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THE NEW ZEALAND MEDICAL JOURNAL

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EDITORIALS

Future directions in health for the new Government: Our health and the public health

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When governments want advice on economics, they turn to economists, when they want guidance about health services, they still turn to economists.

Graham MacDonald, 1993

When somebody persuades me that I am wrong, I change my mind. What do you do?

John Maynard Keynes, 1921.

The title of Simon Upton's 1991 'Green and White Paper' *Your Health and the Public Health* reflected a fundamental policy shift– that individual health care was to be the individual's responsibility in a market model and a scaled-down Government could deliver population health administration. It followed Treasury advice to 'shift the risk' for public services from tax funding to individual/insurance funding. Over the ensuing eight years the policy failed to meet its key objectives. Waiting lists and hospital debts increased markedly, services have become fragmented, health sector staff are demoralised (and in many cases have joined the brain drain) and New Zealand's health status has become even more conspicuously poor compared to the developed world. What is left is Mr English's 'no model' model of wasteful commercialism, expensive contractualism and jingoistic consumerism.

The new Labour-Alliance Government intends greater involvement in the provision of personal health care and the abandonment of commercial funding structures with a return to a form of area health board administration. This shift from 'more market' to 'more government' will carry inherent advantages and disadvantages.

Will the return to 'more government' improve the health of the nation?

This depends on wider aspects of social policy and the degree to which it allows the personal (our health) and population (public health) workforces to be effective. Effective policy changes usually take place in evolutionary steps, not revolutionary leaps.[1] Expectations and realities are unlikely to ever fully synchronise for several reasons:

First, socio-economic factors have more influence on the eventual health of the nation than the action of health professionals. Second, public trust is central to the perception of an improved health system. The erosion of public trust in the publicly funded system has been a matter of policy since Mr Birch's 1993 advertising campaign. Third, the health professionals have been demoralised by the commercialisation of the public health system and the arcane, complex and expensive contractualism, unique to New Zealand.

The Public Health- a goal too far?

The National Health Committee's June 1998 report convincingly demonstrated that poverty, unemployment, education, housing, essential services (water, sewage) and social services are the main determinants of health status in the country.[2] Most of these matters are outside the health sector, but have direct implications for it. The report recommended a strategic, co-ordinated approach. This was rebuffed by the Minister of Health who claimed that these problems were already being addressed.

Recent socio-economic changes (which take decades to turn around) don't bode well for many New Zealanders. University of Otago research has demonstrated a clear link between infant mortality and the gap between the rich and poor.[3] As an infrastructural example, surgeons report that 10-15% of beneficiaries' homes with sick children don't have telephones (Mr Brendan Bowkett, personal communication).

A good first step, then, is to reconsider the existing advice and research in public health matters. The debate about whether improved population health is more cost effective than personal health interventions has been a distraction. Both are necessary for better quality of life and need to be delivered effectively and efficiently.

Our health–measure cost and measure effect: what risks are we sharing?

A 'more government' approach lacks the 'rigour' of market incentives, but allows more forward planning and anticipation of social needs. However, like the market, it risks the problems of bureaucratic and political capture, of unequal power and still requires large and potentially expensive information flows.

Market advocates argued that the old area health boards failed to be innovative but failed to recognise one very important factor in health care– the natural curiosity and creativity of health professionals. What goes on in hospitals and practices is incredibly adaptable. *Change is endemic in the health-care sector.*

The 'more market' approach has lacked a sense of social responsibility and has often failed to monitor clinical effectiveness. A 'more government' approach has the potential of working toward planned and co-ordinated social as well as financial goals. For example, pilot projects such as user-charges-free general practitioner practices, allow a truly experimental, scientific approach.

Unfortunately, the future of health information technology looks as muddled as its past. However, hopefully, the power of computers will be used to measure matters of effect as well as of cost. A fresh approach to Government analysis may find answers different from that of the market. Technology is only expensive if it isn't cost-effective. An ageing population needs different health care, but this is wholly predictable and can be readily planned for. The myth of infinite demand denies the fact that if the system is run cost-effectively, a reasonable level of care can be provided from the public purse, and difficult decisions need only be made at the margin.[4]

As well as setting up the Health Workforce Advisory Committee, the Government will need to consider the need for experienced and well-trained health administrators who understand the complexity of the sufferer/helper relationship that is central to personal health care. Tertiary education in health system management with hospital/practice internships might bridge the cultural gulf between generic management and health care professional values. Shared values mean that both groups are more likely to aim to the same target- better health outcomes.

Important questions need answering

The public and workforce have valid questions which need honest answers:

To whom should the public turn for decisions, Government or district health board, i.e., how will dual responsibility be addressed?

Will the cost cutting drive toward centralisation continue at the personal and political cost of closing local hospital facilities just when technology should allow them to provide more, not less, appropriate services?

What parts of the previous system will be retained? Will the many groups, IPAs, iwi, community trusts, etc., who have taken on significant financial risk in the last 10 years be treated fairly? How will contractual conflicts, service and geographical inequalities, etc, be resolved.

Summary

The 'no model' model awaited the invisible hand. However, 'more government' demands more hands-on direction of the health system. To whom will the government turn for advice?

The health professionals were excluded from the market experiment because of the concern that they would 'capture the process'. With the change in the political will, some of the most simplistic, fallacious perceptions of New Zealand's society should have less influence on health policy.

The new government has the opportunity to re-engage New Zealanders in advancing the health of the nation. Public health specialists have a wealth of information to guide decision-making which deserves wider dissemination and more executive consideration. In personal health care, health professionals have the will to continue innovation but need a system in which their values are respected.

One caveat: there is a tendency, whether the approach is 'more market' or 'more government', to try to measure everything and tick every box. When dealing with complex systems which need highly skilled professionals, however, there simply needs to be a high level of trust. As when getting on a plane, central planners, like the rest of us, need to understand that sometimes the pilots must 'capture the process' in order to get back on course.

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Managerialism in public hospitals and universities in New Zealand

Philip Bagshaw, Associate Professor, Department of Surgery, Christchurch School of Medicine, Christchurch.

Managerialism is the application of management techniques of business to the running of other types of organizations. It evolved in the 1960's and 70's to deal with large corporate and public service bureaucracies blindly focused on procedure rather than outcome.[1] The Thatcher Government used it in the 1980's to improve the efficiency of the Civil Service. From there its use spread to dealing with other professions and public institutions.

Managerialism has been inflicted on the public hospitals and universities in New Zealand over the last decade. The reasons given were two-fold. Firstly, there was the unsubstantiated contention that the need for medical and educational services was a bottomless pit, and that associated costs were rising out of control. Secondly, according to the ideology of the New Right, government should not be paternalistic and should get out of people's lives. The plan was therefore to manage a progressive reduction in state funding of the public hospitals and universities, and to encourage individuals to make increasing financial provision for their own health and tertiary educational needs.

According to managerialist ideology, there is little or no difference between managing a tyre factory, a public hospital or a university. Generic management techniques were used as a central part of the reform process in health and education for a number of reasons: (i) it was expected they would result in cost savings through business efficiency and competition; (ii) the process of change could be rapidly advanced to a state of effective irreversibility; and (iii) opposition from experts could be sidelined under the banner of 'provider capture'. Generic managers, who knew little about their areas of control, were purportedly superior because they had no self-interest in the organizations they led.

Managerialism had many undesirable effects on our public hospitals and universities. There was a sudden and violent movement from a 'collegial' to a 'corporate' model. Vice-Chancellors and Hospital CEO's often acted like heads of large business corporations, with rapidly burgeoning administrations below them.[2] All but a select few staff members were treated as resources or commodities, patients were seen as income-generating units, and universities introduced and marketed courses for reasons of financial expediency rather than for their academic excellence or value to the community. There is concern that some of those who planned and helped implement the reforms may not have been as free of self-interest as was claimed. Some clearly received direct or indirect financial rewards.

The moral and ethical effects of managerialism have been the most disturbing of all.[3] There was increasing secrecy, under the cloak of commercial sensitivity, and camouflaged by the 'good news machine'.[4] There was sophisticated abuse of language, with organizations talking more and more about transparency and accountability – which they supplied less and less. There was also abuse of power, with the marginalisation and subtle denigration of individuals who expressed opposing views, and a gradual erosion of academic freedom. These effects resulted in a breakdown of trust between staff and administration, a decline in staff morale, and the loss of some of our best clinicians and academics to overseas positions.[1]

The competitive model, with its corporate managerial style, has clearly failed in health and tertiary education. Our universities are supposed to be about academia, scholarship, the pursuit of the public good, and the advancement of humankind. Our public hospitals are there to serve the present and future health needs of the community. They are not businesses run for profit. The model is wrong and must be changed.

It is unlikely that the collegial model in its previous form can be reinstated for the following reasons: it would be perceived as a retrograde step; the public now demands a degree of accountability which this model did not provide; and, it would not be flexible enough to respond effectively to the rapidity of the technical advances and the changing financial circumstances we are facing. We must therefore construct a new model that integrates the principles and values of academia and professionalism, with genuine transparency and accountability.[5] This model must harness the energies and abilities of the workforce, and restore morale. It must encourage academics and professionals to 'roll up their sleeves' rather than 'hold out begging bowls'.

A new model is more likely to succeed if organization at departmental or unit level includes: a flat administrative structure, led by suitable motivated and skilled professionals and academics: a small number of managers employed by each unit to help it function efficiently and effectively; genuine peripheral budget-holding by each unit, with periodic external auditing; a system of rewards (and penalties) for those units that do (and those that do not) achieve agreed targets.

In throwing off the old model a number of difficulties will be encountered. Firstly, there is the need for a phased re-deployment of the masses of bureaucrats in our public hospitals and universities whose skills and ideology are now surplus to requirements. Fortunately, this process should lead to a large reduction of the administrative budget, thus freeing up resources to be spent where they are urgently required in health and education. Secondly, the recent elections indicate that the majority of the public do not support the ideology of the previous reforms. A small minority, however, will actively resist change. These will largely be the people who have benefited from the managerial model, and who have tried to sell the reforms in health and education as a success. There has been much propaganda both locally and around the world in which the 'success' of managerialist reforms in health and education has been lauded.[6-8] The 'stake' of managerialist proponents is large and should not be underestimated. Many of them still hold the power.

