorders* smoke tobacco.[56] The evidence shows that smoking cessation interventions increase short-term quit rates in these people,[57,58] but there is currently insufficient evidence supporting long-term effectiveness. Smoking cessation rarely precipitates a relapse of a substance use disorder.[59,60] However, this should not be seen as a justification for not encouraging quitting, but rather for monitoring closely and providing more intensive support.

Relapse prevention and repeat quit attempts—There is insufficient evidence to support any particular approach to relapse prevention.[61] The majority of attempts to stop smoking are unsuccessful, and people who do not succeed should be encouraged to try again. There is insufficient evidence to recommend a minimum time between attempts and so people should be offered cessation support whenever they want it.[62,63] Treatment choice should be guided by learning from prior cessation attempts and individual preference. It is likely that a more intensive treatment is required on a subsequent attempt.

Other treatments and interventions—Many other smoking cessation treatments and interventions are available. However, these lack sufficient evidence of any impact on long-term abstinence and cannot therefore be recommended. These include hypnosis,[64] acupuncture,[65] anxiolytics,[31] incentives or competitions,[66] Nicobrevin,[67] NicoBloc,[68] St John's wort,[69,70] lobeline,[71] and quit and win contests.[72]

Some interventions show promise (e.g. exercise,[73] cytisine[74] and glucose tablets[75]) but need further investigation before they can be recommended. There is evidence that clonidine is helpful for smoking cessation however, due to its adverse effect profile, it is not recommended for routine use.

Conclusions

The 2007 NZ Smoking Cessation Guidelines[4] provide up-to-date evidence-based recommendations on how to help people stop smoking. Importantly, they provide a simple model (ABC) that should facilitate the integration of the key elements of smoking cessation provision into everyday practice.

There is a strong case for systematic smoking cessation advice from HCPs and that smoking cessation interventions are some of the most cost-effective therapeutic interventions available. Therefore it is imperative that every person that has contact with the healthcare system should be asked at least annually if they smoke and their response documented. People who smoke should be given brief advice to stop, and an offer of support to help them stop smoking. This can include referral to local or national smoking cessation services, or provision of effective pharmacotherapy and/or behavioural support.

Furthermore, clinical managers have a responsibility to ensure that systems are in place to enable the effective implementation and delivery of the ABCs of smoking cessation within their healthcare setting. Both HCPs and healthcare managers should refer to the Guidelines[4] for detail of their application to clinical practice. From time-to-time as new evidence becomes available these Guidelines will need to be updated.

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Use of four major tobacco control interventions in New Zealand: a review

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Abstract

Aims To identify the extent to which four major population-level tobacco control interventions were used in New Zealand from January 2000 to June 2007.

Methods We selected the four population-based tobacco control interventions with the strongest evidence base. For each intervention, we undertook literature searches to identify the extent of their use in New Zealand during the study period and made comparisons with the other 29 OECD countries.

Results *Increasing the unit price of tobacco:* New Zealand has high tobacco prices, but the policy on tax has several limitations relative to best practice within OECD countries. In particular, the high price appears to be shifting many smokers from factory-made cigarettes to loose tobacco, rather than stimulating quitting.

Controls on marketing: While New Zealand compares favourably with most other OECD countries for tobacco marketing controls, some jurisdictions have made more progress in specific areas (e.g. eliminating point-of-sale product displays and removing misleading descriptors on packaging).

Mass media campaigns: The country routinely invests in these campaigns, but the budget is only around $1.2 per capita per year. Some design aspects of the campaigns are progressive, but comparisons with other countries indicate potential for improvements (e.g. learning from counter-industry campaigns in the USA).

Smokefree environments regulations: New Zealand was one of the first OECD countries to implement comprehensive smokefree workplaces legislation (including restaurants and bars) and it still compares well. But gaps remain when compared to some other OECD jurisdictions (e.g. no smokefree car laws).

Conclusions There is still substantial scope for New Zealand to catch up to OECD leaders in these key tobacco control areas. In particular, there needs to be higher tax levels for loose tobacco (relative to factory-made cigarettes) and the elimination of residual marketing. There are also important gaps in exploiting synergies between interventions in this country.

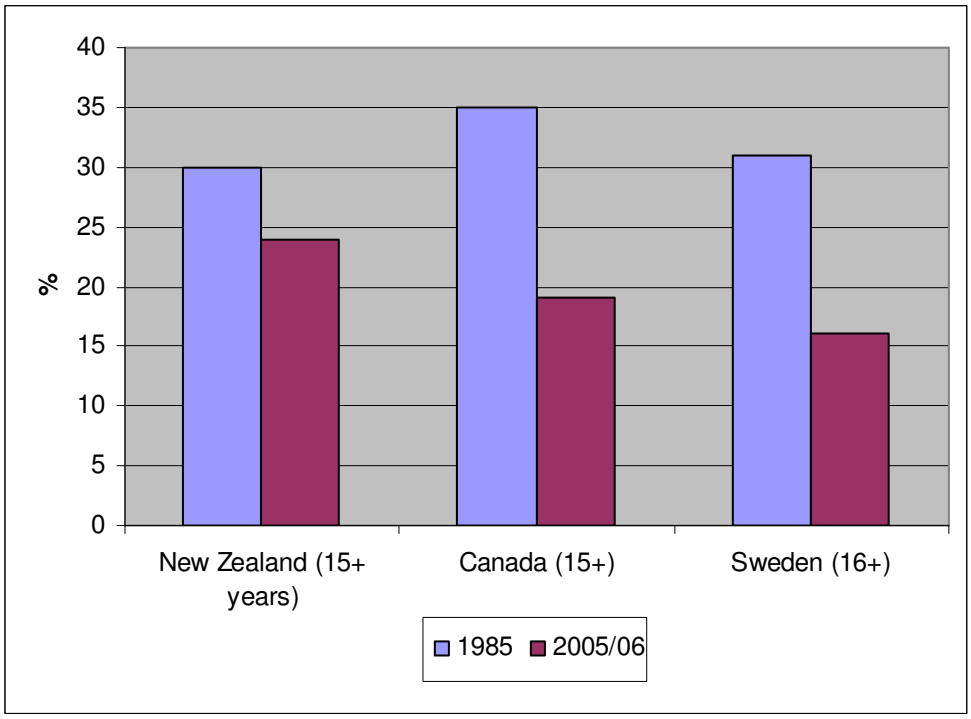
The international literature reports high quality scientific evidence for a number of the population-level tobacco control interventions used in New Zealand.[1] In many cases, there is supportive New Zealand-specific evidence for such interventions being effective.[1] Aspects of New Zealand's overall tobacco control programme have been reviewed previously,[2-5] but not since 2000.

New Zealand ranks ninth lowest among the 30 OECD countries for adult smoking prevalence,[6] but prevalence is considerably higher than in the leading countries, with

for example an absolute gap of over 6% compared to countries such as Australia (at around 17%)[6] or Sweden (around 16%).[7] Also, the overall adult smoking prevalence for New Zealand masks large disparities between population groups, with for example, very high adult Māori smoking rates (46% in 2006) which have changed little over the last 20 years or more.[8] Some other OECD countries have also had much steeper declines in smoking prevalence rates compared to New Zealand (e.g. Canada and Sweden—see Figure 1).

The persistently high and slowly declining smoking prevalence in New Zealand and increasing disparities in smoking prevalence by ethnicity and socioeconomic position highlights the need to critically examine New Zealand's tobacco control efforts. This review aimed to compare the extent to which four best practice population-level tobacco control interventions are being used in New Zealand, and in comparison with other OECD countries.

Figure 1. Adult smoking prevalence in New Zealand, Canada and Sweden (1985 and 2006)



Sources: Health Canada data[9] and two New Zealand data sources[8 10] (with both countries reporting data for 2006 and prevalence for both daily smokers and non-daily smokers combined). A different survey methodology was used for the 2006 data[8] in New Zealand. The results for Sweden are for daily smokers and are for 2004–2005.[7]

Methods

Selection of major interventions—For this article we selected the four population-based interventions that were best supported by evidence for effectiveness from either a Cochrane systematic review or a systematic review undertaken by a United States Task Force (as reviewed elsewhere[1]). These were:

- *Increasing the unit price for tobacco products;*
- *Controls on tobacco product marketing;*
- *Mass media campaigns; and*
- *Smokefree environments regulations.*

As the focus for this review was on population-level interventions, we did not consider programmes for individual-level provision of smoking cessation advice and support (e.g. Quitlines, although Quitline advertising is covered within mass media campaigns, since such campaigns may stimulate quitting that is independent of cessation service usage).

We recognise that there are many other tobacco control interventions where there may be benefits for tobacco control, but where the evidence-base is not as well established (e.g. school-based health education, age limits on purchasing/use of tobacco, smokefree sponsorship, and increasing unpaid media coverage of tobacco-related matters).

There are also interventions that can address upstream societal determinants of smoking such as poverty, inequality, poor education, unemployment, and discrimination. However, these were out of the scope of this review. More radical tobacco control strategies such as reforming the structure of the tobacco industry or market are also not included in this review, as they are without an established evidence-base. However, such new strategies[11–14] need serious consideration in designing future tobacco control policy, either beside or overarching "traditional" and evidence-based tobacco control interventions that are the focus of this review.

We also recognise a particular need to review tobacco control policies for Māori, given the very high smoking prevalence rates of Māori. Such a review is being currently undertaken by our Māori health research colleagues.

Literature searches—To identify relevant New Zealand data, we undertook Medline searches for articles relating to tobacco control interventions, using the search terms "Zealand" and "smoking or tobacco" for the period January 2000 to 30 June 2007.

To identify New Zealand literature that was not Medline-indexed, the following websites were examined for reports and studies: the Ministry of Health, the Quit Group, the Health Sponsorship Council, the Cancer Society, the Heart Foundation and ASH (New Zealand). Non-Medline indexed literature was identified with the search engine *Google Scholar*.

Analysis of each major intervention—For each of the major interventions, we aimed to determine the extent to which the intervention was being applied relative to best practice within other OECD countries. Comparisons for the other 29 countries who were OECD members in 2006 were generally based on *The Tobacco Atlas*[6] (but with other sources cited where appropriate).

Results

Increasing the unit price of tobacco (for cessation and preventing initiation)

The evidence-base on tobacco taxation in this country has been reviewed previously.[15,16] We reviewed the implementation of tobacco taxes in New Zealand during the study period.

