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CONTENTS

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Viewpoint

100 Years Ago in the NZMJ

Proceedings

Medical Images

Methuselah

Letters

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Obituary

Notices

Book Reviews

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THE NEW ZEALAND MEDICAL JOURNAL
Vol 120 No 1266 ISSN 1175 8716

In this Issue in the Journal

Cancer mortality by occupation among New Zealand women: 1988–1997
Hilda Firth, Andrew Gray, Lucy M Carpenter, Brian Cox

This study looked at deaths from cancer among women in New Zealand by their occupation over the time period 1988–1997. Women may be more susceptible to hazards in the workplace than men. The study suggests that further research in this area is required. The increased cancer mortality among nurses and other health professionals requires further investigation.

Women with breast cancer in Aotearoa New Zealand: the effect of urban versus rural residence on stage at diagnosis and survival
Hayley Bennett, Roger Marshall, Ian Campbell, Ross Lawrenson

Despite concerns about access to health care for rural people in New Zealand, there is little research that compares health outcomes for urban and rural people. This study looked at women with breast cancer to see whether urban/rural residence affected how early the cancer diagnosis was made, or how long women survived. No difference in outcomes were found between urban and rural women with breast cancer, regardless of how urban and rural were defined.

Hyperplastic polyposis in the New Zealand population: a condition associated with increased colorectal cancer risk and European ancestry
Andrew Yeoman, Joanne Young, Julie Arnold, Jeremy Jass, Susan Parry

Hyperplastic polyposis is a recently recognised but uncommon large bowel polyp syndrome. Hyperplastic polyps were not previously considered to pre-cancerous but if they are large or multiple and not confined to the lower large bowel they are now recognised to be associated with an increased risk of bowel cancer. It is important to identify this syndrome as bowel cancer can be prevented by close monitoring of the polyps by colonoscopy or by surgery if the polyps are multiple. First-degree relatives on the same side of the family may also have an increased risk of bowel cancer and regular bowel screening by colonoscopy is recommended. This paper reports cases from one large city hospital in NZ. The catchment population of this hospital is multi-ethnic comprising less than 50% Caucasian. However, all identified cases were Caucasian raising the possibility that this condition is associated with European ancestry.

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The influence of hospital environment on postoperative length of stay following major colorectal surgery
Ryash Vather, Kamran Zargar-Shoshtari, Patricia Metcalf, Andrew G Hill

There has been relatively little research performed looking at whether environment plays a role in recovery after surgery. Our study looked at patients undergoing elective colorectal surgery at two different centres—Manukau Surgery Centre (MSC)—a stand-alone facility purposely built for only elective surgery—and Middlemore Hospital (MMH)—a general tertiary care hospital. Both have an identical source population and are serviced by the same surgeons. It was found that patients who were operated on at MSC recovered faster. It was concluded that this was due to a difference in environment, as almost all other factors were constant.

Mosquitoes feeding on brushtail possums (*Trichosurus vulpecula*) and humans in a native forest fragment in the Auckland region of New Zealand
José G B Derraik, Weihong Ji, David Slaney

A brief study was carried out to identify the native and introduced mosquito species feeding on possums during daytime in a native forest fragment (Coatesville forest) in the Auckland region; 22 specimens of the introduced mosquito *Aedes notoscriptus* were collected on humans, with a further 9 specimens collected on possums. The only other species recorded was an individual specimen of the native *Coquillettidia iracunda* trapped while feeding on a possum. The latter seems to be the first record of a native mosquito feeding on these animals in New Zealand. The potential public health implications of these findings are discussed. For example, in Australia, *Ae. notoscriptus* mosquitoes are believed to spread Ross River virus (RRV) including from possums to humans, and it could potentially play a similar role in New Zealand if RRV (which causes Ross River fever—a debilitating viral illness) is established here.

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Elderly access to medical care: should age be a factor in deciding management?