The needs of the community in health and education should be the highest priority in a new model. These should be protected by introducing local democratic representation into public hospital governance and open public scrutiny of university governance. We must use common sense, and distribute resources and services around the country in a fair and equitable fashion. We should stick to the fundamental priorities of providing excellent health care for the public and a world-class undergraduate education for our students. The latter is the prime raison d'être for our universities, and most of their other academic activities largely exist to make it possible. For academia to flourish again, however, we must also provide the environment where all types of basic and applied research are able to thrive. There should be incentives for tangible academic achievement rather than for decreased expenditure. This will require a reallocation of resources and the establishment of stable career pathways for our young academics and researchers. Putting resources back into health, education and research should be viewed as an investment, rather than an expense. These are not luxuries; they are necessities for the future well being of the nation.

The time is ripe for change. For the suggested new model to succeed, however, it will need the active co-operation of the public, the government and a large majority of our colleagues. Academics and professionals already, by and large, accept the need for financial responsibility and public accountability. The public and the government must accept that academics and professionals should manage rather than be managed. The way forward is for us all to work together. Divide and rule has failed.

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ORIGINAL ARTICLES

Liver function and hepatitis markers in carriers of hepatitis B virus in New Zealand

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Abstract

Aims. The Hepatitis Foundation has identified many chronic carriers of hepatitis B virus (HBV) in community surveys of schools and family contacts. This study reports the characteristics of carriers and the relationship between hepatitis markers and liver function.

Methods. Demographic data from confirmed chronic carriers of HBV in the North Island were correlated with liver function and hepatitis markers. Longitudinal data were obtained by following a cohort for two years with regular blood tests.

Results. Of 2778 confirmed carriers of HBV most were children or young adults and 56% were male. Sixty percent were Maori and 26% Pacific Island people. Loss of HBsAg occurred at less than 1% per year compared to 9% for HBeAg. Mean ages for 50% loss of HBeAg were 14 years for children of HBV negative mothers and 19 years for those of HBV carrier mothers. Fewer adult males than females were HBeAg positive. Alanine aminotransferase levels above 50 IU/L were found in 16% of HBeAg positive and 6% HBeAg negative cases. Other factors significantly associated with raised alanine aminotransferase were male gender (OR 1.8) and age more than 15 years (OR 2.0). Thirty five percent of HBeAg positive carriers with raised alanine aminotransferase levels spontaneously seroconverted to HBeAg negative in two years. However, raised alanine aminotransferase in HBeAg negative carriers was persistent in most cases and 38% had HBV-DNA detectable in serum.

Conclusions. HBV carriage is less benign in adults than children, even after loss of HBeAg. It is recommended that all HBV carriers have regular checks of liver function. Those with persistent abnormality should be strongly advised to restrict alcohol and be assessed for possible antiviral treatment.

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Most reported studies on the natural history of hepatitis B virus (HBV) carriers are taken from populations composed largely of cases with symptomatic liver disease and their contacts. In many societies the progress of carriers is also affected by other factors such as HIV, HCV, HDV, dietary aflatoxins or high rates of perinatal transmission. Information from these sources may be misleading if applied uncritically to carriers in New Zealand, particularly those identified in community screening programmes.

The Hepatitis Foundation provides long-term surveillance and follow-up of HBV carriers identified in screening programmes. The great majority were identified as schoolchildren during vaccination programmes, the remainder as household contacts of identified carriers. None of the carriers in this report were referred because of clinical presentation with liver symptoms. As the period of follow up was short and the subjects mostly children and young adults, information on the development of cirrhosis and liver cancer is not available. This paper documents hepatitis markers and liver function tests.

Methods

An initial cohort of carriers was identified in 1984-5 in the Eastern Bay of Plenty and the progress of 5-14 year olds was reported.[1] Striking features were the lack of symptomatic hepatitis and the benign course, with nearly all elevated liver function tests returning spontaneously to normal within a year. Lack of funds prevented regular surveillance and many were lost to follow up. In 1991-2 further pre-vaccination screening was carried out in schools throughout the North Island of New Zealand and many more asymptomatic carriers were discovered. In 1993-4 further efforts were made to trace known carriers from these surveys and to offer regular surveillance of liver function and hepatitis B virus markers. Most of the detected carriers were from Maori and Pacific Island peoples, with smaller numbers from the larger European population and some recent migrants from Eastern Asia. This study describes data from confirmed chronic carriers of hepatitis B and documents the follow up of a cohort over a 2 year period in 1993-4.

Liver function tests were requested through local government licensed laboratories and included alanine aminotransferase (ALT), gamma glutamyl transferase (GGT) and alpha feto protein (AFP). ALT levels were classed as 'normal' if <50 IU/L. Hepatitis markers routinely requested were hepatitis B surface antigen (HBsAg) and e antigen (HBeAg). In those who were negative but had persistent liver dysfunction we also requested antibodies to hepatitis C and D as well as HBV-DNA (by polymerase chain reaction at the Institute of Environmental Science and Research, Porirua or at Auckland Hospital Virology Laboratories).

Age was considered in 5 year bands, defined at time of testing, and adults defined as those over 15 years. Ethnic group was self defined.

Statistical analysis was performed using the EPI Info software. Two x 2 tables were expressed as Mantel-Haenzel Chi square and stratified analysis as odds ratios (OR) with Mantel-Haenzel weighting. Ninety five percentage confidence intervals are indicated in brackets after percentage points.

Results

Cohorts. There were 4239 HBsAg positive individuals identified in community surveys from 1984-92. Of these, 2778 were further tested by the Hepatitis Foundation, confirmed to be chronic carriers of hepatitis B virus and had liver function checked. In 1370 cases the HBsAg status of the mother was also known.

In 1993-4 1226 individuals were enrolled and tested 3-12 monthly (according to ALT levels) over the next 1-2 years, giving a total of 2190 patient-years of follow up. These data are reported as the longitudinal follow up.

Table 1 compares the characteristics of confirmed carriers and the longitudinal study group with those detected as HBsAg positive on initial population screening. The longitudinal study group contained slightly lower proportions of Maori and Pacific Island people and higher proportions of Europeans and Asians. Gender distribution was the same for each cohort. There was a bias towards more successful longitudinal follow up in those with abnormal liver function, 23% of the participants in the longitudinal survey having a raised ALT at first test compared to 13% of the total. Results are therefore presented by initial ALT level.

HBsAg. Fourteen of 1226 confirmed carriers of HBsAg lost this antigen during follow up, giving an annual clearance of HBV carriage of 0.65% (0.3-1.0).

HBeAg. Forty seven percent of 2467 HBV carriers were HBeAg positive on first testing. Prevalence of HBeAg dropped progressively with age (Figure 1) with no gender difference in childhood, but a lower proportion of adult male carriers being positive (OR stratified by age 0.7 (0.6-0.9)). Maternal HBsAg status was known in 1370 cases and

HBeAg was positive in a higher proportion of young adults whose mothers were presumptive HBV carriers (Figure 2, OR stratified for age 1.6 (1.3-2.1)).

Table 1. Comparison of study cohorts of HBsAg positive individuals identified in community surveys

	Community surveys		Confirmed carriers		Longitudinal study	
Total number	4239		2778		1226	
		(%)		(%)		(%)
Ethnic group						
Maori	2712	(64)	1667	(60)	735	(60)
Pacific Is	920	(22)	715	(26)	232	(19)
European	337	(8)	209	(8)	146	(12)
Asian	172	(4)	137	(5)	85	(7)
Gender						
Male	2407	(57)	1560	(56)	707	(58)
Female	1832	(43)	1218	(44)	519	(42)
Age						
mean	18.3 yrs		19.9 yrs		21.6 yrs	
Initial tests						
ALT < 50			2430	(88)	943	(77)
ALT > 50			348	(13)	283	(23)
ALT > 80			129	(5)	120	(10)
HBeAg+			1165/2467	(47)	490/1188	(41)
HBeAg-			1302/2467	(53)	698/1188	(59)

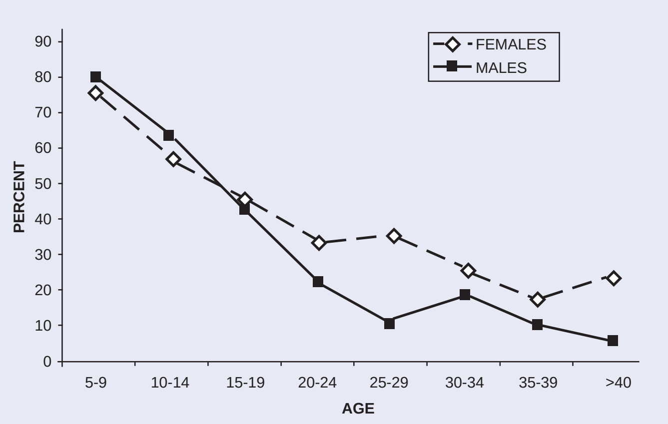

Figure 1. Prevalence of HBeAg positivity in HBV carriers by age and gender.

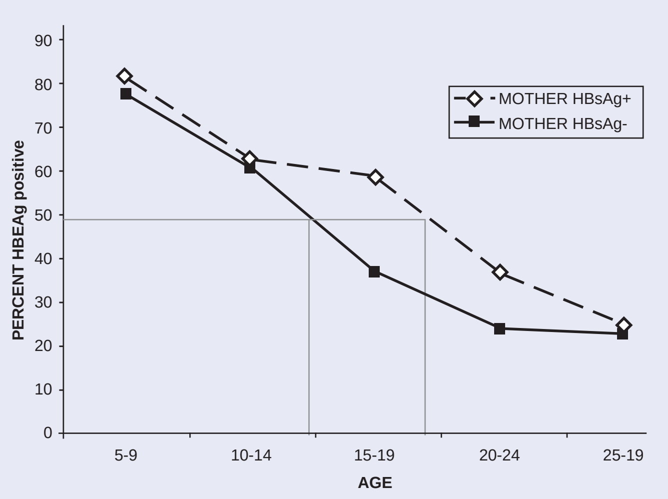

Figure 2. Prevalence of HBeAg positivity in HBV carriers by maternal HbsAg status. Verticle lines indicate mean ages of HBeAg loss.

Among the group followed longitudinally complete data were available from 459 of 502 initially HBeAg positive carriers, and of these 77 lost this antigen in 839 years of follow up, an average rate of decay of HBeAg of 9.2% (7.3-11) per year. (This reported rate essentially reflects only Maori and Polynesian carriers as the numbers of Europeans and Asians were small.)

ALT. ALT levels were raised above 50 IU/L in 16% of 1165 HBeAg positive carriers at first test and above 80 IU/L in 68 (6%). In HBeAg negative cases 6% of 1302 had raised ALT, 27 (2%) above 80 IU/L. There was a significant difference according to gender and age, with higher ALT levels in males (OR stratified for age and HBeAg status 1.8 (1.5-2.3)) and in adults (OR stratified for gender and HBeAg status 2.0 (1.5-3.2)) – see Figure 3.