New Zealand's tobacco tax level as a proportion of the pack price was only 19th out of 25 OECD countries for which data were published in 2006.[6] A more relevant comparison considers relative purchasing power to indicate affordability of tobacco products. A year 2000 comparison ranked 22 OECD countries using the "Big Mac index of cigarette affordability", and ranked New Zealand as having the third most expensive cigarettes.[17]

A similar analysis published in 2002 found that New Zealand cigarettes were the most expensive of all OECD countries,[18] and that Marlboro and "local brand" cigarettes in New Zealand were both the fifth most expensive among all OECD countries when ranked by minutes of labour required to buy a packet. In 2004, an analysis that included 28 OECD countries ranked affordability using pack price in relation to GDP per capita. It found New Zealand cigarettes were the second most expensive after Turkey, one of the poorest OECD members.[19]

More recent published analyses were not available, so we obtained 2005 price data for a pack of Marlboro cigarettes in New Zealand and for EU countries in the OECD (using supplementary online data from a published article[20] and using GDP data per capita for 2005 from the IMF to allow for purchasing power parity-adjustments[21]). The adjusted New Zealand price was more expensive than all the 22 other European OECD countries except for the UK which was only slightly higher.

Despite these high tobacco prices in New Zealand, various other aspects of the price/tax intervention are underused, compared to other jurisdictions. Firstly, there are very infrequent increases in tobacco tax above the annual inflation-adjustment [none for over 7 years (i.e. since May 2000) and only two above-inflation rises in the tax on manufactured cigarettes since 1991].

Secondly the tax is not tied to funding for tobacco control or health-related activities. This is despite examples of the successful use of dedicated taxes within OECD jurisdictions, and the evidence that voters are more likely to support such taxes.[15,22] Thirdly, there is no evidence of other measures to maximise the effect of taxation increases as a public health intervention (e.g. concurrent media campaigns on smoking cessation when tax increases occur).

Finally, the impact of price appears to be being undercut by the very high proportion of smokers who now smoke roll-your-own cigarettes in New Zealand (60% of Māori smokers and 49% of European/Other ethnicity smokers,[8] which are very high levels compared to other OECD countries[23]). This means that without any additional tax on loose tobacco, smokers can keep smoking (for the same expenditure after a price increase) by rolling thinner cigarettes with around half the amount of tobacco of factory-made cigarettes.[24]

Controls on tobacco marketing

Existing controls on tobacco marketing were slightly changed in 2003 with the Smoke-free Environments Amendment Act (SEAA), which introduced further restrictions on tobacco displays at the point-of-sale. These included restrictions on the number and type of tobacco packets and cartons which can be displayed, and requirements that tobacco displays should not be visible from outside the shop, and should not be within a metre of sweets and other children's products. The Framework Convention for Tobacco Control, which New Zealand ratified in 2004,[25] requires comprehensive bans on tobacco advertising and promotion.[26]

New Zealand's controls on tobacco marketing compare favourably with most other OECD countries. A comparison using 2005 data suggested that New Zealand was one of 17 OECD countries (out of 30) to have advertising restrictions on television, radio, and in domestic print media.[6] Also in 2005, New Zealand was one of only four OECD countries to be classified in *The Tobacco Atlas* as having a "comprehensive

advertising ban"—including billboards, point-of-sale advertising, and event sponsorship.[6]

Nevertheless, tobacco marketing has not been completely eliminated. Block displays of up to 100 packs of cigarettes per point-of-sale are still permitted, and tobacco products are prominently displayed in almost all of the most commonly used retail environments—dairies, convenience stores, supermarkets, and petrol stations. More rigorous interventions used in some OECD countries are not used in New Zealand. For example, Iceland,[27] and five Canadian provinces,[28,29] have point-of-sale product display bans.

By requiring large warning labels, other countries also displace more marketing images from the front and backs of tobacco packs than does New Zealand. In 2005, New Zealand lagged behind 15 OECD countries which had health warnings that were required to cover 30% or more of the pack.[6] New Zealand is adopting graphic warnings during 2008, but these still only cover 30% of the front of the pack (the most significant surface for smokers), compared with 50% in Canada. This is despite the evidence-base for the impact of large size Canadian graphic warnings on smokers.[30,31]

Descriptors such as "light" and "mild" are marketing devices to reassure smokers and suggest that such cigarettes have less adverse health effects.[32] These descriptors are banned in at least 23 OECD countries[33] and will shortly be in Canada also.[34] "Light and mild" descriptors are not banned in New Zealand, although this issue is subject to a current (2008) Commerce Commission Enquiry. The Commission has however, chosen to ignore the issue of "brand names",[35] despite these also being potentially misleading—e.g. the "Freedom" brand.[36]

Colour coding also appears to be being used by tobacco companies in New Zealand to signal "light and mild" cigarettes[37] (possibly in anticipation of a ban on the descriptors), and this issue may also be outside the Commerce Commission's considerations.

Mass media campaigns (cessation and preventing initiation)

Mass media campaigns have been extensively used internationally and in New Zealand for tobacco control. We reviewed the use of tobacco control mass media campaigns at a national level in New Zealand since January 2000. Not included are more local community level mass media campaigns, or where media are used to promote regional quit and win contests.

Recent mass media campaigns have focused on promoting smokefree workplaces, homes and cars; promoting quitting (including calling the national Quitline); explaining the new smokefree law (the SEAA 2003); and promoting smokefree messages to Māori and Pacific peoples (for details see the Quit Group and Health Sponsorship Council websites and the website: www.secondhandsmoke.org.nz).

One analysis detailed national-level monthly mass media campaign expenditure for three 12-month periods (late 2002 to late 2005).[38] From this source, the average annual expenditure can be calculated to be $2.3 million by the Quitline and $2.8 million for other agencies (e.g. the Health Sponsorship Council), and represents around $NZ 1.20 per capita per year. When this amount is adjusted by relative

purchasing power (using GDP per capita values for New Zealand and the United States) it equates to only $US 0.57 per capita. This can then be compared with data from particular US states, which have reported two to four times higher per capita advertising expenditures for youth campaigns alone (i.e. $US 2.35 per capita for Arizona, $US 2.16 for Massachusetts, and $US 1.29 for Florida[39]) or for all campaigns combined (e.g. $US 1.32 per capita for 2000/01 in California).[40]

Nevertheless, the available literature on the New Zealand campaigns[41-44] suggests that some campaigns are well targeted for priority audiences and are well designed. For example:

- A focus on attempting to ensure appropriateness for priority audiences and to reduce inequalities through the use of Māori participants in many of the advertisements, as well as a specific campaign designed by Māori for a Māori audience (i.e. the *It's About Whanau* campaign). Similarly, the Māori Television channel has been used for showing advertisements.
- A campaign for a Pacific peoples audience.[45]
- Use of campaigns of proven efficacy—e.g. adaptation of advertisements designed in Australia for many of the advertisements shown in New Zealand.
- A common focus on the health threat theme, and the combining of this with a message for alleviating this threat (i.e. calling the Quitline).

When compared to other OECD countries however, it is possible to identify potential for improvements in the New Zealand mass media campaigns. These include the following:

- None of the smoking cessation focused mass media campaigns have been linked with tobacco tax increases, in order to maximise the impact of the ensuing price increase. This is in contrast to some other OECD jurisdictions, e.g. various US states.[46]
- None of the mass media campaigns have been linked with the messages on the warning labels on cigarette packaging, e.g. in contrast to Australia.[47]
- No government-funded media campaigns have focused on exposing the nature of the tobacco industry. Such industry "denormalisation" campaigns have been very successful in other OECD jurisdictions: California (from 1990), Florida (from 1998), across the USA (by the American Legacy Foundation), Norway, and the Canadian province Quebec (reviewed elsewhere[48]). In particular there has been a lack of the use of adolescent tobacco use prevention campaigns, using counter-industry themes—despite the growing US-based evidence of their effectiveness.[49–52]

Furthermore, there is some evidence for the deliberate constraint of resources allocated to mass media campaigns to prevent excessive demand on the Quitline Service, such as following the implementation of the smokefree workplaces and public places in December 2004.[53] Instead, there should be an increase in funding of mass media campaigns at such times to exploit the synergies of co-interventions coupled with an increase in resources for cessation support to address the increased demand.

Smokefree environments regulations

From an international perspective, New Zealand's smokefree law of 1990 was an advanced piece of tobacco control legislation. The updated 2003 legislation (implemented during 2004) extended smokefree areas to all restaurants, bars, and other indoor workplaces (except for prisons cells, and designated smoking rooms in health care institutions, residential disability care institutions, or rest homes). It also prohibited smoking in schools and early childhood centres, in taxis and other public transport, casinos, and in gaming machine venues. Smoking in outdoor settings is prohibited in the grounds of all schools by this legislation.

Local regulations or policies initiated by some local governments (Territorial Local Authorities) cover some council-owned parks (e.g. in South Taranaki and Upper Hutt), the grounds of some hospitals, some stadiums, and the campuses of a university (Massey).

In 2005, New Zealand was one of only seven OECD countries to have a full ban on smoking in government buildings.[6] In 2004 it became the third country in the world to ban smoking indoors in bars and restaurants (after Ireland and Norway), though this legislation was a decade behind that for California.[54]

In 2007, New Zealand was still one of only 10 OECD countries with comprehensive indoor workplace smoking bans that included bars and restaurants (though some other OECD countries such as Australia and the US have state-wide bans).[54]

Table 1 details the range of environments covered by smokefree regulations. These are relatively broad compared to most other OECD countries. Nevertheless, in certain ways the New Zealand coverage of smokefree environments lags behind. For example, there are a number of jurisdictions where smoking is banned outside on beaches, in parks, playgrounds, stadiums, bus shelters, the outdoor sections of hospitality venues, common areas of housing estates, and in the outdoor areas of a whole town in California.[55–58]

More specifically, these restrictions include all Californian public playgrounds;[59] public playgrounds in over 20 New South Wales local authorities;[60] and all park, sports fields, playgrounds, beaches, and bus shelters in parts of Sydney.[61,62] A number of jurisdictions also ban smoking near building entrances—e.g. Washington State in the United States.[63] Some of these approaches will probably reduce secondhand smoke exposure in crowded settings, but more importantly, they may reduce the visibility of smoking to children and hence contribute to preventing role modelling of smoking to children and the denormalisation of smoking within society.