Joel Yap, Leo Anthony Celi

> "But neither one person, nor any number of persons, is warranted in saying to another human creature ripe in years, that he shall not do with his life for his own benefit what he chooses to do with it."
>
> John Stuart Mill, *On Liberty*

An 89-year-old gentleman is brought in to the Emergency Department with epigastric and back pains. A CT scan reveals a leaking abdominal aortic aneurysm (AAA). He has no other significant comorbidities and lives independently. This is a clinical scenario that is increasingly being encountered in practice. Should this gentleman be offered surgery?

Michael DeBakey, a pioneering heart surgeon who developed the DeBakey classification of aortic dissection, made headlines in 2006 when he, at age 97, underwent open heart surgery for an aortic dissection at Baylor Hospital where he was a consultant. He required mechanical ventilation for 6 weeks, renal support therapy, tracheostomy, and gastrostomy, and spent more than 8 months in the hospital prior to discharge, at a cost exceeding US$1 million. His successful outcome sparked debate on how much is society willing to spend to prolong life.

Everyone has an unqualified right to health care. As living conditions and medical care improve, the life expectancy of the population continues to rise. With that, the prevalence of degenerative and chronic diseases such as diabetes, osteoarthritis, malignancies, and cardiovascular diseases increases.

As the baby boom cohorts reach retirement age, the New Zealand population will experience rapid structural aging.[1] The pressure on government health expenditure will amplify and ethical issues regarding investment in disability-reducing versus life-extending services will arise.

According to the Ministry of Health, the percentage of older people above 65 and 85 years of age in New Zealand were 11.9% and 1.3% respectively in 2002. It is projected to increase to 22.4% and 4.3% respectively by the year 2051.

Health expenditure is exponentially related to age. An ageing population affects the economy as well, because the proportion of the population that is of working age diminishes, thereby exerting pressure on economic output. In their report, the New Zealand Ministry of Health also summarised the projected consumption of health resources by different life-cycle stages (Figure 1).[1]

The elderly are a heterogeneous group of people. The presumption that old age is associated with an unfavourable medical outcome may be statistically accurate but remains a highly undependable predictor of clinical outcome.[2] The elderly are physiologically and psychologically very different as a population and thus directing health care on an age-based policy will not result in an efficient use of resources.

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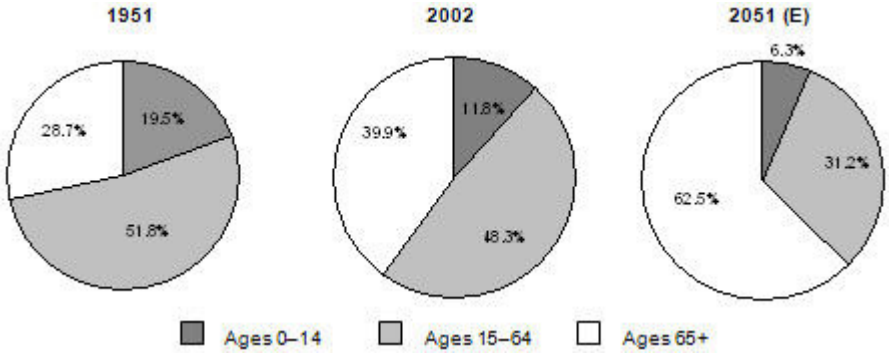
Figure 1. Share of health expenditure, by lifecycle stage, selected years
(**Source:** Ministry of Health. 2051 (E)—characterised by a mortality reduction rate of 1.5% and a disability prevalence reduction rate of 0.5%—is considered the 'central' scenario.)[1]



Some people argue that any amount of health care for the present old would be beneficial to society because everyone, including the young, would eventually grow old and a public policy of health care investment on the elderly would benefit them as well. It promises the young care from diseases, which they would otherwise be forced to anticipate when they are old. Public health care benefits for the elderly population can also help relieve the young of economic burdens they would otherwise have to bear and would allow them to devote more effort to the social aspects of caring for the elderly.[3]

Age should never be used to demean an individual. The value of an individual's life should be respected for its own sake, not for its social or economic benefits. However, certain generalisations are necessary to a degree, as to ignore age suggests that it is an unimportant human characteristic. The use of age as a standard treats everyone alike, aiming that each should achieve a natural life expectancy, whether productive or not.[3]

An aging population, increased prevalence of chronic disease, and the emergence of expensive medical interventions make it increasingly necessary to draw lines and set limits to health care for the elderly.