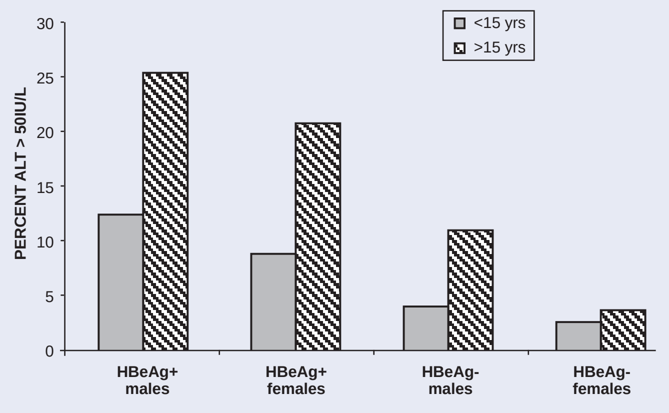

Figure 3. Alanine aminotransferase (ALT) by gender, age and HBeAg status.

On follow up of persistently HBeAg positive carriers whose initial ALT was normal, subsequent tests were raised in 13% at one year and 19% at two years. If the initial ALT was high, it remained so in 67% at one year and 62% at two years. ALT elevation above 80 IU/L was maintained at one year of three of 11 children and 18 of 26 adults.

Of 31 cases with initially elevated ALT levels who lost HBeAg during two years of follow up only eight (26%) had a raised ALT at the last test. Liver dysfunction commonly preceded loss of HBeAg and 35% of initially HBeAg positive cases with ALT >50 IU/L spontaneously lost this marker in the following two years.

In persistently HBeAg negative carriers with ALT >50 IU/L, levels of ALT remained high for at least two years in 51%. An initial ALT >80 IU/L persisted in 44% at two years. In addition, 10% of HBeAg negative carriers with initially normal tests had a raised ALT after two years.

An increase of ALT levels with age was apparent in some individuals. For 99 young adults further data were available on HBeAg status and liver function during childhood more than eight years previously (mean 10.1 years). Although only 34% were HBeAg positive at the time of the study compared to 71% initially, only 11% had raised ALT levels as children, but 21 % as adults (OR 2.1 (0.9-5. 1)).

GGT. GGT levels > 60 IU/L and exceeding ALT were found in 6.5% of adults, suggesting alcohol abuse or other pathology as a cause.

AFP. Excluding pregnant females, there were no cases in this study where AFP exceeded 25 IU/L.

Hepatitis C and D. No cases were detected.

HBV-DNA. HBV-DNA was detected by PCR in 35 of 93 (38%) HBeAg negative carriers who had persistent liver enzyme elevation during (or subsequent to) the study.

Discussion

Published data on hepatitis B carriers are dominated by highly selected groups, often with cases from specialist liver clinics and from populations that have other confounding factors such as HIV, HCV, HDV, or high dietary aflatoxin intake. It is desirable to determine the natural history of carriers in the New Zealand population, especially as many have been identified coincidentally in pre-vaccination screening programmes. The cohorts described in this report were identified from community studies. They can be considered reasonably representative of asymptomatic carriers apart from the predominance of children and adults under the age of 25, and a higher proportion of Asian and European than Maori and Pacific Island carriers in the longitudinal study. There was a greater proportion of high ALT levels in those followed than in the initial cohort, but separate analysis according to initial levels prevents bias in the presentation.

HBsAg loss during follow up was less than 1% per year, emphasising the long duration of the HBV carrier state in most individuals.

As previously reported,[1] HBeAg, which reflects a high level of viral replication, decays at a much faster rate than HBsAg, especially during the late childhood and early adult years as the host develops an effective immune response to the virus. Our previous studies included very small numbers of adults and had not detected the higher rates of HBeAg in adult females than males shown in Figure 1. Our cross-sectional data (Figure 2) suggest a delayed loss of HBeAg in children of HBsAg positive mothers. As development of the carrier state is relatively unusual after infection of healthy adults, most of these mothers were probably HBV carriers from childhood and many will have infected their children at birth. The later loss of HBeAg after perinatal infection leads in turn to a greater risk for further infection in the next generation and may also lead to a greater risk of long-term liver damage in these families. East Asians have higher rates of perinatal transmission than Maori or most Pacific Island peoples, and this may be perpetuated by historic patterns of infection rather than any biological difference.[2] The disturbance of liver function as judged by elevated ALT levels was mild in the great majority of carriers tested. Although the tests were performed in a number of laboratories, all were subject to the same standardisation and quality control procedures and should be broadly comparable. We have chosen the level of 50 IU/L for the borderline of "normal" from "abnormal" as laboratory 'normal ranges' vary a little, though most give an upper limit of 40 IU/L. It should be noted, however, that obesity as well as alcohol can lead to mildly elevated ALT levels.[3] A study of Maori and Pacific Island HBV negative blood donors found ALT > 36 IU/L in 16% compared to 8% of Europeans (Woodfield G, personal communication). Earlier data on children in the Bay of Plenty found means of 9 IU/L in controls, 14 IU/L in HBeAg negative and 28 IU/L in HBeAg positive carriers.[1]

As expected, liver dysfunction was more common in HBeAg positive cases, with ALT levels above 50 IU/L in 16% at initial test but >80 IU/L in only 6%. ALT often flares just before loss of HBeAg[4,5] and a single period of a few months of liver dysfunction followed by resolution does not lead to cirrhosis.[6] In those individuals where HBeAg loss was documented the ALT levels were initially high in 48%, but fell to normal in most following HBeAg loss. Conversely, 35% of HBeAg carriers with elevated ALT levels had lost HBeAg within 2 years. For this reason we usually advise waiting for at least this period before considering interferon treatment in children and young adults, in whom the risks of cirrhosis are low.

It is often considered that carriers who have lost HBeAg are at low risk of further liver damage. In our population of HBeAg negative carriers, however ALT levels were in excess of 50 IU/L in 6%, and persistence of raised levels was the rule, 51% remaining unresolved at two years. Even in those with initially normal ALT, 10% became abnormal in the next two years. The presence of HBV DNA in 38% with persistently raised ALT levels suggests that some cases had a chronic hepatitis from a precore mutant HBV. This can lead to serious liver disease in a significant proportion of HBeAg negative carriers,[7,8] and accounts for the majority of cases of chronic hepatitis B in some populations[9] Severe liver disease in HBeAg negative carriers is not uncommon in New Zealand.[10]

There was a striking difference in the prevalence of liver dysfunction according to age and gender. After allowance for HBeAg status, males and adults had considerably higher ALT levels than females and children respectively (Figure 3). Bortolotti[11] has pointed out that "there is a discrepancy between the mild disease in children and the severe liver damage found in many adults living in endemic areas where infection is often acquired early in life." Some of these differences may be related to lifestyle, particularly alcohol intake and obesity. Most reports indicate that moderate or heavy drinking of alcohol exacerbates viral hepatitis and increases risks of cirrhosis and liver failure in carriers of HBV.[12] Advice on these issues is very important, but may require a culturally appropriate input and follow up to have much chance of long term success. The increased levels of ALT with age in carriers is of particular concern because there is a steep gradient of risk of serious disease with increasing age. Liaw reported that patients with chronic hepatitis (ALT >40IU/L) for more than six months progressed to cirrhosis at a rate of 2.4% annually if HBeAg positive and 1.3% if HBeAg negative.[6] These risks were age dependent, cirrhosis developing in cases over 55 years of age at more than ten times the rate of those less than 25 years.

The purpose of following asymptomatic HBV carriers in the long term is to detect liver disease at an early stage with the hope of offering effective treatment before the onset of irreversible cirrhosis or advanced hepatocellular carcinoma. Successful treatment of cases of active hepatitis with interferon is now known to reduce the risks of liver failure and cancer.[13-15] The Hepatitis Foundation supervises surveillance for carriers, and in practice has recommended referral for possible interferon treatment in about 3-4% of cases per year. It is likely that the advent of antiviral drugs against hepatitis B will lead to less intrusive and more effective therapy over the next few years, which may be applicable to a greater proportion of cases. We recommend maintaining contact with identified HBV carriers with at least annual blood tests.

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Establishment of a smoking cessation programme in primary and secondary care in Canterbury

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Abstract

Aims. Smokescreen for the 1990's is a smoking cessation programme devised for use in primary care in Australia. It is based on the 'readiness to change' model where smokers are categorised as being 'ready', 'unsure', or 'not ready ' to quit smoking. Those in the 'ready' group are encouraged to set a quit date and offered nicotine replacement therapy. Those in the unsure group receive brief motivational intervention, and those 'not ready' are given simple health advice. The aims of the study were to evaluate the process and outcome of establishing this program in primary and secondary care in Christchurch.

Methods. Process evaluation involved all staff participating in the program. Patient outcomes including quit rates were assessed by interview six months after enrolment.

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Results. Implementation was successful with 59 general practitioners, 49 practice nurses and 294 hospital staff receiving education in the use of the programme. Nine hundred and seven patients (smokers) were enrolled in the study, 347 from primary care and 560 from Christchurch Hospital. The point prevalence abstinence rate at 6 months was 10.4% for the primary care sample and 17% for the secondary care group, with an overall rate of 14.4%.

Conclusions. The programme was successfully implemented across primary and secondary care with an acceptable quit rate at 6 months.

Tobacco smoking is the main cause of preventable death and morbidity in New Zealand and in many western countries. Despite decades of health promotion and tobacco control legislation, the prevalence of smoking among adults and teenagers in New Zealand remains unacceptably high. In the 1996/7 Health Survey, the proportion of New Zealanders who smoked was 24.9%, with nearly half of all Maori adults reporting that they smoked.[1] Cigarette smoke contains nicotine, a powerful addictive substance which can cause chemical addiction after just a short exposure. In addition, many continue to smoke for social and psychological reasons. Many people want to quit but for a variety of behavioural, psychological and pharmacological reasons find it difficult to achieve.

A wide variety of smoking cessation programmes have been developed and studied over recent years. Most programmes achieve point prevalence abstinence rates in the region of 10 - 30% at 12 months with higher rates within this range described for programmes using nicotine replacement therapy (NRT).[2]

The programme we used was Smokescreen for the 1990's, which was developed specifically for general practitioners in Australia at the School of Community Medicine, University of New South Wales.[3,4] This report describes the simultaneous implementation of the programme in primary and secondary care in Christchurch.