There has also been no proposal by the New Zealand Government for a law for smokefree private cars, and yet a number of jurisdictions have introduced such restrictions—where children are in the vehicle. These include South Australia, Arkansas, Louisiana, Puerto Rico,[64] and the city of Bangor (Maine, USA).[65]

Table 1. Areas covered by (and areas not covered by) smokefree regulations in New Zealand

Area	Extent of coverage
Workplaces (including hospitality settings)**	Fairly comprehensive and effective according to various studies.[53,66–69] But still not complete for some e.g. hospitality workers who service outdoor smoking areas; workers who work in proximity to designated smoking rooms e.g. in rest homes; or prison staff who enter cells. Around 8% of survey respondents report smoking inside their workplace.[8]
Schools*	Comprehensive for schools and early childhood centres.
Public transport*	Comprehensive (with some air quality data available[66]).
Grounds of healthcare facilities	Some hospital grounds.
Stadiums*, parks, beaches, bus stops etc.	Some stadiums, a small percentage of parks (but with these being "voluntary"), one university campus, but no beaches or bus stops.
Prisons*	Smokefree cells where "reasonably practical". There are variable regional policies on connected spaces and other interior or exterior places.[70]
Settings where no regulations exist or are rare	
Private homes	There are no regulations, however mass media campaigns have encouraged smokefree homes.
Private cars	As above for homes.
Marae*	Only covered by government regulation when they are internal workplaces (including where there are regular volunteer workers), licensed premises, or education areas. Considerable regulation by marae organisations exists.
Outside the entrances of buildings	Virtually nil. (However, Victoria University does not permit outside smoking that is: "within three metres of an external entrance or air intake duct to an air handling system").

*These settings can also be workplaces for some people;**Includes health care facilities (including mental health facilities).

Discussion

Main findings and interpretation—The major finding of this review is that there is still scope for further progress in all these four key tobacco control areas in New Zealand. There is a strong public health argument for increased investment to achieve such progress, given the major impact of tobacco use on premature mortality in this country,[71] its adverse impact on Māori health, and its contribution to health inequalities.[72] The argument is supported by the relatively poor results of government efforts to reduce the smoking prevalence, compared to countries such as Australia, Canada, and Sweden.

Although New Zealand has relatively high tobacco prices, it is a concern that New Zealand is not using tax policy to prevent smokers from shifting to thinner roll-your-own cigarettes,[24] rather than quitting. This problem could be partly addressed by adding a differentially higher tax for loose tobacco (so that it leads to a similar price for thin roll-your-own cigarettes and standard factory-made cigarettes).

Furthermore, there has been no real increase in levels of taxation for over 7 years. Given the proven effectiveness of tobacco tax[73] and its ethical justification,[74,75] this situation should be a priority one for health agencies and advocates to address. Indeed, the Ministry of Health's 5-year plan for tobacco control specifically identifies

tobacco taxes as "the most important single intervention to reduce smoking initiation".[76]

However, there are some gaps in the information required to inform best practice in the use of tobacco taxation policy for prevention of smoking among youth and reducing smoking in high prevalence communities such as Māori. For example, there is very little information on how tobacco price impacts on Māori smokers, and on low socioeconomic position smokers in New Zealand. There are few New Zealand studies that consider the impact of youth income and tobacco prices on youth smoking.[77–80]

Other important areas for New Zealand to catch-up with OECD leaders include eliminating point-of-sale product displays, removing misleading descriptors, and using larger areas of packs for warning labels. In the mass media campaign area, there is scope for learning from countries that have used tobacco industry focused campaigns, and for a large increase in the resources allocated to sustained and targeted mass media campaigns using best practice methods. In particular, there is a need for a greater focus on campaigns that reach Māori and Pacific audiences (though this is to be the subject of a separate review).

By being the third country in the world to implement extensive smokefree workplaces (including restaurants and bars) there may be a sense among New Zealand policymakers that the smokefree environments issue is "solved". However, the normality for a significant proportion of adults and children of being exposed to tobacco smoke,[8,81] particularly in homes, means that measures are urgently needed to reduce children's exposure to SHS and the role-modelling to children of smoking as an adult behaviour. This is crucial, given the evidence of the influence of smoking around children on smoking initiation,[78,82–87] and the policy emphasis within the Government's *Framework for Reducing Smoking Initiation in Aotearoa-New Zealand.*[88] Measures could include:

- Laws requiring smokefree cars where there are children inside;
- Laws for a wide range of smokefree outdoor settings that children frequent (e.g. parks and playgrounds used by children); and
- Better funded mass media campaigns aiming to make it socially unacceptable to smoke around children in the home and other settings.

The context behind the policy shortfalls—It is possible that New Zealand policymaker focus on introducing and operationalising the smokefree environments law (SEAA 2003) has diverted attention away from the need to have an effective overall strategy. Public health worker and policymaker attention has also been diverted to such key public health issues as the obesity epidemic and climate change. Another contributing factor to the slow progress in some areas may be the political situation, in that the dominant political party (Labour) in recent years has had to fight hard in Parliament for tobacco control advances (i.e. the SEAA 2003).

In particular, the minor parties in the government coalition since 2002 (United Future), and since 2005 (United Future, New Zealand First), do not appear to be natural allies in tobacco control progress. That is, 19 out of 21 MPs in these parties voted against the SEAA and one leader has a long history of opposition to tobacco control.[89]

The Labour-led Government may not have felt it had sufficient political support from other parties in the MMP government, and sufficient public support to make additional bold moves on such issues as tobacco tax reform. But from a public health perspective, a government that better *informed* the public of the issues would probably be able to better engender increased public support for more rapid progress on tobacco control.

Limitations of this review—This review may not have identified some of the grey literature relating to the utilisation of these interventions in New Zealand (e.g. internal documents that organisations had not published on their websites). The comparisons with other OECD countries were also incomplete, as it is often years before the details of particular policy interventions are detailed in the Medline-indexed literature.

Others have also taken a slightly different approach to inter-country comparisons for tobacco control, using a scale with six interventions, adding to the ones we have used the use of large warning labels on packs and smoking cessation treatment (but with these two extra categories having a lower weighting).[20]

We are also aware that this review has not fully considered issues around synergies between different interventions. Nevertheless, in the areas where such synergies could clearly have been exploited, these appeared to be poorly developed in New Zealand. For example, when the new smokefree law was introduced in 2004, Quitline mass media expenditure actually decreased![38] Furthermore, there was no special mass media campaign for quitting at the time of the last substantive tobacco tax increase in 2000. Mass media campaigns for smokefree cars have also not been accompanied with legal requirements for such cars to be smokefree when children are present.

The issue of synergies, and the limitation of excluding other interventions where the evidence-base is not as well established, become particularly important when the question is posed of the causes of New Zealand poor performance in reducing smoking prevalence, when compared with similar jurisdictions in the last 15 years.

In addition to Canada and Sweden (see Figure 1), there has been particular progress in lowering prevalence rates in particular states and provinces within OECD countries. That is California, British Columbia, and New South Wales have reached daily smoking prevalence rates below 10%, 12%, and 14% respectively (albeit with minor variation in definitions of "adult").[90] Thus California, with *less* use of marketing controls, an earlier use of smokefree laws, and *more* use of mass media, has a daily rate of less than half that of New Zealand. Thus the particular *mix* of interventions may be a major factor in tobacco control effectiveness (along with differing social and economic contexts).

Furthermore, one of the significant differences between Canada, USA, Australia, and New Zealand, is the much greater degree of litigation against tobacco companies and around smoking harm in the former group.[48] It is possible that such factors such as litigation,[91] and the type and extent of coverage of tobacco issues in the media,[92–94] are as significant as any of the four major interventions that we have focused on.

Implications for policy and research—The clear implication from this review is that much more progress in all the four intervention areas that we focus on is necessary, and that synergies between them should be maximised. One counter argument however, is that attention to these established areas distracts from achieving the key

structural changes that may deliver more rapid progress (as mentioned in the *Methods*).

Such structural approaches are possibly more rational than incremental change in specific intervention areas—but they may also be much harder to achieve politically. Therefore health advocates may wish to run a mixed strategy of getting high level structural change onto political agendas, and pushing for them when the political situation is favourable, but focusing on specific priority interventions at times when political will is weak and fragmented.

Conclusions

The major finding of this review is that there is still substantial scope in each of these four key tobacco control areas, for New Zealand to make progress to the level of OECD leaders. In particular, New Zealand needs to increase tobacco tax levels for loose tobacco (to equate to that on factory-made cigarettes at the per cigarette level). Further elimination of residual marketing (e.g. at point-of-sale displays) and the removal of misleading descriptors on tobacco packaging, are also needed. There is also potential for achieving greater synergies between the major interventions.

Competing interests: All of the authors have previously undertaken work for the Ministry of Health or non-governmental agencies working to improve tobacco control.

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Evidence and arguments on tobacco retail displays: marketing an addictive drug to children?

George Thomson, Janet Hoek, Richard Edwards, Heather Gifford

Abstract

Aims To investigate arguments for and against a ban on tobacco displays in New Zealand shops.

Methods Analysis of evidence from international experience and research studies, for the arguments used to oppose and support display bans; and 27 qualitative interviews with New Zealand ex-smokers, smokers, and retailers.

Results The main arguments used to oppose display bans identified were: (1) Fears of financial losses for retailers, particularly for small stores; (2) Claims that tobacco is a 'normal' product; (3) 'Lack of evidence' about effectiveness of display bans; and (4) Fears of increased theft and risks to staff.

The counter-arguments include: (1) The lack of evidence of significant short term adverse economic effects on retailers (including small stores) where display bans have been implemented; (2) Tobacco is a highly abnormal and hazardous retail product; (3) Evidence that tobacco displays influence initiation of smoking among children, increase impulse purchases, and are crucial to tobacco companies' marketing strategies; (4) Lack of evidence that display bans increase thefts and risks to staff.

The qualitative interviews supported the counter arguments. Smokers and ex-smokers interviewed indicated that tobacco displays tempt smokers trying to quit. There was widespread support for a display ban among interviewees (including some retailers) mainly because it might reduce smoking uptake among children.

Conclusions Arguments for tobacco displays are contradictory, flawed, and unsupported by local and international research evidence, and by the overseas experience of tobacco-free display policies.

In New Zealand, the primary tobacco retailers are the four main oil companies (Shell, BP, Mobil, Caltex), the two supermarket chains (Foodstuffs, Progressive Enterprises), and smaller independent convenience stores.

Every day, thousands of children go into one or more of the 5000 plus retail outlets that feature prominent tobacco displays,[1,2] where they are exposed to an array of tobacco products. These displays are typically located immediately behind the sales counter, in full view of customers paying for their purchases.

Health researchers, health professionals, and others in many countries have raised concerns about these displays, which they believe undermine restrictions on tobacco promotion, and encourage children to start smoking.