One way of doing this is to deliberately limit health care for those who lived a normal natural life span, which is not meant to represent abandonment. By doing so, the unavoidable place of death at the end of life is acknowledged and the diverse requirement of people in different age groups is affirmed. Beyond the point of a natural life span, the relief of suffering and preservation of quality of life should be prioritised.[4]

But age-based rationing may fuel discrimination against the elderly and increase tension between the older and younger groups of the population. The Universal Declaration of Human Rights, adopted by the United Nations in 1948, states that people should not be discriminated against because of their age. A scheme which rations based on age devalues older people and threatens security that should come with old age.

Resources dedicated to the health care of the elderly should focus on effective management and prevention of chronic illnesses and accidents. The prevention of illness has long been promoted as the best way to improve the health of the elderly in

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the long run and to reduce health-care costs. It is important to note that a reduction in spending on the elderly does not ensure that the money would be allocated to a better suited area. Such is the mechanics of health politics.

We will be facing situations where we have to decide whether to offer costly medical and surgical interventions such as AAA repair to older patients with increasing frequency. Unfortunately, cost-benefit considerations in the elderly are complex, as benefit is less certain and harm is more likely. Decisions are often strongly influenced by personal beliefs and may not be reflective of societal values. This is an area that requires ongoing discussions between clinicians, policy-makers, and society-at-large.

Competing interests: None.

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Global warming and possums: contributors in the future to new mosquito-borne human diseases in New Zealand?

Edwin R Nye

New Zealand has, so far, been spared from the transmission of mosquito-borne viruses (arboviruses) and other pathogens. Among these viruses are the Ross River virus (endemic in Australia), and strains of dengue virus that sometimes cause outbreaks of dengue fever in the South Pacific region.

The three major conditions that must be fulfilled for virus transmission to occur (either to human or non-human host), are:

- A reservoir of virus in a viremic warm-blooded species, which can include birds as in the case of the West Nile virus;[1,2]
- A mosquito species with vector potential (i.e. can spread infection by conveying pathogens from one host to another such as from possums to humans); and
- An ambient temperature sustained long enough for viral replication to occur in the vector.

Thus animal reservoirs of virus, such as possums, may pose a threat to humans if vectors feed indiscriminately on animal and human hosts.

The mosquito species *Aedes notoscriptus*, reported in this issue of the *Journal* by Derraik et al,[3] is widespread in the North Island of New Zealand, including Auckland and Wellington (where I found a breeding site in Karori cemetery).

Forty years ago, Whataroa virus (an arbovirus) was reported from birds in Westland by Miles et al,[4] however (as pointed out by Derraik et al) outbreaks of known human pathogenic viruses, such as Ross River or dengue, could occur in New Zealand, particularly in summer months when the necessary conditions listed above are present.

This risk could well be exacerbated by effects of global warming which could adversely change the distribution and density of indigenous (or accidentally introduced) mosquito vector species.

The obvious advantages of possum elimination for the New Zealand biosphere can now be seen as having further benefit by reducing at least one potential animal reservoir of arbovirus.

Competing interests: None.

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Cancer mortality by occupation among New Zealand women: 1988–1997

Hilda Firth, Andrew Gray, Lucy M Carpenter, Brian Cox

Abstract

Aim To examine cancer mortality by occupation among New Zealand women, 1988–1997.