Methods

Setting up the Programme. The smoking cessation programme was planned as a joint initiative between Canterbury Respiratory Services of Canterbury Health and the Pegasus Medical Group, which includes the majority of general practitioners in Christchurch. A Steering Committee was established which included the key staff from each organisation. Funding from the then Southern Regional Health Authority was provided to establish this pilot scheme. The funds were used to purchase resources and provide training for hospital and general practice staff through the appointment of two part-time educators. These staff played a key role in establishing the programme and maintaining primary-secondary care linkages.

The Smokescreen resources were purchased from the University of New South Wales and used without modification.[3] The kit includes patient leaflets and educational resources giving detailed information about the adverse health effects of smoking. The approach recommended was that all patients who smoke were identified in their medical records and using the simple question "How do you feel about your smoking?" were categorised as 'ready', 'unsure' or 'not ready' to give up smoking. Those categorised as 'ready' to quit were asked to set a quit date, offered nicotine replacement therapy (NRT) and encouraged to attend for follow-up and in selected cases offered ongoing telephone counselling. Those categorised as 'not ready' were given simple health advice, while those categorised as 'unsure' were offered more detailed advice about the pros and cons of smoking and using the 'readiness to change' approach encouraged through motivational interviews to consider giving up smoking in the future.

Prior to launch date in 1995, one of the Sydney based programme directors spent several days in Canterbury and undertook a series of workshops to train the trainers. Thereafter, key hospital and primary care staff underwent training in readiness for participation in the programme. The Pegasus Medical Group provided subsidised NRT for their patients.

The Evaluation. The pilot programme included an evaluation component which aimed to describe in detail the establishment of the programme and the outcomes including number of patient contacts, and for participants their smoking status six months following enrolment.

The process evaluation comprised written questionnaires to health care staff participants including medical and nursing staff. The outcome evaluation was based on the registration of all enrolled smokers using a simple card. They gave verbal consent to a telephone interview at three and six months to establish their use or not of NRT and their smoking status. Participants were asked to answer the following three questions in this regard:

(i) "Have you smoked at all since your quit date approximately six months ago?"
(ii) "How many cigarettes a day are you currently smoking?"
(iii) "How long have you been smoke free since your quit date?"

Only those categorised as 'ready' or 'unsure' were followed up for smoking status at six months. For 50 subjects in the secondary care group, the evaluation included biochemical validation of their smoking status by means of an exhaled carbon monoxide measurement using a Bedfont (Kent, UK) micro carbon monoxide analyser. Participants were asked to hold their breath for 15 seconds then blow out gently into the mouth piece for as long as possible.

Results

Initial implementation of the programme was by staff of respiratory inpatient and outpatient units at Christchurch hospital together with 59 self selected general practitioners and 49 practice nurses from 40 practices in Christchurch.

Process Evaluation

Primary Care. Forty general practitioners and 15 practice nurses were sent written questionnaires with a response rate of 78% and 86% respectively. Most respondents (84%) considered that the training session was sufficient to allow them to use the programme. The majority found the resources easy to use and most (93%) offered NRT to their clients. It appeared that most general practice screening was opportunistic, as only 21% of respondents reported using the case note stickers to identify smokers. A greater proportion (64%) of primary care subjects were classified as 'ready' to quit smoking than in secondary care. Potential barriers to the use of the programme included time constraints (83%) and remuneration issues (50%). Nevertheless, all respondents stated their intention to continue using the programme.

Secondary Care. Questionnaires were sent to 26 medical staff and 46 nursing staff who had been exposed to the programme. Approximately half (53%) of these were returned, which was as expected given the mobility of the workforce. As for the primary care sample, the majority (84%) felt that they had received adequate training in the use of the programme. NRT was available through the retail hospital pharmacy at a discounted price and 66% of respondents recommended this for their patients. Free NRT for inpatients was available. Potential barriers to the use of the programme included time constraints (79%) and lack of confidence with the programme (36%).

Outcome Evaluation

Primary Care. Three hundred and forty seven subjects were enrolled in the programme over the initial five months and at entry the median number of cigarettes smoked per day was 20 (range 2 - 60). Of these 347, 216 (62%) were classified as 'ready' to quit, with 93 (27%) being 'unsure' and 38 (11%) 'not ready'. The response rates for follow-up at three and six months were 89% and 50% respectively. Non respondents were classified as still smoking. The results of the programme in terms of quit rates at six months are given in Table 1.

Table 1. Smoking cessation rates at 6 months

	Primary Care	Secondary Care
Total original sample	347	560
Eligible sample at six months	309	506
Response rate	50%	55%
Point prevalence quit rate	10.4%	17%

Note: All non respondents and those in the 'not ready' group were catergorised as still smoking.

Secondary Care. Five hundred and sixty subjects were enrolled in the secondary care programme over the initial eight months, the majority having been admitted to the hospital with a smoking related disorder. Their median age was 52 years (range 18 - 85) and the median number of cigarettes smoked per day was 20 (range 1 - 85). Of these 560 subjects, 302 (54%) were classified as 'ready' to quit smoking with 204 (36%) and 54 (10%) being 'unsure' and 'not ready' respectively. Of those in the 'ready' group, 48% used NRT. Biochemical evaluation was performed in 50 randomly selected subjects, of whom seven had a level of 7ppm or higher indicating a deception rate of 14%.

Cost of Programme. The total budget for the programme for the six month pilot study was $55 329 comprising the salary costs for the two part-time educators ($21 000) and set up costs including purchase of the kits ($17 350). During this period the Pegasus Medical Group provided some $22 765 in NRT subsidies to their patients. The cost per contact over this period was approximately $61 and the cost per successful quit approximately $425 excluding NRT costs.

Discussion

This pilot study has demonstrated the acceptability of the Smokescreen for the 1990's programme in New Zealand and successful outcomes in terms of quit rates at six months. The overall point prevalence quit rate for the eligible sample was 14.4%, a figure comparable to that achieved in the Australian setting using the same programme.[4] This result may have been affected by non-response bias since all non respondents were classified as still smoking. The quit rate was significantly higher for the hospital sample which may reflect the high impact of smoking cessation advice when delivered while the patient is in hospital with a smoking related disorder. The hospital patients were also older and a significant proportion had a chronic illness. In addition, a greater proportion of subjects enrolled in primary care were classified as 'ready' to quit, perhaps reflecting lack of experience with the programme.

Funding limitations for this programme did not permit full biochemical evaluation of smoking status for all participants. There were insufficient resources for urinary cotinine measurements so we relied on carbon monoxide assessments. Subjects were not informed of the purpose of this test until they arrived for their appointment which makes it less likely they would have knowingly refrained from smoking beforehand. The deception rate in this sub group was only 14%.

A unique feature of this venture was the joint participation of both primary and secondary care providers from the outset to ensure integration of the programme in the community. This is in keeping with recommendation of the most recent guidelines for the implementation of smoking cessation programme published by the British Thoracic Society.[5] Also in keeping with these guidelines was our decision to recommend NRT for all participants. This strategy has been shown to increase the successful quit rate two-three fold. In the Pegasus Medical Group cohort, patients were provided with direct access to subsidised NRT. While this was very well received and was used by 87% of participants, it did not lead to a particularly high quit rate by international standards.

The Smokescreen Programme does not involve detailed education and follow-up counselling as may occur in a group programme. In the Australian setting, follow-up visits for participants are provided free of charge by the general practitioner and their staff. In New Zealand there are significant financial barriers to this and we believe that ongoing support and counselling for participants, either by telephone or at the family practice, may have improved the outcome.

The costs of this programme were relatively modest. Obviously a substantial portion of the initial budget was for set up costs which would reduce over time as more patients are enrolled into the programme. Even at the cost of $425 per successful quit, this is a remarkably cheap public health intervention and is in keeping with costs estimated for UK programmes which range from £212 to £873 per successful quit. There are numerous studies which support the cost effectiveness of smoking cessation programmes, and they are guaranteed to bring population health gains in the longer term through reductions in health care costs.[6,7]

Since the pilot phase of this programme was completed in 1996, the initiative has been extended widely throughout primary and secondary care in Canterbury. In primary care the vast majority of Pegasus Medical Group doctors are using the programme and it has also been introduced to most other independent general practices in the metropolitan area. The Pegasus Medical Group has continued to provide subsidised NRT and other general practitioner groups have negotiated substantial discounts for their patients. Quit rates at six months in primary care are now approaching 30% (unpublished data Pegasus Medical Group). In secondary care the programme has been implemented in almost all wards and departments within Canterbury Health, including the recent establishment of a Staff Smoking Cessation Programme. Most patients enrolled in the programme from secondary care are referred back to their general practitioner for ongoing follow-up and NRT.

The resources originally supplied with the Smokescreen Programme have now been significantly modified to make them more appropriate to the New Zealand situation. This has, however, not altered the main thrust of this successful model which provides a non-threatening assessment of each individual's readiness to quit smoking.

This programme, either in its original form or using locally modified resources, could be readily adopted anywhere in New Zealand. Funding for the Canterbury programme has been secured within the Canterbury Health contract with the Health Funding Authority. Other primary and secondary care providers should insist on funding for smoking cessation services in their area. This would appropriately complement the recently established 0800 Quit Line.

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GERIATRIC MEDICINE

Stroke rehabilitation for the older person: current evidence, potential problems and future challenges

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Stroke is a catastrophic illness that not only kills, but leaves survivors significantly disabled. Most of this disability burden falls on the elderly, with 75% of all strokes occurring in over 65 year olds.[1] This article will focus on the rehabilitation needs of older individuals who have had a stroke. Other aspects of stroke, such as prevention and acute treatments are important but are not discussed in this paper. Comprehensive best practice guidelines for the management of stroke have been published recently.[1]

What is rehabilitation? Primarily it involves restoration (as much as possible) either of function (physical or mental) or role within family, social network or workforce.[2] These areas require equal emphasis. Preoccupation with restoration of physical function may blind us to the other important aspects of rehabilitation.[3] Longer-term psychosocial adjustment is critical and is an area where patients/carers tell us we fall well short of the ideal.[4] In the older person, the "medical" model of minimising impairments will fail, unless it is combined with emphasis on functioning (disabilities) and roles (handicaps).[5] All health professionals dealing with older people with strokes must strive to improve all three aspects (impairments, function and roles). There is evidence that hospitals often don't achieve all these goals, since deconditioning (loss of independence and skills) is common.[6]

Who should get rehabilitation after stroke? This is contentious, as some units exclude the severely disabled[7] whilst others take all comers.[8] Recent data[9] suggest that all patients (irrespective of age, sex and initial severity of stroke) benefit from stroke rehabilitation and thus all elderly stroke patients should receive rehabilitation. Balanced against this approach is the claim that some prognostic scores or variables[7,10] can predict poor functional outcomes and the need for institutional care. Prognostic scores are useful, but are not yet accurate enough to guide treatment decisions for individual patients.[8] A compromise is to give all patients a trial of rehabilitation, accepting that not all will improve. Goal setting with regular reviews will detect those not making progress.