Because tobacco is an addictive product that kills half of those who use the product lifelong as intended, the *New Zealand Smokefree Environments Act 1990* banned most

advertising and marketing of tobacco products to 'reduce the social approval of tobacco use, particularly among young people.'[3] The *Smoke-free Environments Amendment Act 2003* introduced limited restrictions on tobacco displays in shops, but these measures did not allay public health concerns that displays functioned as a form of advertising.

In response to these concerns, and to a Ministry of Health discussion document on retail displays,[4] a group named Stay Displays developed a website that first appeared in November 2007. The site states that retailers 'have joined together to inform retailers about this important issue.'[5] To date, investigations have not been able to reliably identify the website funders.[6]

Currently, the New Zealand government is analysing submissions on proposals to further restrict or ban display of tobacco products in retail settings.[4] A complete display ban would mean that shoppers would only see the products when they were handed to a customer. This article discusses some of the arguments for and against bans of tobacco displays in shops.

The public health arguments—the dangers from tobacco displays

International evidence

Preliminary findings from a systematic review of the evidence of the impact of point of sale (PoS) tobacco marketing found that although there were some limitations in the evidence, most of the eight published quantitative studies support an association between PoS marketing (including displays), and smoking susceptibility, experimentation, and uptake among children.[7]

Recent US quantitative studies have documented these associations, using a variety of measures of exposure to PoS displays and advertising.[8,9] In a particularly strong study, Feighery et al investigated the relationship between smoking-related outcomes and exposure to PoS displays and advertising using four different measures of exposure among 11–14 year old children in California. They found statistically significantly increased odds (adjusted *OR*s 1.46–2.01) of ever smoking for all four measures of exposure, and increased odds (adjusted *OR*s 1.31 to 1.64) of smoking susceptibility among never-smokers for three out of four measures of exposure. The results were adjusted for demographic factors, smoking by family and friends, and amount of unsupervised time.[10]

Australian and US research in experimental settings indicates that the high visibility of tobacco products in retail outlets also normalises tobacco use for children, by increasing their perceptions of the prevalence of smoking among peers and adults, and creates the perception that cigarettes are easily obtainable in these stores.[11–13]

Evidence about the impact of PoS advertising and displays on established smokers is more limited. However, a recent study of Australian adult smokers found that most reported noticing tobacco PoS displays 'often or more frequently'; a quarter 'sometimes or more often' reported buying cigarettes due to seeing PoS displays; and 31% thought that removal of PoS displays would help them quit.[14]

The research evidence is supported by the findings of reviews of formerly secret tobacco industry documents which reveal that the tobacco industry uses PoS tobacco

displays to recruit new smokers, retain existing ones and cue impulse purchases.[15,16] This documentary evidence is supported by the industry's investment in PoS promotion, particularly in countries where other forms of advertising and marketing are restricted or banned.[14,16–18]

New Zealand evidence

Quantitative evidence on the impact of PoS displays on children is not yet available from New Zealand, though some data collection is underway. However, there is no reason to believe that the impact will differ from findings reported in other countries. Recent evidence reveals that the current partial restrictions in New Zealand on tobacco displays are widely ignored; 64% of stores in a recent survey breached at least one PoS regulation. Stores in areas with a high proportion of children were more likely to display tobacco products nearby children's products.[2]

We conducted 20 qualitative interviews in 2007 with New Zealand ex-smokers, and smokers who had made a recent quit attempt. All had been smokers in the previous 8 months. They were recruited from Quitline users and from local networks in the Manawatu and Whanganui regions.[19]

The findings suggest that displays were both very salient (one of the first things noticed on entering a store) and a source of temptation.[19] Participants indicated they would strongly support a government initiative to ban retail displays, because they thought this would increase the likelihood that children would stay smokefree (as well as removing temptation for those trying to quit smoking).

Having experienced the difficulty of multiple quit attempts, participants were adamant that they did not want their children and grandchildren to take up smoking:

> They don't have to be on display, even if you smoke, you know you can get them there…I would probably be thinking more about my grandchildren…and [them] not being able to…see them'
>
> I don't think it's right that those cigarettes are where they are…that children should be exposed to cigarettes…I don't think it's something that should be put in front of them.'[19]

These findings support the public health arguments for restricting or banning tobacco displays in shops. They also substantiate claims that displays are an effective form of tobacco marketing that imply smoking is widespread (particularly to children), and encourage experimentation and smoking uptake. The findings also suggest that those who have quit smoking find displays tempt them to start smoking again. However, while the public health evidence is clear and growing in strength, retailers and the tobacco industry have argued against further display restrictions. These arguments focus on the alleged economic implications and moral arguments. We turn now to explore these issues.

Retailer and tobacco industry arguments

Pro-display arguments worldwide were analysed; these arguments were sourced from tobacco industry documents, media coverage, trade and official websites, and official and parliamentary documents (including industry submissions). Five health advocates and five officials (from Australia, Canada, and Ireland) were also interviewed to explore the industry and health arguments advanced in those countries.[20] Five main arguments against tobacco retail restrictions were identified.[20]

Argument 1: Financial losses for retailers

A principal argument against restrictions is that retailers would suffer financial losses resulting from reduced sales, and reduced sales incentives from tobacco companies. In addition, retailers argue they would incur capital costs needed to create new enclosures for tobacco products.

Because some small retailers in New Zealand depend on tobacco products for about 40% of their revenue, and up to a quarter of their gross profits, some retailers have argued that display restrictions would reduce the viability of their business.[21] However, overseas experience indicates that tobacco display bans have had little short term effect on store profitability.

Retail display bans have been implemented in Iceland (2001) and Thailand (2005). The Canadian province of Saskatchewan adopted a ban in 2002, but allowed displays during court appeals from October 2003, before re-imposing the ban in January 2005. Five other Canadian provinces and territories have banned displays since August 2005—and bans are planned in further Canadian provinces as well as in Ireland[22] and the Australian state Tasmania.[23]

In Canada, retailers predicted their profits would be eroded.[21–24] However, the evidence reveals that any initial financial impacts resulting from tobacco display bans were minor, even for small stores reliant on tobacco sales. Crucially, payments made by tobacco companies to retailers have continued beyond the introduction of display bans.[17,24pp.11–12]

In 2006, the director of the Western Convenience Stores Association stated that the Saskatchewan display ban 'has not impaired sales'.[25p.51] The spokesperson of Rothmans Benson & Hedges (one of Canada's top three tobacco companies) reportedly said 'I do not believe the display ban will have a significant effect on total sales'.[25p.51]

Prevalence and consumption data indicate that Saskatchewan tobacco sales fell only slightly more than national sales, during 2000-2005.[26,27] This is predictable from a marketing perspective, since changes in smoking experimentation, initiation and addiction will only be evident over several years, during which time retailers will have had many opportunities to diversify their product range.

As in New Zealand,[28–30] the Canadian tobacco industry makes payments to retailers. In the July–December period before the Saskatchewan 2002 ban, the total payments for a 6-month period were over $C800,000; this reduced to $C450,000 for July–December 2002. However, the payments increased to $874,000 for the same period in 2004 (when displays were permitted, pending the court ruling), and did not drop significantly after the resumption of the ban in January 2005.[24pp.11–12]

Tobacco company reports to Health Canada show that annual payments to Saskatchewan retailers from tobacco companies dropped only 3% between 2004 and 2005, and then 8% between 2005 and 2006.[17] These figures imply that tobacco companies are now paying retailers to *handle and sell* their products, rather than to display them. From a marketing point of view, this explanation is logical, since tobacco companies will want retailers to maintain the same range of brands and brand variants as they did prior to the display ban.

While retailers' anxieties about display bans are understandable, the available evidence does not support their concerns. Because tobacco companies depend on their products being widely available, they will have strong (and continuing) incentives to assist retailers to change their storage systems, as this will help ensure the on-going availability of their brands. For the same reasons, they are likely to continue to provide payments and services to retailers.

Evidence from Canadian provinces (that have moved from displays to enclosed storage) suggests that New Zealand retailers:

- Are likely to receive assistance from tobacco companies to change their storage systems;
- Are likely to continue to receive incentives from tobacco companies who want to ensure that their products remain widely available;
- Could generate new income from other suppliers who want to use the display space currently used by tobacco products;
- Could increase the mark-up on tobacco products slightly to compensate for any change; and
- Could change or expand their product range to ensure that as spending on tobacco products decreases, customer spending moves to other products that they stock.

Argument 2: Economic disadvantages for small stores

Small retailers in New Zealand, Australia, and Canada have argued that the introduction of display regulatory measures would particularly disadvantage them.[21,31,32p.47] In 2003, one New Zealand trade report noted, 'Behind the uneasiness felt by small retailers [about new display restrictions] is a fear that they will lose money and perhaps be forced to close their source of livelihood'.[31] In 2004, British American Tobacco New Zealand (BATNZ) suggested that the demands of the new 2003 legislation 'will impact on the little owner/operator who doesn't have much display space'.[32]

Arguments about disproportional disadvantage to small retailers have suggested that they would lose sales, since smokers could not be sure they would stock tobacco products, or a full range of tobacco brands. As a result, smokers would be more likely to purchase from supermarkets or service station chains, where they could arguably be more certain that tobacco products would be available. This argument suggests smaller retailers would have reduced profits, which could result in their demise.

Business failures would increase unemployment and reduce the services available in the suburban and rural areas where smaller retailers are located. The New Zealand website Stay Display sums up the perceived problem: 'A ban would distort free competition because consumers could perceive bigger retail outlets have a wider range of products…[and] could easily result in less income for smaller, locally owned retailers, many of who already struggle and work very hard to keep their businesses viable'.[21]

However, evidence from Saskatchewan reveals that small stores have adjusted to display bans without suffering the adverse effects outlined above. In August 2002, the six Health Canada tobacco enforcement officers in Saskatchewan reported they had found 'minimal cost to retailers' from compliance; no stores had closed and no staff had been laid off.'[33] Similarly, the Saskatchewan Coalition for Tobacco Reduction reported in April 2005 that the costs retailers had incurred from the introduction of the display ban appeared to be minimal. They also reported that no stores had closed as a result of the display ban, and found no evidence that staff had been laid off.[34]

Logically, a display ban would simplify compliance for small shops, particularly when compared to the current situation, where small shops are less knowledgeable about their obligations, typically less compliant, and therefore at greater risk of prosecution.[2,31] A ban on tobacco displays would reduce the current burden of interpreting and applying complicated rules relating to the siting and size of tobacco displays, and would minimise the risks of non-compliance.

Argument 3: Tobacco is a normal product. 'Legal to sell, legal to display'

Some retailers argue that tobacco is a 'normal' and 'legal' product, and thus display restrictions are unjustified.[35] This argument extends to a related claim, that tobacco retailers are responsible and legitimate businesses that should be allowed to continue operating in a 'responsible' manner.