Method Proportional mortality ratios (PMRs) were calculated for the six most common general occupations among women: clerical workers, health professionals, teachers, farmers, cleaners and textile workers. Age groups examined were those aged 20–59 and those ≥20 years. Data on occupation was obtained from death certificates.

Results From 1988–1997, annually 12–54% of women had a codeable occupation on their death certificate, leaving 3079 deaths among women 20–59 years, and 7236 in those ≥20 years for analysis. Leukaemia was significantly increased in health professionals aged ≥20 years (PMR=1.52; 95% CI: 1.08–2.09, n=38). In nurses alone, the PMR for leukaemia was 1.42; 95% CI: 0.96–2.01, n=31).

Conclusion This study represents the first systematic examination of cancer mortality by occupation among women in New Zealand. These data should be examined routinely as part of regular surveillance of occupational cancer among women. Avenues for further research identified particularly include an analytical study of leukaemia and other cancers among female health professionals.

Cancer is the leading cause of death in New Zealand (NZ) with 27.5% of deaths in 2002 attributed to cancer. Among women aged ≥20 years, there were 3740 deaths from cancer in 2002, with the leading cancer sites breast, lung, and large bowel making up 47% of the total.[1]

Cancers caused by occupational exposures have been estimated to account for 2–8% of all cancers in men and women, with the figure for women being at the lower end of this range.[2] More recently, a figure for women of 0.7–1.7% has been suggested. Therefore, approximately 24–59 cancers per year in NZ women may be due to occupational exposures.[3]

However, it is thought that exposure to carcinogenic hazards may be under-estimated for women.[4] The National Occupational Health and Safety Advisory Committee (NOHSAC) has highlighted the poor surveillance of occupational diseases and the need for better surveillance systems and information regarding women.[5,6]

Studies of cancers by occupation are needed in women as well as men, as the female reproductive cancers need to be investigated and kept under regular surveillance; furthermore, women may differ from men in the nature, type, and severity of the health outcome developed.[7]

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Also, occupational cancer tends to occur among small groups of people for whom the relative risk is high, but where the risk can be reduced or even eliminated by removal of the hazard and other means of prevention.

Previous investigations have examined cancer incidence and mortality among employed men in NZ.[8,9] Little research has examined this issue among women. There have been difficulties because of the low proportion of women in the paid workforce, and the low proportion of women with an occupation recorded on their death certificate in past years. However, with a larger number of women now in paid employment (58% in the 1996 census), it is timely to investigate cancer mortality by occupation among women using routinely collected data.[10]

Efforts have been made overseas to examine routinely collected data of mortality and cancer to estimate the incidence and mortality of cancer among employed women.[11–15] In the UK, occupational mortality for women was examined for the period 1979–90, with an emphasis on those occupational groups with a high proportion of female workers such as teachers, health-related professions, and textile workers.

Overall, 30% of the deaths among women 30–74 years could be used in the analysis.[11] Other work from the UK has reported, that of the cancers in women registered between 1981–1987, the most commonly reported occupations at cancer registration were "office workers and cashiers", "other service occupations", "retailers and dealers", "nurses", and "teachers, not elsewhere classified" which all accounted for 63% of cancers registered.[13]

In these analyses, 22% of registrations had an occupation consistent with being in paid employment. Significantly increased risks were found for bladder cancer among nurses, and knitters; pleural cancer in carpenters; and lung cancer among carpenters, and publicans and bar staff. In the United States, reproductive cancers by occupation in women were examined using death certificate data, however the proportion of women with an occupation consistent with being in paid employment was not stated. Nurses and pharmacists had significantly increased risks for cancer of the ovary, and physicians an increased risk for cancer of the endometrium.[12]

Data from the Nordic countries has been examined, where use of personal identification numbers (PIN) facilitates individual record linkage between census and mortality records over time.[15] Cancer registrations from 1971–1991 in women aged 20–64 years were linked to data from the 1970 census and 52% were described as "economically active". Nurses had significantly increased risks for cancers of the breast and uterus and a non-significant increase for Hodgkin's disease. Clerical workers had significantly increased risks for cancer of the lung, rectum, breast, and bladder. Farmers had a significantly increased risk for multiple myeloma.[15]

Our study aimed to examine the quality of the data available to investigate cancer mortality by occupation among NZ women for the years 1988–1997, and to examine the mortality from cancer among women by occupational group.