Where should the older person with stroke receive rehabilitation? Most people with stroke are, and should be admitted to hospital.[11] This is because most have high dependency needs, but there are other important psychological benefits that accrue from hospitalisation.[12] There is now good evidence that stroke rehabilitation should be given by a multi disciplinary team with expertise in stroke.[9] This may be in a designated stroke unit, or in a mixed health care of the elderly rehabilitation ward – which has been a common model of care in New Zealand until recently. In these settings, patients do better with lower mortality, reduced dependence and are more likely to return home.[9] They may also achieve better physical and psychosocial functioning.[13] Evidence favouring stroke units is encouraging, but leaves no room for complacency.

A burning issue now is "how the stroke person should be managed after the initial inpatient rehabilitation phase". The answers challenge existing models of care. There is growing evidence for facilitated early discharge schemes (FEDS),[14,15] but it is essential that these schemes have augmented community supports.[16] FEDS may give similar outcomes to those obtained by inpatient rehabilitation, but with shorter lengths of stay in hospital. Furthermore, patients and carers may prefer such home based rehabilitation. Unfortunately the outcomes measured have focused mainly on physical functioning and resource use, and the effects on carer strain and full economic impact are not yet known. Further studies are needed before implementing FEDS in New Zealand. Many stroke patients discharged from hospital receive day hospital rehabilitation. Two studies suggest that for some patients domiciliary rehabilitation may be at least as effective and more cost effective than day hospital therapy.[17] The practical task-oriented rehabilitation at home, in the patient's familiar environment, has much to commend it.

Some rehabilitation, possibly less intense and "slow stream" could be undertaken in rest homes rather than hospitals. Potential benefits include smaller, often purpose built and more homely environments, which are closer to home and general practitioner involvement. However, the author has reservations about this model being applied locally, unless changes are made. First, medical complications during rehabilitation are the norm[18,19] and these need input from other medical and allied health specialists. Second, current funding arrangements for rest homes may create a perverse incentive against improved functional outcomes so that the person remains a long term resident. Furthermore a person living alone may have to sell the family home to finance such care. If they regain independence later, they have lost their own home making it doubly difficult to return to independent living. As most wish to remain in their own homes and can often do so successfully[1,20] rest home rehabilitation may not be in their best interests.

When should rehabilitation begin (and for how long)? Since the older person tolerates immobility in hospital poorly,[6] rehabilitation should begin as soon as possible, usually on day 1 or 2.[21] Most recovery after a stroke occurs in the first two to three months so it is appropriate that most rehabilitation effort is provided early.[22] As a corollary, many assume that there is no point in trying further rehabilitation later, but "late" rehabilitation is often beneficial and the benefits are sustained.[23-25] It is important to note, however, that these late gains are made, not by prolonged efforts, but by bursts of intensive outpatient therapy- protracted outpatient rehabilitation may lead to patient and therapist fatigue. The challenge for the clinician is to balance the possible theoretical improvements against the reality of actual gains obtained. If progress has plateaued, ongoing rehabilitation efforts need review.

Neural plasticity. Rehabilitation is not a passive process. What the patient and the team does, or doesn't do, can influence recovery. Positron emission tomography studies have revealed a degree of neural plasticity, which was not recognised previously.[26] Reorganisation of neural networks distant to the injury play a role in recovery. Positioning, patterns of muscle use (eg, gait) may have a major impact on this reorganisation. Restoration of normal patterns of movements (and avoidance of abnormal patterns) appears critical and this forms the basis of techniques such as early, partially- supported treadmill training.[27] Some drugs such as benzodiazepines, haloperidol and tricyclic antidepressants (TCA) are commonly used in this age group and may be harmful[26] and others (fluoxetine and amphetamines) beneficial to this neural reorganisation. It is hoped that new evidence will soon guide us in the exciting area of pharmacological augmentation of recovery, and also tell us which drugs to avoid.

Rehabilitation models. Some rehabilitation guidelines state explicitly that the patient should be medically stable prior to entering a stroke rehabilitation programme.[28] Elderly people with strokes do not fit into this "pure rehabilitation" model as medical complications are both common and occur throughout rehabilitation.[18,19] As a consequence the patient should be where medical and rehabilitation needs can be met concurrently. In the older stroke patient, particularly the 'old' old group, major comorbidities such as diabetes, poor vision, arthritis, respiratory disease, dementia or falls are common. They are frequently destabilised by the stroke and admission to hospital, and need active, continuing medical management. Whilst comorbidities and complications are additional hurdles, they should not prevent access of older stroke patients to rehabilitation and care. Unfortunately, the current Health Funding Authority dichotomy of personal health/ disability funding for the elderly encourages the separation of medical and rehabilitation provision. This is counterproductive to the provision of holistic care.

Complications. *Psychological.* There is some debate as to whether depression is more prevalent amongst stroke survivors than those with other chronic illnesses,[29] but it is clear that post stroke depression causes considerable suffering, is associated with poorer outcomes and can be treated.[30] A major challenge in older individuals is to recognise the depression. It is easy to dismiss low mood as being "understandable" given the huge personal losses involved and thus not appreciate the need for treatment.[31] Dysphasia, drugs, deafness, apathy and coexisting medical problems further challenge our diagnostic skills and often a treatment trial is required to clarify whether the person is depressed or not. Selective serotonin re-uptake inhibitors (SSRIS) are probably the best tolerated pharmacological treatment for the older stroke patient.[30] In contrast to TCAs, SSRIs may potentially augment neural reorganisation. There are other psychological complications. First delirium may be precipitated by the stroke itself, by medical complications or by the shift to hospital. This can cause further disability and may be fatal.[32] It should be treated as an emergency. Second, emotionalism is very common, always deserves reassurance, and only sometimes requires treatment.[33] The emotional response is usually appropriate but both the threshold for crying and the ability to control the response is lower after a stroke. It may occur with or without underlying mood disorder. It often improves with time. Third, feelings of tiredness and impaired concentration are very common following a stroke[4] and require reassurance that these are not unexpected. Fourth, is anxiety. The literature is sparse but clinical experience suggests that anxiety may be as prevalent as depression.[29] The stroke person already has anxieties about their own abilities, sense of who they are and whether their carer can manage,[1] but the added uncertainties of returning home and their family's natural but sometimes over protective concerns can make the anxiety overwhelming.

Continence. Urinary incontinence following a stroke is not uncommon and may be a new disability or a pre-existing condition made worse. There is no place for nihilism since treatment of urinary retention, constipation, hyperglycaemia, infection, immobility and removal of certain drugs (eg diuretics) may help. Ultrasound scans to measure post-micturition residual volume are simple and should be done on all incontinent patients to exclude urinary retention and guide treatment options. Urinary incontinence is a predictor of poor outcome and there is some evidence that regaining continence predicts better outcome[34] - it will certainly improve the person's morale.

Shoulder Pain. Shoulder problems usually begin within the first two weeks post stroke but may not present as pain or restricted movement until later.[35] There is continuing debate as to whether the primary problem is subluxation, capsulitis or rotator cuff tendonitis.[36] It is unclear how best to manage this problem but careful handling, passive range of movement exercises, appropriate positioning and avoidance of subluxation are probably all beneficial. Slings to support the arm have been tried with only minimal success, and some form of taping and/or Functional Electrical Stimulation (FES) look more promising.[37,38]

Language problems. Language problems after a stroke are very disabling. Dysphasia may limit the sharing of even simple feelings resulting in considerable frustration.[39] This is reflected in studies showing that spouses of dysphasic patients experience more marital difficulties than non-dysphasic controls.[40] These difficulties are often down played by hospital staff who concentrate on the more tangible (although no more obvious) physical hemiplegia. Language is not a luxury - talking on the telephone, shopping, handling money or even seeking help in an emergency are prerequisites to managing independently. Active participation in more meaningful social activities requires even better language skills.

Dysphagia and Nutrition. Dysphagia following a stroke is common and the management of this is beyond the scope of this article but some points warrant mention here. The use of safe swallow techniques, combined with dietary modification (thickened fluids and altered food consistency) are standard treatments, but can bring a new set of problems. Inadequate nutritional intake, superimposed on pre-existing malnutrition and increased catabolic demands imposed by illness, are common problems for the elderly person in hospital.[41] Thickened fluids, lack of variety in texture and presentation of food, loss of the social context of eating, together with the diminution of taste and smell with age, will all exacerbate nutritional deficiencies. Food and its presentation should be as normal as possible. This may require judicious use of flavouring and colouring agents, imagination in presentation and innovations in food technology. Nutritional supplements are beneficial for elderly people with hip fracture[42] and respiratory infections,[43] and should also be considered for stroke patients. Early judicious use of percutaneous endoscopic gastrostomy feeding should be instituted for those unable to tolerate oral feeding.[44]

Deconditioning or Loss of Skills. In general, prolonged hospital stays should be avoided unless there are clear benefits in rehabilitation. Indeed long hospital stays may threaten the patient's desired independence. Loss of functional skills occurs rapidly in hospital (deconditioning) and needs to be actively countered.[6] Prolonged periods of inactivity are commonplace in hospital[45] resulting in loss of muscle mass and strength, which are critical to maintaining functional independence. Older people are often poised on the "threshold of frailty"[46] and further small losses make simple tasks such as transferring, walking and stair climbing more difficult or impossible. Inactivity is not good for either the psyche or for neural reorganisation which depends on "doing". We must strive for the optimal balance for each individual patient, juggling the dependency, security and carer needs (often best met in hospital) against the risks of deconditioning.

Carer issues and support in the community. It can be difficult to balance the needs of both the patient and the carer. The carer is usually the spouse who may also be old and frail, or a daughter with dependents. Their needs as a carer require acknowledgement. Despite the availability of formal community supports, most of the burden of caring still falls on these family members.[47] They need to be involved in rehabilitation, discharge planning and in strategies to encourage independence, yet they also must be allowed to express their limitations. The burden of caring should not be underestimated. The patient's physical dependency or emotional distress, and the carer's lack of leisure time or sense of isolation are all important contributing factors to this burden.[48] Unfortunately it is not clear how to reduce this burden. Encouraging work by Evans et al[49] showed that counselling the family or carer, together with problem solving and stroke education improved the family unit functioning at one year. Two recent studies[50,51] used trained stroke workers to visit the home several times after discharge. Neither study was able to show reduced carer strain, but a further qualitative study of a subgroup of these patients suggests an alternative, more optimistic viewpoint.[52] Patients with reduced social support networks spend longer in hospital and have poorer outcomes. Efforts to improve these networks are logical and should be continued, but so far any benefits are unproven.[53]

The future. With the ageing population, the absolute numbers of people with stroke will increase three fold over the next forty years.[1] An increase of this magnitude will challenge existing rehabilitation systems. More community-based rehabilitation may create a win/win scenario for both the health system and the patient, provided adequate community supports are given.[16] This would require major shifts in resources from hospitals to the community.