Tobacco products differ from other consumer products, which typically are neither addictive nor fatal to around half those who use them long-term. Tobacco thus has more in common with inherently dangerous products such as ammunition and some pharmaceuticals, than it does with the consumer goods alongside which it is sold. Dangerous products are subject to considerable controls; for example, many pharmaceuticals and chemicals in New Zealand are stored securely *and* out of sight from retail customers in shops.

The New Zealand Government has recognised the dangerous and addictive nature of tobacco products and explicitly aims to reduce smoking initiation by imposing controls on marketing and advertising.[36] Although controls now cover tobacco advertising, sponsorship, and price promotions, tobacco retailing is (by comparison) under-regulated and thus has the potential to undermine government efforts to improve health.

Consumers, particularly children, appear to be inadequately protected from the effects the displays. The adoption of the precautionary principle suggests that restrictions on tobacco retail displays are justifiable and necessary.

Argument 4: Lack of evidence for effectiveness of display bans

A common argument against proposed regulation is that there is a 'lack of evidence' about the health gains that will result. Variations on this argument include assertions that displays have no effect on anyone but smokers (only affect choice of tobacco product brand and not overall consumption), do not affect children, do not increase sales, and do not constitute 'advertising'.[24,35,37]

The New Zealand website Stay Display states:

> There is currently no reliable evidence showing a ban would be effective – There is no proven link between tobacco displays and reduced levels of smoking, particularly among youth…The display itself has no real effect on people's buying patterns…Similar bans are already in place in other countries, including Canada and Iceland. It is too early to say if it works, but early evidence suggests it does not.'[21]

These arguments are inconsistent with the research evidence detailed above for the impact of PoS displays on smoking among children. The notion that PoS displays only affect brand choice is difficult to reconcile with evidence from Australia that adult smokers either never (90%) or rarely (4%) use retail displays to decide which cigarette brand to purchase.[38] These arguments are also inconsistent with retailers' concerns that they will lose sales following the introduction of display bans (see Argument 1). They are also contradicted by tobacco company documents, which clearly explain the important role retail displays play in their marketing strategies.[16–18]

The Stay Display claims are at odds with tobacco companies' use of retail displays to increase impulse purchases.[39] For example, BAT's 'Project Insight' included research on impulse buying and associated shop layouts.[40] New Zealand evidence also documents payments that tobacco companies have made to retailers to maximise display effects.[28–30]

Overall, the "lack of evidence" argument is logically flawed on several grounds, not least of which is the retail industry's concern over lost sales. Within the wider marketing and retailing literature, the importance of retail displays in promoting purchase has been well documented.[41–43] Suggestions that retailing principles known to apply to other products may not apply to tobacco products appear to lack logic, credibility, and empirical support.

Argument 5: Staff safety and product security

Retailers have also argued that the 'distraction' of using out-of-sight tobacco storage would increase in-store theft and pose greater risks to staff. The New Zealand website Stay Display suggests that a display ban could cause 'a higher risk of shoplifting. If we have to spend longer turning our backs on customers, we believe the shoplifting rate will increase.'[21]

We suggest that a display ban can *reduce* theft and risks to staff. If products are stored under the counter rather than in large displays behind the counter, the time spent by shop assistants with their backs turned to customers would be *reduced* rather than increased. A display ban could also reduce opportunities for theft of tobacco products, as these would be less accessible and visible.

The Saskatchewan Coalition for Tobacco Reduction reported in April 2005 that there had been no thefts due to the display ban there.[34] Furthermore, eliminating tobacco displays would increase the external visibility of in-store activities, thus providing an additional safety benefit.

The views of retailers in New Zealand

There is currently little evidence that the views held by Stay Display advocates are shared by other retailers, and this question requires further examination before widespread retailer opposition can be assumed.

Initial data from in-depth qualitative interviews with three senior managers from New Zealand retail organisations, and four current or former owners or managers of local convenience stores and dairies, suggests some awareness that tobacco displays encourage children to smoke:

> [A display ban would] be bad for cigarette companies…[but] good for the people that are young and impressionable, that are thinking of smoking. If they don't see it then they probably won't think about it the same.[44]

None of the interviewees strongly supported selling tobacco, but many saw it as either an economic imperative, or were neutral, viewing it as similar to other products. One senior manager described tobacco as a 'sunset' category, which was in permanent decline:

> …the sooner that we can stop selling tobacco then the better…we are actually doing a disservice to our consumers by advocating tobacco in the fact that we are selling it.'[44]

Although the level of support for further restrictions on retail tobacco displays was mixed, we found no evidence of unanimous opposition to display bans.[44]

So what sort of regulation is needed for tobacco retailing in New Zealand?

The tobacco industry has a well-documented history of circumventing regulatory initiatives, and evolving new marketing efforts in response to controls. Because of this, a display ban needs to be part of a comprehensive, planned, and timetabled tobacco control strategy. This should include visually informative warnings, and plain packaging for tobacco products.[45]

A complete display ban should ensure that tobacco products cannot be displayed in retail or other commercial areas, or be seen by any consumers when storage areas are opened. Products should only be visible when handed to customers after the sale has concluded. Regulations should also ensure that closed storage containers for tobacco products cannot be used for other tobacco marketing purposes, such as brand positioning via colours, lighting, or shapes.

We suggest that a ban on tobacco displays would be more effective if complemented by a requirement that tobacco retail outlets display large and effective health warnings that clearly communicate the risks of smoking. A start to this would be the display of large government-designed graphic health warnings (we suggest at least 1 square metre in size). Such warnings would need to include the Quitline telephone number, be at eye height, immediately next to the point of purchase, and completely unobstructed.

Another complementary 'best practice' measure would be the licensing of tobacco retailers.[46]

The advantages of retailer licensing have been summarised as:

- Facilitating the enforcement of regulations on tobacco retailing, due to the better tracking of retailers, and the power of licence revocation, and;
- Enabling better communication by health authorities with retailers.[47]

Introducing regulations to ban tobacco displays also provides a rare and important opportunity to improve other aspects of tobacco retailing. The supply of tobacco where alcohol is served presents a particular danger to smokers trying to quit.[48,49] The new legislation should therefore prohibit tobacco sales in licensed premises; the Quebec and Nova Scotian tobacco retailing laws provide exemplars of this.[22,50]

In summary, national and international research evidence suggests point of sale displays influence smokers and non-smokers, particularly children. Arguments from retailers and retail lobby groups have not successfully countered this evidence, or challenged empirical findings from public health researchers. Indeed, detailed analyses of retailers' arguments reveal these are contradictory and flawed, and unsupported by actual experience from international jurisdictions.

New Zealand has an opportunity to create retail environments that better support smokefree living as a norm to those most vulnerable to marketing manipulation: children. New Zealanders can help protect children from addictive drugs, by encouraging government to require tobacco-free shop displays.

In addition, New Zealand also has a legal duty to 'undertake a comprehensive ban of all tobacco…promotion' within 5 years of its January 2004 ratification of the Framework Convention on Tobacco Control (FCTC).[51(s.13.2)] The evidence indicates that retail displays fulfil an important role in continuing to promote tobacco in New Zealand. So to honour the FCTC obligations, the displays need to be gone by January 2009.

Competing interests: Edwards and Thomson have previously worked for NGOs and the Ministry of Health on tobacco control issues.

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Perianal actinomycosis mimicking as multiple fistulae in ano

Pravin J Gupta

Actinomycosis is a chronic and suppurative infection caused by an endogenous Gram-positive bacterium and is commonly seen in tropical countries. Primary cutaneous actinomycosis is rare and usually associated with external trauma and local ischaemia.

I report on the case of a primary cutaneous actinomycosis of the perianal region in a 54-year-old man who presented with multiple pus-discharging lump that mimicked fistulae in ano. The patient was treated successfully with surgical resection and combined antibiotic therapy.

A 54-year-old previously healthy man presented to the surgery department with a 16-month history of progressive perianal swelling. The patient reported with pus discharge from multiple openings over the swelling with only mild pain. He denied fever, chills, or weight loss. The patient had no significant past medical history, and denied diabetes, hypertension, or any cardiac ailment. Physical examination revealed a 12×6 cm area of nodular mass with multiple pus discharging openings in the right perianal region.

No fluctuation was noted; however, there was firm induration surrounding the mass. Rectal digital exam and anoscopy was normal with no signs of anal extension of the lesion. All other test results including blood biochemistry, haematology, haemoglobin electrophoresis, sexual transmitted disease (STD) serology, urine analysis and microbiology, and stool exam were within normal limits. Microscopic examination and culture of the discharge from the sinuses did not reveal any bacterial growth.

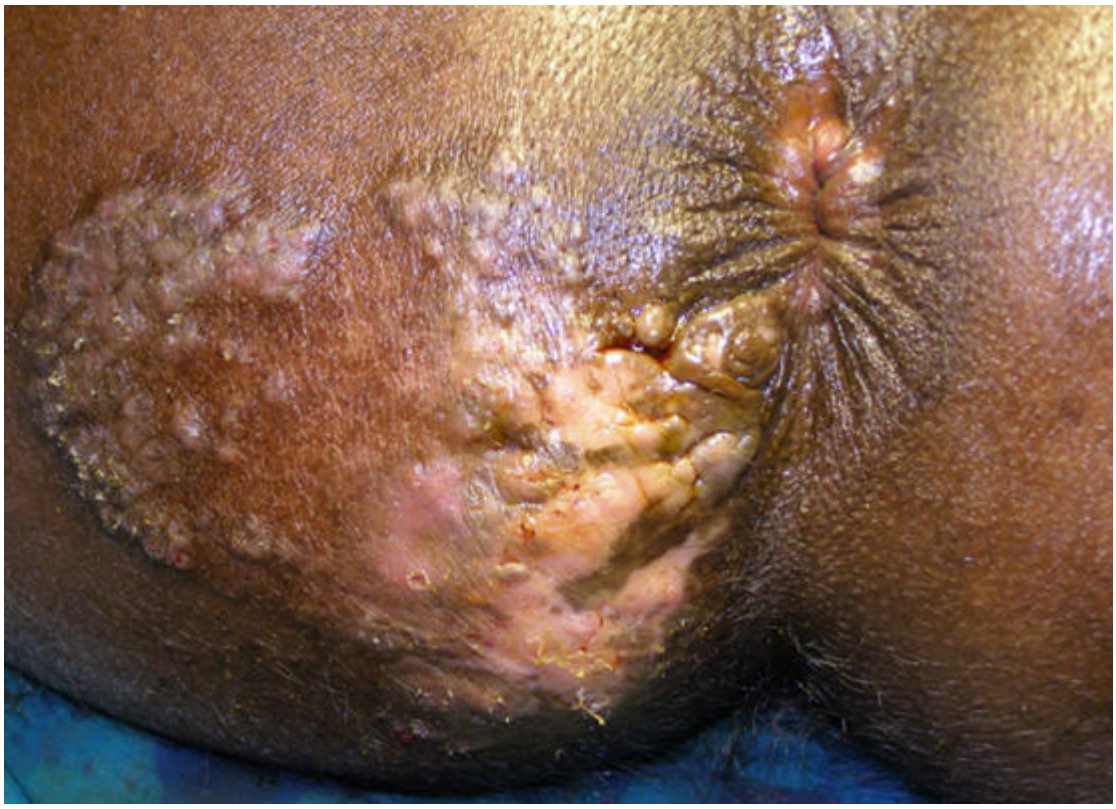
The patient underwent surgery once the necessary tests were run. The lesion as a whole was excised using a Ellman radiofrequency device [Ellman International Inc. NY, USA] in a single operation. The specimen was 2-cm thick.