We need to be open to challenge existing practices. Different rehabilitation techniques such as sensory stimulation[54] are now being studied with encouraging results. Systems that have been traditionally used such as day hospitals, are now openly challenged.[17] Pharmacological augmentation of therapy may become a reality.[27] The perception by some staff and general public that "therapists" are the only ones able to carry out rehabilitation must be discarded. Nurses and families should be educated and trained so that "rehabilitation" is done all day, every day. This may be professionally threatening with a change in roles, but should improve the patient's lot. Research is needed to evaluate outcomes and to assess those measures that matter to patients and carers such as independence in extended activities of daily living tasks, quality of life, carer burden, psychosocial functioning and patient satisfaction. Process outcomes (eg. length of hospital stay) and funding measures (DRG) are too simplistic and disadvantage the elderly person with multiple problems.[55]

Conclusion. Rehabilitation after stroke is a life long process that extends well beyond the hospital walls. It can be likened to a marathon, the hospital phase being merely the starting line and the first 2-3 kilometres (and occasionally revisited en route), but the majority of hard work is in the community pacing him/herself for the long distance ahead. Encouragement and refreshments are given from the drink stations along the way. Bursts of rehabilitation may also be required to keep the momentum going. The coach cannot run the race, nor can the health professional do the rehabilitation - the patient does with our guidance. Our rehabilitation, akin to long training runs, must gradually extend the capabilities of the person, always fostering independence and individual responsibility, whilst minimising disabilities and dependence on us. If we do this, the stroke person will be best equipped to tackle the daunting race ahead.

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VIEWPOINT

Lost in the smoke: tobacco control in New Zealand during the 1990s

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What were the effects of government attitudes during the 1990s on tobacco control in New Zealand? To assess those effects, we looked at the situation for tobacco control in 1990 then examined aspects of subsequent government tobacco control policy. We found that the actions by government signalled generally ambivalent or negative attitudes. There were few major developments in tobacco control, and smoking prevalence tended to plateau.

Published data for the period were supplemented by documents from the New Zealand Treasury and Ministry of Health (MoH) obtained under the Official Information Act. The documentary material was checked and given context by 15 anonymous or attributable interviews with policy makers, officials and advocates during 1996-98.

The situation to 1990

During the period 1984 to October 1990, comparatively rapid progress on tobacco control was made in New Zealand, particularly with taxation and legislation. Tax driven price rises caused the average working time to earn 20 cigarettes to rise from 12 to 19 minutes during 1985-1991.[1] Mass media campaigns on the dangers of tobacco were run during 1986-90.[2] The prevalence of adult (15 years and over) smoking dropped from approximately 32% in 1984 to 27% in 1990. The consumption of tobacco fell from 2779 cigarette equivalents (CEs) per adult in 1984 to 1957 CEs in 1990, an average fall of 137 CEs per year.[1] In August 1990, the Smoke-free Environments (SFE) Act introduced legislative control of tobacco advertising and smokefree environments.[3,4] It also created the Health Sponsorship Council to promote the smokefree message and to replace tobacco sponsorship.

In late 1990, the National Party was elected to office, and remained dominant in government through to the time of writing. Don McKinnon, the National Party health spokesperson, announced in May 1990 that tobacco sponsorship was a fundamental right and that: "A National Government would repeal any legal ban on sponsorship as long as the product sponsored can be sold legally in New Zealand".[5] However, the degree of the objection to the SFE Bill within the National party appears to have varied.

Events since 1990

In 1991 legislation was introduced under urgency by Government, to allow exemptions for tobacco sponsorship of international events in New Zealand (the SFE

Amendment Act 1991). The Government was 'concerned that the sweeping nature of the sponsorship restrictions might unnecessarily isolate New Zealand from future multinational sporting events'.[6] Another Bill was then put forward, which proposed to repeal the whole sponsorship section of the 1990 SFE Act. Eventually the only change was that the start of the sponsorship ban was postponed for two years, to begin in 1995. In 1994, amendments to the SFE Act were proposed, to raise the purchase age for tobacco to 18 years or over, restrict the sale of smaller sized packets of cigarettes, enhance health warnings and limit price notices.[7] The policy formation and legislation processes were protracted but the Bill was strengthened and eventually passed in 1997.

Dissolution of the Public Health Commission in 1995 meant the loss of a substantial volume of ongoing independent official advice on tobacco.[8,9] While the National Health Committee (NHC) has been able to offer public health advice since 1996,[10] they have given no substantial comment on tobacco control beyond a set of smoking cessation guidelines.[11] In 1995, the Government agreed with the tobacco industry on a code of practice for retail price notices for tobacco, a return to the type of agreement used before 1990. However, the code was removed in 1998 by the 1997 amendments to the SFE Act.

Particular interventions and the effects

By mid-1995, there had been only two successful prosecutions of retailers for selling tobacco to under-age (under 16 years) buyers,[12] but in the two years from September 1996, 70 convictions were obtained. Between 1997 and 1998, sales to 14 year-old children dropped from 16 per 100 monitored buying attempts to five per 100.[13] Despite such interventions school survey data suggests a general increase in smoking prevalence during the 1990s among young people.[14]

There were tobacco tax increases beyond the consumer price index (CPI) rate in 1991 and 1998, and in 1995 the tax on loose tobacco was equalised with that on cigarettes.[15] The price rise in 1991 caused the average working time to earn 20 cig arettes to rise from 19 to 22 minutes, where it remained until moving to 24 minutes with the 1998 tax increase.[1,14]

Between 1991 and 1995 there were no major anti-smoking campaigns[12] in the mass media, although there was an active programme of smoke-free sponsorship by the Health Sponsorship Council. In 1996, the Ministry of Health began the low budget 'Hei Aha te Kaipaipa - Why start?' multimedia campaign.[15] This was largely designed to help reduce the uptake of smoking amongst young people, including Maori. The other government-funded tobacco control initiatives with Maori during this period were also modest in scale.[12,16] During the 1990s smoking cessation remained the Cinderella of New Zealand tobacco control, with no comprehensive programme addressing the needs of smokers wishing to quit. The first appreciable government funded interventions were the launch in 1999 of a national free phone quit-line and a low-budget mass media campaign to promote smoking cessation.

The total identifiable amount spent by government on tobacco control has been less than $13 million annually[17] (MoH document 27 Feb. 1998). This compares to the annual government revenue from tobacco sales of around $800-850 million during 1997-98 (Treasury document 9 July 1997), and the estimated tangible costs in 1990 of tobacco use in New Zealand of $1220 million.[18]

From 1990 to 1998, the prevalence of adult smoking was relatively stable (changing from 27% to 25%) and the rate for Maori adults smoking also remained steady at around 50%.[15] Nevertheless, the consumption of tobacco declined from 1957 CEs per adult in 1990 to 1371 in 1998, an average drop of 74 CEs per year for the period.[1,19]

The role of the tobacco industry

While much of the pressure on government from the industry is not recorded, some details of the effects were found. Examples include the persuasion by the tobacco industry of the Minister of Health to direct the Ministry to re-consult over SFE Act amendments (MoH, 27 Oct. 1995). The industry in 1996 asked Cabinet to defer any decision until other process steps were carried out, and Cabinet 'invited' the Minister of Health to investigate further (Cabinet 96/7/7). Legal threats have also been used to slow or halt developments in the control of tobacco price notices and the plain packaging of tobacco (MoH 7 June 1995; MoH 27 Oct. 1995).

Promotion by the industry persisted with retail displays of tobacco packages being widely used as advertisement substitutes.[20,21] The promotion and 'normalisation' of smoking in material sourced from outside New Zealand also continued in films, videos, magazines and foreign sports on TV.[22,23]

The impact of government attitudes

Attitudes of indifference or neglect by the dominant governing politicians during the 1990s appear to have had a crucial impact on New Zealand Government tobacco control policy. Legislative reversals were introduced and a voluntary code for retail advertising was reinstituted for a period.

Enforcement of the SFE Act was almost invisible until 1995 and the relative level of tobacco tax was to a large degree frozen between 1991 and mid-1998. Furthermore, tobacco control campaigns were absent or minimal in the mass media and little attention was given to supporting smoking cessation by Maori and low-income New Zealanders. Indeed, direct government spending on tobacco control activities remained at under 2% of the government revenue raised from taxation of tobacco sales. Further signals from ministers and government have included the relatively timid tobacco control legislation asked for by government in 1994, and the lack of priority in resources and ranking given to that legislation until 1997. The extent of the neglect of tobacco control appears to stem from the general approach of post-1990 governments. By that neglect these governments gave a clear sign to officials and the public that tobacco control was not a priority. This disadvantaged health advocates, within and outside officialdom, in their work for taxes and other measures that require support from non-health sector official agencies.

Despite the efforts of health sector officials and the two Associate Ministers since 1997 who were committed to change, government tobacco control since 1990 has had minimal progress. It is tempting to point to the slower decline of consumption and static rates of prevalence, especially during 1994-97, and suggest a causal link to the lack of substantial government policy. The reasons for the slower reduction in consumption and prevalence are complex, however, and we can only say that relative government inaction is a prime suspect for the generally poor progress.

The underlying origins of government policies

New Zealand tobacco control in the 1990s, as in other countries, reflects some of the problems of protecting and promoting health in general. The political and state sector environment neglected long-term benefits in favour of short-term considerations. The dominant political environment also appeared, in general, to see the world as composed of autonomous individuals rather than individuals within communities.

Behind the lack of tobacco tax rises for most of the period has been the debate at a political and bureaucratic level over the value and desirability of such taxes. Treasury has consistently advised against tobacco tax increases, as not sufficiently targeted, depriving smokers of pleasure, and over-recovering the 'identifiable external costs' of tobacco use (Treasury 9 July 1997). Others have estimated these costs to society to be far greater than those considered by Treasury.[18]

The stress on individual and corporate rights has had particular repercussions for tobacco control. The 1998 New Zealand Government position on rights in this context says 'weighting is given to individual choice where the costs of this choice are not borne by others'.[24] The international tobacco industry has very important precedents at stake when governments attempt to curtail their 'rights' by controls on the presence of trademarks, or controls on packaging. Their assets at risk include brands such as Marlboro which is valued at $33 billion.[25]

New Zealand is heavily dependent on external trade and therefore on the goodwill of major trading countries and blocs. Because of that the New Zealand Government has been wary of any tobacco control intervention, such as plain packaging, which may be interpreted as a 'restraint' on international trade.

Tobacco control in New Zealand is disadvantaged politically, since many of its potential beneficiaries tend to have little political power. Maori and low-income New Zealanders should have been the prime beneficiaries of tobacco control because of their higher smoking prevalence rates and their higher rates of tobacco-related disease.[26-28]

Finally, in New Zealand and elsewhere, the difficulties of countering the tobacco industry's political resources (lobbying, public relations and legal) may be a crucial obstacle. In the first rank of these difficulties are the unknown's in lobbying. "One of the biggest problems that we face now with smokefree political activities, is the unknown as to what happens behind closed doors. That the fight is not in the newspapers, it's not in the street, its not in the courts in New Zealand. The fight is behind politicians' closed doors. So it is very difficult to know how many you need in a caucus or Cabinet,... because you are dealing with an unsighted rival." (Interview with Dr Boyd Swinburn of the Smokefree Coalition, February 1997.)

Conclusions

Tobacco control developments in New Zealand in the 1990s suggest that the lack of a substantial commitment by governing politicians is a major barrier to effective progress in tobacco control. That contention in turn suggests the need for a tobacco control strategy by non-government health advocates that is largely political.

This view argues that the way political parties are regulated, the vulnerability of politicians to hidden pressure and the resources available to tobacco control advocates are as important as specific tobacco control interventions in deciding population health outcomes. It argues that long-term tobacco control outcomes partly depend on public health advocates obtaining sufficient information on the political forces that affect tobacco control.

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Disclaimer. This work does not necessarily reflect the views of the Australasian Faculty of Public Health Medicine (NZ) or any agency for which the authors have undertaken contract work in tobacco control. A full bibliography of the documentary source materials is available from the authors.

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Geographic perspectives on hospital restructuring and its impacts in New Zealand

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The introduction of the internal market in health in 1993 led to important changes in the provision of hospital care in New Zealand. Despite some evidence of efficiency gains, including a decline in costs per hospital discharge and length of stay, fiscal problems and issues of access to services, particularly politically contentious waiting lists, persist. Despite reviews of the impact of the reforms,[1,2] evaluative research on the spatial, social and economic aspects of change in health services delivery remains fragmentary. In reviewing recent changes in the hospital system, this paper has two specific aims; (1) to outline some of the geographic variations in patterns of change in hospital services, and (2) to highlight questions in need of further research. Given the dearth of research, especially in the area of rural health policy, I suggest that a number of key themes require attention.

Changing patterns of hospital financing and service provision

One characteristic of contracting in the internal market has been increased budget deficits on the part of Crown Health Enterprise/Hospital and Health Services (CHE/HHS) providers. This could be due to a number of reasons: HHSs may be delivering services above their contracted levels and thus incurring costs for which they receive no payment; or their contract prices may be too low.[3] For whatever reason, for the financial year ending March 31 1998, most CHEs/HHSs suffered financial deficits (Table 1). All but two (Northland Health and South Auckland Health) operated at a loss. By comparison, the accumulated Health Funding Authority (HFA) deficit was miniscule. Although public funding of CHE/HHS services has increased by 5.2% in real terms since 1993, total funding per capita is still 8.1% lower than in 1989.[4] It would seem that the modest increases in funding have not been sufficient to cover increased costs and thus continued HHS deficits must be put in the context of a long period of under investment in public hospital services.

One response to deficits has been for CHE/HHSs to exit from hospital services. Figure 1 shows CHE/HHS exits over the period 1993-99. It should be pointed out that the figure is selective in that it excludes a large number of service rationalisations which took place within particular institutions, such as the deinstitutionalisation of patients from Templeton Hospital by Healthlink South. Immediately apparent is that 21 of 27 exits have occurred in two regions, the Midland and Southern areas of the HFA. Two factors are important here: the impact of different RHA/HFA strategies and the impact of CHE deficits. In terms of purchasing strategy, the Midland RHA was seen as being both the most fiscally conservative of the RHAs (it had the smallest accumulated budget deficit in both 1996 and 1997) and more aggressively entrepreneurial, both in primary care where it alone negotiated risk sharing contracts with general practitioners[5] and, in the case of hospital exits, where six of the eight Midland CHE exits went to private 'for profit' providers.

In terms of the pattern of budget deficits. CHE/HHS financial performance generally has been worst in the Central and Southern regions (Table 1). The effects of deficits are being felt most acutely in the Southern region as a result of the implementation of a new population-based funding formula and the consequent south to north reallocation of funds. Reflecting such pressures, between 1997-98 the two southernmost HHSs, Healthcare Otago and Southern Health, ranked first and third in the rate of growth of accumulated deficits. Healthcare Otago also became the first HHS to withdraw completely from the provision of rural health services.

The pattern of CHE exits is reflected by changes in the number of public hospital beds (Table 2). The greatest decline occurred in the non-acute sectors and, not surprisingly, this was highest in the Central and Southern regions. However, a number of points can be made. First, contrary to popular impression, between 1993-99 there were few actual hospital closures: these were in Stratford, Marton, Pahiatua, Milton, Tapanui and Roxburgh. In all other cases, private or voluntary providers assumed ownership of former public hospitals and developed replacement inpatient services in the same institution or in new purpose built buildings. Second, despite controversy surrounding CHE/HHS decisions to downgrade or close rural hospitals, the level of rationalisation since 1993 was generally less than that experienced in the five years preceding the reforms. This was true for all types of hospital and only in the case of psychiatric care, where deinstitutionalisation continues,[6] did 1993-98 national rates of change approach those attained previously. Third, while the decline in public bed numbers in the five years after the 1993 reforms was less than previously, the private sector increased its share (from 21% to 39% of all beds or from 27 to 43% of all non-psychiatric beds, 1988-98), but with some regional differences. While the Northern RHA remained the most privatised region, most of the change that occurred between 1993-8 took place in the remaining three RHAs. CHE exits also led to different privatisation outcomes in different regions. In Midland these exits resulted in an increased presence of for

Table 1. Changes in CHE/HHS financial performance by RHA/HFA 1996-98.

RHA/HFA	Surplus/ deficit $M 1996	1997	1998	% Change 1996-98	Accum Surplus/ deficit $M 1996	1997	1998	% Change 1996-98
Northern	-41.2	-33.5	-27.5	-33.3	-155.3	-188.1	-215.6	38.8
Midland	-26.2	-29.2	-31.9	21.8	-110.4	-139.5	-171.4	55.3
Central	-69.5	-105.9	-61.5	-11.5	-176.2	-281.9	-343.4	94.9
Southern	-31.8	-59.4	-83.6	162.9	-118.8	-178.2	-261.8	120.4
New Zealand	-168.7	-228.0	-204.5	21.2	-559.6	-787.7	-992.2	77.3

Source: CHE/HHS Annual Reports, 1995/96 - 1997/98. CHE: crown health enterprise. HHS: hospital health service. RHA: regional health authority. HFA: health funding authority.

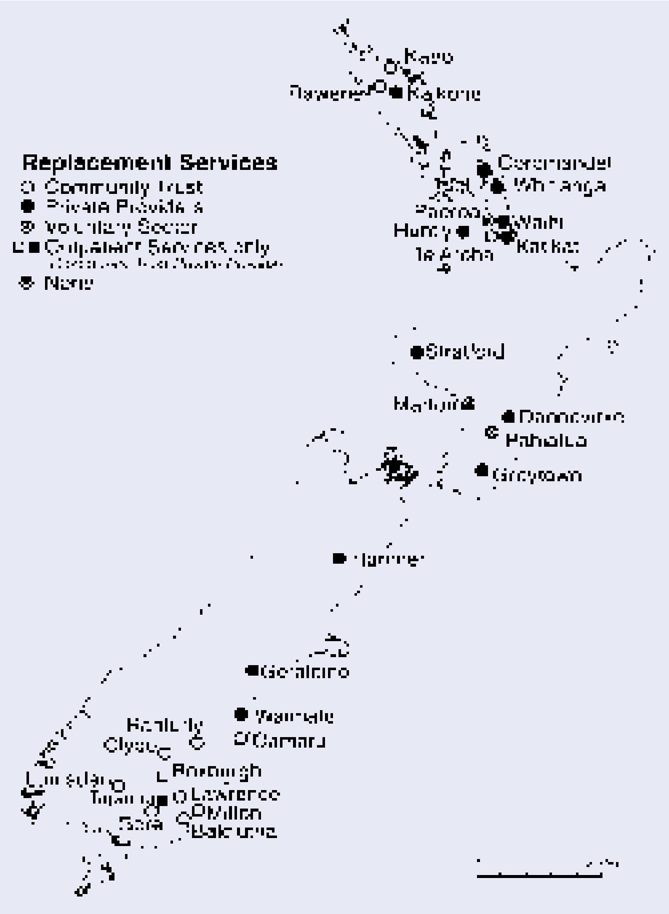

Figure 1. CHE/HHS exits from hospital services 1993-99.

profit providers in the geriatric sector. In other regions, community charitable trusts appear to be the dominant emerging organisation form. Finally, there has been a marked centralisation of public surgical services in larger base hospitals, with many smaller centres, such as Taumaranui, Oamaru and Balclutha, experiencing a loss or downgrading of their surgical services and declining hospital admissions.[7] Private surgical services have shown less centralisation and this has also been true of private geriatric hospitals. Since 1993 these have expanded most in regional cities and towns where CHE exits have been greatest.

The patterns of change in hospital services cannot be attributed solely to the effects of the 1993 reforms but reflect also a continuation and intensification of earlier rationalisation trends. The drop in public bed numbers, for example, is a long-term trend consistent with international experience associated with increasing cost pressure, changes in clinical practice (eg, increased rates of day surgery, care of the mentally ill in the community) or changes in the pattern of demand (eg, maternity care).

Addressing processes and impacts of restructuring – some neglected research questions

The exiting of CHE/HHS services raises a large number of issues for further research. These can be grouped under four general headings.