The histological finding in the biopsy specimen was that of an infective granuloma forming a deep nodular process, with granulation tissue, epithelioid cells, plasma and giant cells, and degenerative changes. Multiple superficial abscesses and sinuses were found, which contained polymorphonuclear leukocytes and miscellaneous debris, along with the ray fungus and its filaments.

The bacteria were morphologically compatible with an *Actinomyces* species. Culture confirmed the diagnosis by growing *Actinobacillus actinomycetemcomitans*.

Thereafter he underwent a combination of amoxycillin and clavulanic acid for a month with marked improvement. So amoxycillin in a dose of 500 mg was continued till the wound healed completely. The wound took 10 weeks for complete healing. The patient was called for follow-up every 3 months for 1 year. No recurrence was noted during the follow-up.

Figure 1. Perianal actinomycosis with multiple pus discharging openings



Discussion

Actinomycosis is a chronic bacterial infection attributed to *Actinomyces* spp., most commonly *Actinomyces israelli*.[1] This Gram-positive, anaerobic organism is a normal inhabitant of the human oropharynx, gastrointestinal tract, and female genital tract.[2] The infection is commonly seen in tropical countries and is characterised by chronic and progressive suppurative inflammation.

Actinomycetes are usually non-virulent, but a disruption of the protective mucosal barrier, and alteration of the resident microbial flora play a crucial role in promoting infection. Actinomycosis is believed to be acquired by endogenous implantation into deep tissues where anaerobic conditions prevail. Probably all cases of actinomycosis are closely connected with other contaminating bacterial infections.[3]

Cutaneous localisations of actinomycosis generally occur by contiguity of underlying foci by direct inoculation or by spread through the bloodstream during a septicaemic phase of the infection. Abscess formation is common and may extend to involve the overlying tissue to form draining sinus tracts, as occurred in our patient.

Cutaneous actinomycosis manifesting with nodular lesions that tend to form fistulae needs to be differentiated clinically from other chronic inflammatory skin diseases, such as cutaneous tuberculosis, sporotrichosis, and nocardiosis.[4]

Biopsies should be carefully directed to areas likely to have active infection and not the remaining fibrosis. Antibiotic treatment should be continued until the surgical wound is completely healed. Because of the potential for relapse of infection, prolonged observation of patients after treatment is necessary to detect possible recurrence.

In conclusion, physicians should be aware of the possibility of actinomycosis as the cause of generally indolent anal abscesses. The absence of previous surgery and/or macroscopic "sulphur granules" in the pus and/or of multiples perianal secondary external orifices would not exclude the final diagnosis which is made on postoperative histology or bacterial isolation.[5]

The outcome for actinomycotic anal sepsis is excellent when appropriate surgical procedures and oral antibiotic therapy are combined.

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

Lymphoma-like presentation in suspected rheumatoid arthritis due to sulphasalazine hypersensitivity syndrome

Padmanabha Shenoy, Ramnath Misra, Manoj Jain, Vikas Agarwal

Drug-induced reactions may present with protean manifestations and may test the acumen of the most astute clinician at times. Awareness of these reactions is of utmost importance as it may otherwise result in considerable morbidity, or even mortality.

Herein, we present a patient with suspected rheumatoid arthritis (RA) who presented with symptoms suggestive of a lymphoproliferative disorder following initiation of sulphasalazine.

Case report

A 20-year-old Asian Indian female presented with additive, symmetrical, inflammatory polyarthritis involving the small and large joints of the hands and feet of 2 months duration and high-grade fever, facial puffiness, vomiting, oral ulcers, and a pruritic maculopapular erythematous rash all over her body (including her face) of 10 days duration.

History of photosensitivity, Raynaud's phenomenon, seizures, altered behaviour, alopecia, oliguria, haematuria, or bleeding tendencies was negative. She had received (from elsewhere) diclofenac sodium and sulphasalazine for the past 1 month due to a diagnosis of rheumatoid arthritis, based on high rheumatoid factor (100 IU/L) and juxta articular osteopaenia seen in radiograph of the hands.

Her arthritis had remitted completely for the last 15 days. Examination showed generalised erythematous maculopapular rashes all over her body, including face and the ears. In addition she had multiple oral ulcers over the buccal mucosa, hard palate, and tongue.

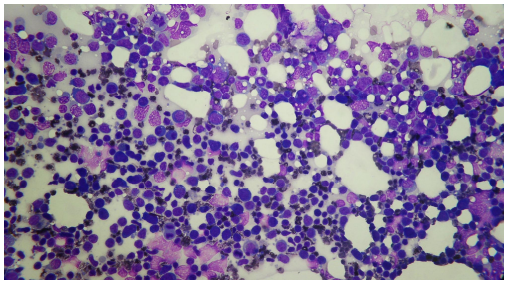
She had generalised lymphadenopathy involving bilateral cervical, axillary, and inguinal lymph nodes; however, a single, firm, and non-tender lymph node of size 2×3 cm in the central group of left axilla was conspicuous. She also had mild hepatomegaly.

The rest of the general and systemic examination, including musculoskeletal system, was normal. Investigations revealed haemoglobin 8.8 g/dL, normocytic normochromic red blood cells, reticulocyte production index 2.1, total leukocyte count 60,280/mm^3 (with 20% neutrophils, 13% lymphocytes, and 65% atypical lymphoid cells), platelet count 103,000/µL, serum bililrubin 1.94 mg (conjugated 0.64 mg), serum aspartate transaminase (AST) 137 U/L (normal <40), alanine transaminase (ALT) 233 U/L (normal <40), alkaline phosphatase (ALP) 1447 U/L, gamma glutamyl transferase (GGT) 553 U/L, lactate dehydrogenase (LDH) 1200 U/L, and serum creatinine 1.1 mg/dL.

Serology for antinuclear antibodies, antineutrophil cytoplasmic antibodies, HIV-1 and HIV-2, HBsAg, anti-HCV, and IgM for Epstein Barr virus were all negative. However complement proteins—C3 32.6 mg/dL (normal 60–120) and C3 <5.2 mg/dL (normal 15–25)—were low.

Radiograph of the chest, ultrasonogram of the abdomen and pelvis, and 2D echocardiogram were normal. Fine-needle aspiration from the enlarged left axillary lymph node showed polymorphic population of immature large lymphoid cells with vesicular nucleus, prominent central nucleoli, and basophilic cytoplasm along with centrocytes, centroblasts, mature lymphocytes, histiocytes, plasma cells, neutrophils numerous mitotic figures and tingible body macrophages (Figure 1).

Figure 1. Fine needle aspiration cytology (FNAC) left axillary lymph node showing polymorphic population of immature large lymphoid cells along with centrocytes, centroblasts, mature lymphocytes, histiocytes, plasma cells, neutrophils, numerous mitotic figures, and tingible body macrophages (H&E; ×100)



Suspecting lymphoproliferative syndrome bone marrow examination was done that revealed atypical lymphocytosis and epithelioid cell granuloma. However staining for acid-fast bacilli and fungal elements was negative. She was managed conservatively with metoclopramide, local anaesthetic gargles, and paracetamol—and sulphasalazine was discontinued.

Two days following the discontinuation of sulphasalazine, her fever subsided and total leukocyte count dropped to 18,000/ mm^3 with 10% atypical lymphocytes. Skin rash disappeared completely, 5 days later. Her lymph nodes decreased in size also. The liver enzymes started improving on day 7 (AST 33 U/L, ALT 80 U/L, ALP 729 U/L, GGT 298 U/L, and LDH 895 U/L). She was discharged with a diagnosis of sulphasalazine hypersensitivity. One month later, liver enzymes, haemogram, and enlarged lymph nodes normalised and she had no evidence of arthritis.

Discussion

High leukocyte counts with atypical lymphocytes in peripheral blood smear; bone marrow and lymph node with short duration of arthritis mimicked lymphoproliferative disorder, initially. The temporal association between the development of fever, skin rash, lymphadenopathy, hepatitis, and atypical lymphocytosis following administration of sulphasalazine and its resolution following the discontinuation of

sulphasalazine were strongly suggestive of sulphasalazine hypersensitivity reaction in this case.

Sulfasalazine is an established disease-modifying antirheumatic drug (DMARD) in RA.[1] In around 20–30% of patients it has to be discontinued due to adverse reactions. Most reactions occur within 3 months of starting therapy and are trivial and self-limiting. The most frequent adverse effects are gastrointestinal, headache, dizziness, myelosuppression, leukopaenia, rash, and hepatitis.[2]

Drug rash with eosinophilia and systemic symptoms (DRESS) is a rare side effect of sulphasalazine therapy, developing most frequently between 2 and 6 weeks of initiation of the drug. The complete syndrome manifests as skin rash, lymphadenopathy, hepatitis, fever, leukocytosis, eosinophilia, and atypical lymphocytes. Its mortality is estimated to be around 8%.[3]

Facial puffiness, especially periorbital, is a clue to the diagnosis. Lymphadenopathy is frequently generalised and painful.[3,4] The differentiation from viral infections and hematological diseases is difficult as was in our patient. Leukocytosis, even over 50,000 leukocytes/mm^3, has been reported. Eosinophilia is a prominent feature. [4,5] The absence of esoniophilia, the absence of generalised lymphadenopathy, leukocyte counts above 50,000/mm^3 and the rarity of the condition led to the delay in diagnosis in our patient.