1. Understanding processes of change. It is apparent that patterns of change in the provision of hospital services have been uneven. This is due partly to contextual factors such as RHA and CHE management policies and levels of fiscal deficit, partly to political factors such as community resistance or perhaps the location of certain hospitals in key electorates, and partly to demographic changes such as migration and population growth. In view of such trends, a research agenda should perhaps have the following key objectives: to understand why regional differences in RHA policy making emerged in the first place; to examine the extent to which local policy decisions have been shaped by central government monitoring and control; to determine the relative effect of different contextual variables on local policy outcomes (given evidence that patterns of rationalisation have differed among similar types of communities such as Ashburton and Balclutha); to determine to what extent regional differences in policy outcomes were an important element affecting the decision to centralise control over purchasing decisions; and to monitor the implications, in terms of access, costs of care or patterns of local control, of this change. For example, in New Zealand, as in Britain, the quasi-market had little effect upon already established ties in different localities with purchaser contracts mainly involving local providers.[8] But will this continue to be the case? Will moves toward greater centralisation and the quest for greater efficiency result in a more radical reallocation of contracts away from traditional providers?

2. How much centralisation is justified? Questions remain over the justification for CHE/HHS exits from rural services. These have frequently been justified on cost grounds. The 1996/97 Personal Health Funding formula

Table 2. Number of public and private share of non-psychiatric hospital beds by region and urban-rural location, 1988-98.

	Number of Public Beds*			% Change	% Change	Private % share	Change in % share	Change in % share
	1988	1993	1998	1988-93	1993-98	1998	1988-93	1993-98
A. By Region								
Northern	3848	3186	3150	-17.2	-1.1	48.3	9.9	0.4
Midland	3644	3145	2957	-13.7	-6.0	33.9	7.1	7.9
Central	4752	3425	3052	-27.9	-10.9	45.0	8.9	13.0
Southern	4590	3673	3299	-20.0	-10.2	38.1	5.8	7.2
B. By urban-rural location†								
Metropolitan	7632	6327	6536	-17.1	3.3	46.5	8.6	0.6
Regional City	5103	4343	4036	-14.9	-7.1	36.8	6.0	11.6
Large Town	1340	1016	831	-24.2	-18.2	30.9	3.3	7.5
Small Town	2759	1743	1055	-36.8	-39.5	35.4	4.5	28.1
Nw Zealand	16834	13429	12458	-20.2	-7.2	41.9	8.4	6.7

Sources: Department of Health, Hospital Management Data Year Ended 31 March 1988, Department of Health, Wellington, 1988; Ministry of Health, Licensed CHE Operated Hospitals and Old People's Homes in New Zealand, Licensing Section, Ministry of Health, Wellington, 1993 and 1998. Ministry of Health, Private Hospitals in New Zealand as at 31 March 1993, Licensing Section, Ministry of Health, Wellington, 1993; Ministry of Health, Licensed Privately Operated Hospitals in New Zealand, Licensing Section, Ministry of Health, Wellington, 1998.

* Public beds include hospital beds provided by community trusts

† Metropolitan 100 000 and over; Regional City 20 000 - 99 999; Large Town 10 000 - 19 999; Small Town <10 000

guide states that "extra costs in rural hospitals are generally due to either the purchase of greater volume, or paying a higher unit cost than in urban areas".[9] The report also states that "we have not focused too closely on identifying which of these issues lead to extra costs", a somewhat surprising admission given evidence that rural hospitals often provide a greater volume of service per patient and have cost structures which reflect primarily the population environments in which they operate. Thus factors such as rural ageing, high rates of rural poverty or poorer access to post-hospital convalescent care have all meant that the average length of stay (ALOS) is usually longer for rural than urban patients.[10] Rather than reflecting some inherent inefficiency in the institution, therefore, higher ALOS in rural hospitals is primarily a result of background contextual factors over which hospital managers have little control.

With respect to higher unit costs the evidence is more ambiguous. On the one hand it has been frequently argued in New Zealand[9] and elsewhere[11] that diseconomies of scale result in higher unit costs in smaller hospitals. Downsizing or closure, therefore, is perceived to result in increased efficiencies in terms of lower costs when services are centralised in larger institutions. Such assertions, however, are open to question. Vogel and Miller,[12] for example, cite a variety of American studies which show that rural hospitals are generally less costly than urban ones, a finding which remains after controlling for confounding factors such as variations in wage structures, scope of services and so on. Thus while CHE/HHS exists from rural hospital services may help reduce deficits, if no clear links exist between downsizing and financial performance (in terms of profitability and liquidity) as suggested in American research,[13] then such strategies may not necessarily improve the efficiency of HHSs as provider organisations.

New Zealand evidence on unit costs of provision, although fragmentary, appears to confirm the findings of overseas research.[3] For instance, a 1991 Canterbury Area Health Board Report on rural hospitals indicated that 'closure of rural hospitals and provision of alternative services to the same level as current hospital services is a more expensive option ... than retention of present rural hospital services.'[14] Similarly, arguments that patient safety is jeopardised in smaller hospitals is not supported by a recent review of American evidence.[15] Findings regarding hospital size and its relationship to patient volumes and mortality outcomes were inconclusive. Indeed, most conditions and procedures for which volume effects on mortality have been found (such as cardiac surgery) typically do not pertain to small rural hospitals. The presence of such evidence and the absence of a clear economic rationale, therefore, raises questions as to the nature and validity of the data which have guided recent 'rationalisations' of public hospital services and the extent to which such decisions can be justified.

3. Impact of restructuring on access to care. Despite a substantial overseas literature,[11,16,17] with few exceptions,[18] little is known about the impact on access to care of hospital downsizing and closure in New Zealand. When considering access in terms of admission rates, waiting and travel times, a number of questions present themselves. First, considerable small area variations remain in acute and elective discharge rates.[3] This may be due to a number of factors, including the reinforcement of historical supply driven patterns or the deliberate maintenance of high rates of utilisation in order to demonstrate local need. Second, it is not clear to what extent the substantial variations in HHS waiting time for surgery have been affected by centralisation. Waiting times have traditionally been less in smaller institutions[10] leading to interregional inequity. In the absence of a substantial interregional reallocation of resources, closing or downgrading rural hospitals simply means an increased burden on their urban counterparts. Rather than increased centralisation, it has been suggested[19] that larger urban base hospitals transfer selected groups of patients to provincial hospitals and already there are some indications that this is occurring. Third, it is not clear to what extent the presence of private sector alternatives has continued to influence public sector waiting lists, an effect apparent at the end of the 1980s.[20] Finally, the centralisation of facilities especially evident in surgical services means that rural patients have to travel further which stretches social support mechanisms.[21] Furthermore, centralisation of facilities imposes a considerable economic burden upon rural residents providing support for family or friends in urban hospitals. This is all the more so given the recent (1996) imposition of stricter eligibility criteria for transport, accommodation and living costs by RHAs. Although it is clearly uneconomic to provide higher order surgical services in smaller hospitals, greater attention needs to be paid to the regional framework of service institutions and the extent to which they are able to handle emergency and acute admissions. The HFA's 1998/99 funding agreement with the Minister makes a commitment to ensuring access to services for rural people within certain travel times.[22] The extent to which these are met is quite variable,[3] with further evaluation required for patterns of patient admissions in terms of their origins, destinations and outcomes. Such analysis is important given evidence that distance barriers have a negative impact on both the utilisation of services[23] and health outcomes[24] and the need for both funders and providers to be held more accountable for changes in population health.

Processes of centralisation seem to be less problematic for geriatric services which have been retained in many communities either in privately or community owned hospitals and rest homes. While means and asset testing, in theory, determines access to any of these beds whether in public or private institutions, levels of institutionalisation nevertheless seem to be dependent upon the local provision of care. In the Waikato, for instance, cities and larger towns had much higher rates of institutionalisation than smaller communities, reflecting both the absence of private investment in such places and a resistance on the part of the rural elderly to move to other centres for care.[25] Although research has begun on the implications of service changes for the rural elderly, recent patterns of rationalisation in the geriatric and rest home sector and their effects need to be better documented.

4. Impact of reform on communities and health care providers. Research on hospital closures has concentrated more on the reasons for closure and less on the impact on communities where this has occurred. Given that rural residents gain both a sense of security and economic vitality from their local hospitals, it is important that researchers pay more attention to the psycho-social impacts of closure. While overseas research has begun to investigate such issues, with the exception of recent work by Kearns and Joseph[5] and Joseph and Chalmers,[26] the local literature is sparse. Thus numerous questions remain. For instance, with respect to community trusts, while they have been seen as a form of community empowerment, has the evolution of such 'do it yourself care' resulted in intolerable administrative and economic burdens being placed on smaller rural communities especially when they have to raise considerable capital in order to maintain local services? Also, what impact has the downsizing and privatisation of rural hospital services prompted increased population outmigration and thereby contributed to the reducing long-term sustainability of rural communities?

Changes in the provision of hospital services have had an impact on local GP providers. One effect of the removal or reduction of hospital services has been that the gap has increasingly been filled by GPs who have become more involved in various ways,[27] in providing trauma care. The extent to which such added responsibilities have been a factor in the increased 'burnout' of rural doctors, as suggested by a recent Southland study,[28] is unclear.

In New Zealand it is suggested that the gap left by the removal or reduction in hospital care is being filled by 'integrated care' projects involving both the primary and secondary providers offering 'seamless services' or 'one stop shopping' for health care needs. These have the potential to reduce duplication of services, improve continuity of patient care and to reduce levels of hospitalisation. Given the number of new healthcare initiatives, however, close attention needs to be paid not only to the effects of hospital downsizing or closure, but also to the geography of change in terms of how new institutional arrangements are affecting access, costs and the quality of care in different parts of the country. Given that government has encouraged communities to consider a variety of integrated care arrangements, monitoring both the short and long term implications of such changes will be an important research priority. For instance, will integration produce more satisfying work environments for rural GPs and improve doctor retention in smaller communities, areas which often have unacceptably high rates of doctor turnover.[29]

Conclusion

This paper has examined recent geographical changes in the provision of hospital services and raised a number of questions regarding recent processes of restructuring and their impact upon the provision of hospital care. In New Zealand, as elsewhere, changes in hospital provision in the 1990s must be seen in the context of the long-term decline in the relevance of hospitals as therapeutic environments and the search for more cost and health effective forms of treatment in community settings. Given that hospital rationalisation is likely to continue, questions remain about the appropriate number of hospital beds that are necessary to meet future health care needs. With a public bed ratio which has declined from 5.9 to 1.9 beds per 1000 population (1983-97), giving a rate which is currently lower than that of most other countries, the ability to make further reductions would seem to be highly dependent upon the development of new institutional alternatives. These are now beginning to occur, but whether such trends will lead to an improvement in local health services and create feelings of security and well-being, once associated with the 'hospital on the hill', remains to be seen.

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