Hepatic involvement constitutes the most common visceral manifestation and can lead to fulminant hepatic necrosis on occasions.[2,6] This type of reaction is most commonly observed after use of antiepileptics (phenytoin, carbamazepine, and phenobarbital) and sulfonamides, although cases have been reported secondary to allopurinol, gold salts, dapsone, sulphasalazine, thalidomide, lamotrigine, calcium channel blockers, ranitidine, and antiretroviral drugs used in the treatment of HIV infection such as indinavir, nevirapine, and zalcitabine.[6]

Cross-hypersensitivity reactions are common between the three main aromatic anticonvulsants (i.e. phenytoin, carbamazepine, and phenobarbitone), and all three must be avoided by patients who have experienced DRESS with any one of these medicines.[7] Granulomatous reaction involving the marrow and the liver as seen in our patient is less commonly reported.[8]

The pathogenesis of this syndrome is far from clear although there are suggestions that it may be due to genetic polymorphism of drug metabolising enzymes. Also it has been suggested that human herpesvirus type 6 may be the culprit, similar to the association between Epstein-Barr virus and ampicillin.[9]

Since genetic factors may be involved in the DRESS syndrome, first-degree relatives need to be alerted to the risk of this serious adverse drug reaction to particular drugs.[6]

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Erythema ab igne

Akheel A Syed, Farheena N Mecci

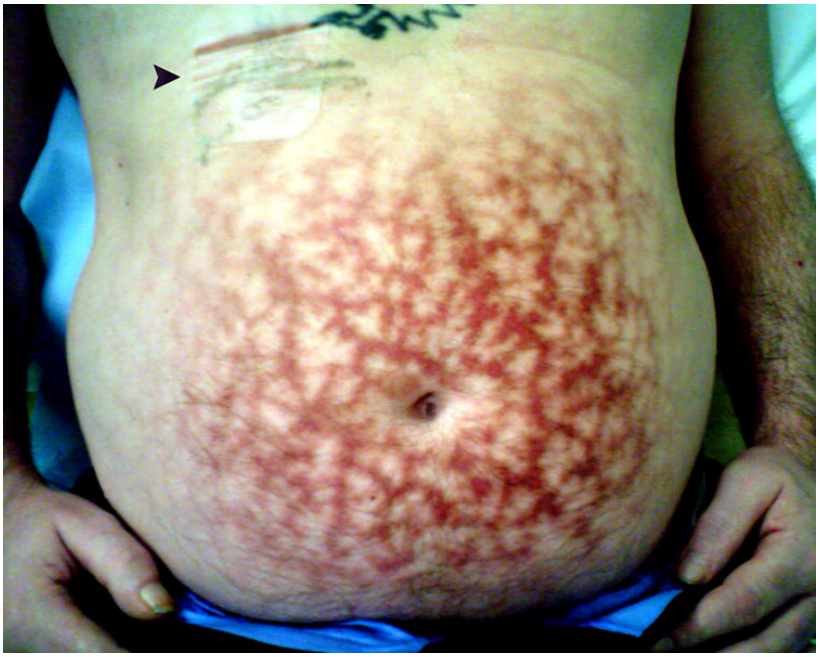
A middle-aged man presented with intractable abdominal pain from chronic pancreatitis secondary to excessive alcohol use in the past. The pain was unrelieved by thoracoscopic splanchnicectomy and regular opioid analgesia, and he had been using a hot water bottle for years to obtain relief.

The reticular, nonblanching hyperpigmented discolouration of the skin is characteristic of erythema ab igne (Figure 1). This is a useful diagnostic sign in pancreatitis,[1] but may also be encountered in patients with abdominal neoplasms such as gastric and hepatic tumours.[2]

It can occur at any site exposed repetitively to infrared radiation in the form of non-painful heat, such as the shins of old people who sit in front of fireplaces in temperate climates or the abdomen and thighs of *kangri* (a small portable earthen firepot) users in the Himalayas.[3]

Erythema ab igne is not always an innocuous cutaneous feature as the mitogenic effects of heat can lead to thermal keratoses and skin cancers; mainly squamous cell carcinomas.[4]

Figure 1. Netlike dusky rash of erythema ab igne resulting from long-term use of a hot water bottle to obtain relief from chronic abdominal pain unrelieved by splanchnicectomy and regular opioid analgesia (note the transdermal fentanyl patch; indicated by arrowhead)



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THE NEW ZEALAND MEDICAL JOURNAL
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Equine anatomy

Lee Grant, Isabella Latini, Adrian K Dixon

We evaluated the abdominal CT images of a 64-year-old male patient who underwent CT imaging in order to evaluate a known abdominal aortic aneurysm (Figure 1; black arrow).

Figure 1

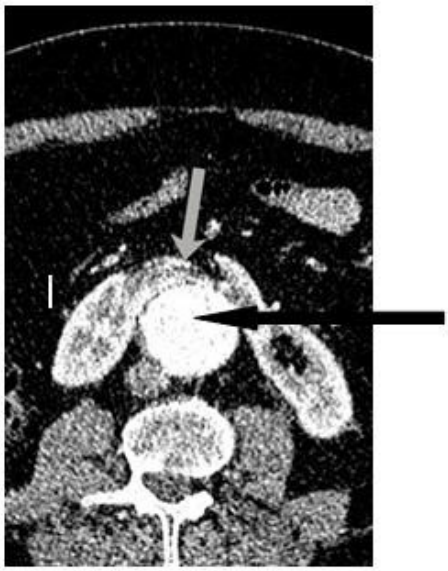


Figure 2

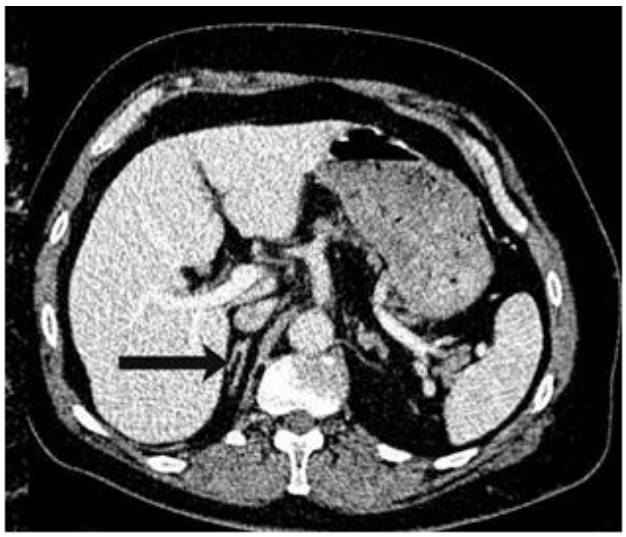
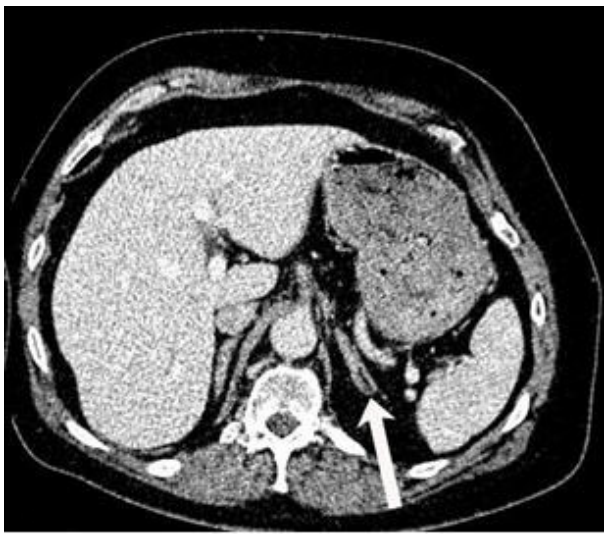


Figure 3



What structures are indicated by the single arrows?

Answer

The patient was found to have an incidental horseshoe kidney (Figure 1; grey arrow), a congenital renal anomaly where both kidneys are fused together early in embryonic life.

In conjunction with this developmental renal abnormality, it was noted that the adrenal glands demonstrated the normal inverted 'v' appearance on CT imaging (Figure 2 and Figure 3 arrows).

Discussion

A horseshoe kidney is the most common developmental fusion abnormality of the kidneys whereby both kidneys are joined at their poles (most commonly the lower pole) by a parenchymal/fibrous isthmus.

It has traditionally been thought that the mass effect exerted by the kidney on the original globular shape of the adrenals in early foetal life leads to the normal inverted 'y' or 'v' appearance on computed tomography (CT) imaging for the left adrenal gland and the linear or inverted 'v' appearance on the right. In this patient the adrenal shape is preserved despite the congenital renal abnormality.

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Case of compound fracture and dislocation of wrist

Published in N Z Med J. 1908;6(26), reported before the South Canterbury Division of the B.M.A., and written by Dr. James R. Loughnan

J.C., coal heaver, on April 17th was trying to "wind up" a four-cylinder motor car of high horse-power when the engine back-fired and caused the injury. The man's own strength no doubt contributed to the severity of the injury, as the handle of the car was so much bent it could not be turned. Instead of making compression by pulling the handle up, he was pushing the handle down, and so received the whole force of the backfire in the palm of his hand (right).

His wrist presented the usual deformity of a Colles's Fracture, without lateral displacement, but in addition there was a transverse rupture, 1½ inches long, of the skin of the anterior surface of the forearm, about an inch and a half above the wrist, and through this there protruded the head and an inch or more of the shaft of the ulna.

Under an anaesthetic, after very careful cleansing, the end of the bone was easily replaced inside the skin, but the deformity was only reduced after enlarging the wound and helping reduction with a finger in the joint. The fracture of the lower end of the radius was oblique from before, backwards and upwards.

There was no fracture of the ulna, but the ligaments were torn completely off the head of it. The wound was closed without any drainage, and healed without any suppuration; but for a week patient had a little pyrexia; maximum 100·6° the day after injury. Passive motion was begun very early, and was soon supplemented by active motion and massage, and now 12 weeks after receipt of injury there is little limitation of any movement of the wrist joint.

This case was also of interest in that the injured man could not obtain compensation, as the accident happened in the street and not on the premises where he worked, and as he was not doing it for his employer nor as part of his work.

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A nation of pill takers

This paper starts by pointing out that a recent CBS News commentary reported that the United States makes up only 5% of the world population yet accounts for a whopping 42% of the world's spending on prescription drugs.

It then reminds us that Direct to Consumer Advertising (DTCA) is a relatively new phenomenon, only legal in the United States since 1997, and banned in the rest of the industrial world, with the exception of New Zealand. It has been a lightening rod of controversy from the start, with highly vocal critics on one side who are calling for a moratorium on the practice, pitted against strong supporters, most notably the Pharmaceutical Research and Manufacturers of America.

And—although pharmaceutical promotion to medical professionals still outweighs spending on DTCA, real spending on DTCA increased by 330% over the last decade. When three of the top five drug classes (based on sales revenue) were examined, they found that manufacturers spent about one third of their total marketing dollars on DTCA in 2005.

You may draw your own conclusions. I share the opinion of the authors of this paper—DTCA is bad for patients, the medical profession and the public purse, but good for Big Pharma.

Southern Medical Journal 2008;101:341–1

And even more about DTCA

In late November 2007 television viewers in the US were shown a 60-second commercial for Cypher, the sirolimus-coated coronary artery stent produced by Cordis division of Johnson & Johnson. This marked the dawn of a new era in medical DTCA, which has for the past decade focused on brand-name pharmaceutical giants.

The question raised by two cardiologists in the editorial—has industry crossed the line this time? In the ad for Cypher, a device is being promoted to millions of people who are ill-equipped to make judgements about the many clinically relevant but subtle and complex therapeutic issues that even specialists continue to debate. I know what I think about it.

N Eng J Med 2008;358:2197–200

Shyness: how normal behaviour became a sickness

This is the title of a book which laments the creation of new diseases, e.g. shyness, redefined as social phobia. Apparently the Diagnostic and Statistical Manual of Mental Disorders (DSM) in the USA currently has 347 categories of psychiatric disease—whereas there were only 253 such diseases in 1987. Why?

There may be some scientific reason but the author of the book under review accuses the drug companies of medicalising the problems like shyness and unhappiness. The drug industry develops compounds such as diazepam, fluoxetine, or paroxetine, and then promotes the creation of disorders for which these new drugs are the apparent answer.

And—"treat someone for shyness, and the insurance companies will laugh at you. Treat someone with social phobia, with its DSM seal of approval as disorder 300·23, and the bill will be paid."

BMJ 2008;371:2063–4

Antibiotic prophylaxis for infective endocarditis?

Patients who have a prosthetic valve, congenital heart disease, or a history of infective endocarditis are at risk for endocarditis. Antibiotic prophylaxis at the time of invasive procedures has been a tenet of cardiac and dental practice for half a century, although the evidence of benefit is limited. But the American Heart Association 2007 guidelines suggest prophylaxis only for patients with high-risk cardiac disorders, indicating that antibiotic prophylaxis is no longer recommended for patients with native valve disease or for any gastrointestinal or genitourinary procedures.

Furthermore, guidelines published this year by the National Institute for Health and Clinical Excellence (NICE) suggest an end to antibiotic prophylaxis altogether. Although NICE identifies patients at increased risk of infective endocarditis, it no longer advocates prophylaxis for dental or respiratory procedures and only for gastrointestinal and genitourinary procedures where there is suspected pre-existing infection.

The authors of this commentary suggest that these new views are valid. We wonder what the National Heart Foundation of NZ thinks?

Lancet 2008;371:1317–9

Improved surgical techniques?(!)

Natural Orifice Transendoluminal Surgery (NOTES) is a novel surgical technique which shatters the traditional boundaries of minimally-invasive surgery. Potentially the most exciting surgical innovation since the inception of laparoscopic surgery, encouraging reports of NOTES procedures have been seen in animal models, ranging from diagnostic biopsies to cholecystectomies. We are familiar with transurethral resection of the prostate (TURP) but what do we think about transrectal cholecystectomy? Endoscope into the rectum, out of the rectum, across the peritoneal cavity, unsheath the instruments, remove the gallbladder, withdraw the scope and repair the rectum. Sounds super-difficult and what price peritonitis? The surgical editorial writers are conservative and finish by saying—"a note of caution in the light of the lessons learned with the advent of laparoscopic surgery. There is a fine line between what we *can* do and what we *should* do."

J R Soc Med 2008;101:160–2

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Deryck Joseph Austin Gallagher

Born 1924; qualified 1947 Dunedin Medical School (MBChB, M Med Sc, FRCGP)

Deryck—a former general practitioner in Herne Bay and Ponsonby, Auckland and geriatrician in Selwyn Village and Waitakere Hospital, Auckland—died from congestive heart failure in April 2008.

After qualifying, he married and practised as a locum GP in a country practice in Fairlie, South Canterbury, NZ.

With his wife and two young children he then travelled to England for a year to study medicine and experience general practice.

On returning to NZ he gathered a group of partners to start one of the first successful group practices to provide 24 hour emergency cover and obstetrics service, and where he was an esteemed member of the community for 35 years.

He helped to form the Auckland Faculty of the Royal College of General Practitioners (RCGP) of which he was made a Fellow, and was a Practice visitor for applicants to the College.

He lectured part time at the Auckland Medical School and taught many student observers in his practice. After retiring from general practice he retrained in care of the elderly and was a well loved doctor in Selwyn Village and Waitakere Hospital.

He was a strong family man and supporter of pony clubs for his daughters and dinghy sailing with his son. He had a deep love of classical music, Italian art, and many forms of photography. After retirement, he and Ann travelled extensively in NZ and returned to his family roots in Taupo for his last four years where he enjoyed trout fishing, walking, and assisting in the local museum.

He leaves a wife, Ann; and a son Christopher (a doctor at St Bartholomew's Hospital, London), two daughters, Sally and Jennie, and five grandchildren—one of whom has also become a doctor.

Deryck's wife, Ann Gallagher, wrote this obituary. We also thank Dr Bill Brabazon, a former colleague, for coordinating its writing and sending to the *NZMJ*.

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David Duncan Pottinger

David Pottinger, a GP Physician, Anaesthetist, Obstetrician, Aviation Doctor, and GP College Examiner, died on 21 March 2008, at the age of 82.

Born in India in 1925, he moved with his family to Invercargill where his uncle and father worked in General Practice. He attended St Catherine's Convent and Marist Brothers' School in Invercargill, followed by St Kevin's College, Oamaru, where he gained University Entrance and a Boarding Bursary.

He studied at the Otago University Medical School, with his final year at the Christchurch Hospital Clinical School. After graduating in 1949 he spent 2 years at Southland Hospital, where he gained wide experience in many fields.

After a year looking after his father's practice, David attended postgraduate courses in London, and later at the Royal Infirmary and Western General Hospitals in Edinburgh, close to his family's Scottish roots.

He attained his MRCP Edin. in 1954, and returned to Invercargill to resume practice with his father. He was appointed Visiting Anaesthetist to Southland Hospital in 1954, and in 1961 Assistant Physician to Southland Hospital on a part-time basis, and visiting Physician to Karitane Hospital. Following his father's death in 1962 he became a solo practitioner.

In 1974 he gained Membership of the Royal New Zealand College of General Practitioners, and in 1981 was appointed to the Panel of Examiners for the College. In 1992 he was elected a Fellow of the College, and in 1999 was presented with a silver medal in recognition of his contribution to the Panel of Examiners.

In 1984 David was elected a Fellow of the Royal College of Physicians, Edinburgh which was something he valued greatly. His obstetric career spanned almost 50 years, during which he delivered 3 generations and considered obstetrics to be one of the greatest rewards in his general practice career. Other appointments which he valued were Patron of the Invercargill Branch of the Royal Plunket Society, and Member of the Calvary Trust Board from 1991 to 2002.

While studying in Christchurch he learned to fly a de Havilland Tiger Moth, and gained his A license in 1948 and Commercial Pilot License in 1964. Flying became a lifelong interest. He was appointed Designated Medical Examiner by the Civil Aviation Authority in 1971. In 1977 he was elected a Life Member of the Southland Aero Club. The Southland and Central Otago pilots who saw him, valued his personal experience as a pilot. David tutored his daughter, and more recently his grandson in flying.

In the later years when he had colleagues sharing the practice, he was a great resource due to his wealth of experience, and he never ceased being a teacher and mentor. He retired from practice in August 2002 and enjoyed an active retirement, including his passion for flying.

David was incredibly modest about his achievements, honours, and skills. To his colleagues, his thoughtfulness, support, wisdom and humour were his hallmarks. To his many patients, he is remembered for his compassionate care, his high standards, his engagement in their lives which extended into his retirement, and for being a friend.

David was a man devoted to his family, and in particular to his supportive wife, Pamela. He cherished his children, Bill and Anne, and his six grandchildren.

He loved the quote from WB Yeats:

> *Think where man's glory most begins and ends, and say my glory was I had such friends.*

Dr Robert Bester (Invercargill), a friend and colleague of David, wrote this obituary and supplied the photograph.

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University of Otago Faculty of Medicine Freemasons Postgraduate Fellowships in Paediatrics and Child Health for 2009

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

Applications close on **4 July 2008** with the Department Administrator, Department of Women's & Children's Health, Dunedin School of Medicine, PO Box 913, Dunedin, from whom further details may be obtained (wchadmin@otago.ac.nz)

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Global Tuberculosis Control 2008: surveillance, planning, financing

Published by World Health Organization (Geneva), 2008. ISBN 9789241563543. Contains 302 pages. Price CHF40.00 / US$40.00

This publication is the twelfth annual WHO report. The one-page summary then three pages of Key Points give an excellent overview. In 2006, globally there were 9.2 million new TB cases, 1.7 million deaths, and about 10% of these were co-infected with HIV. There are marked regional differences.

Globally the number of new cases appear to be falling. Four regions are on track to halve prevalence and death rates by 2015 compared with 1990 levels. Africa and Europe are not on track.

Globally the rate of case detection for new smear-positive cases reached 61% in 2006 (target at least 70%) and treatment success 84.7% (target 85%). Available funding for TB control in 2008 peaked at US$3.3 billion up from less than US$1.0 billion in 2002. However case detection slowed globally in 2006 and began to stall in the two highest burden countries China and India.

There is very good information in the Key Points three-page section but beyond that the publication is probably only relevant to those involved in managing TB in regional or national programmes. I refer to relevant staff in the Ministry of HChapter 1 covers The Global TB epidemic and progress in control. A wealth of detail. Chapter 2 covers Implementing the Stop TB Strategy. This has six components, the most interesting being the first (Pursuing high quality DOTS) and the second (Addressing TB/HIV, MDR-TB). Chapter 3 covers Financing TB control. 80 countries comprising 77% of cases globally submitted complete reports for 2007. These three chapters take 55 pages.

The bulk of the publication comprises four Annexes with huge amounts of statistical detail from regions/countries with various TB burdens.

This publication will be useful only to those directly involved in managing tuberculosis. Well funded medical libraries might stock it as a reference.

Noel C Karalus
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