Method

Data on cancer deaths for the years 1988–1997 were provided by the NZ Health Information Service (NZHIS). Age, sex, occupation, race, region of domicile, and type of cancer for deaths were recorded. Because of possible differences between occupation recorded on the death certificate and at census (numerator/denominator bias) results are shown as proportional mortality ratios (PMR) which do not

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use census data in the denominator.[16] The PMR is adjusted for age using 10-year groups. All deaths registered in women with a codeable occupation form the standard for comparison.[11]

To assess the effect of occupation on mortality for both those in current paid employment and those who had ever been in paid employment, PMRs were calculated using two different age-groups: women aged 20–59 years and women aged ≥20 years. Cancer site was coded to the ICD-9th Revision and occupational group to the NZ Standard Classification of Occupations (NZSCO). A codeable occupation is one where the occupation can be ascribed a code from the NZSCO. The 95% confidence intervals are exact and were calculated using the Poisson distribution.[17]

The six largest occupational groups numerically at the NZSCO minor group level at the 1996 census for women 20–59 years were salespersons and demonstrators (NZSCO 521), library, mail and related clerks (NZSCO 414), specialised managers (NZSCO 122), secretaries and keyboard operating clerks (NZSCO 411), housekeeping and restaurant service workers (NZSCO 512), and market-oriented animal producers (NZSCO 612).[18]

To obtain occupational groups of reasonable size, occupations were grouped into eight major female occupations: clerical workers, health professionals, teachers, restaurant workers, sales workers, farmers, textile workers, and cleaners. The data were also examined specifically for cancers of occupational interest. These were defined as those where occupational associations are already established.[2,13] These cancers were pleura, lung, bladder, non-Hodgkin's lymphoma (NHL), and leukaemia.

Results

From 1988–1997, the range of female cancer deaths each year in those aged 20–59 years with a codeable occupation was 24–54%, and 12–36% for those aged ≥20 years (Table 1).

A total of 3079 cancer deaths among women 20–59 years and 7236 among women ≥20 years were available for analysis. Clerical workers were the largest combined occupational group at the 1996 census in both age-groups, with 23% of all cancers being in clerical workers aged 20–59 years, and 22% in those ≥20 years (Table 2).

Table 1. Work-related cancer deaths as a proportion of total cancer deaths in New Zealand women, 1988–1997

Year of death	Total deaths in 20–59 years age group N	Deaths in NZSCO occupation 20–59 years N (%)	Total deaths ≥20 years N	Deaths in NZSCO occupation ≥20 years N (%)
1988	741	181 (24.4)	3008	366 (12.2)
1989	782	211 (27.0)	3110	434 (14.0)
1990	788	222 (28.2)	3177	441 (13.9)
1991	791	263 (33.2)	3225	525 (16.3)
1992	719	235 (32.7)	3095	513 (16.6)
1993	758	314 (41.4)	3260	684 (21.0)
1994	759	333 (43.8)	3311	861 (26.0)
1995	880	415 (47.2)	3483	992 (28.5)
1996	823	445 (54.1)	3556	1197 (33.7)
1997	849	460 (54.2)	3430	1223 (35.6)
Total	**7890**	**3079 (39.0)**	**32,655**	**7236 (22.2)**

NZSCO: New Zealand Standard Classification of Occupations.

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Table 2. Total numbers and cancer deaths by occupational group in New Zealand women, 1988–1997

NZSCO Code	Combined occupation	1996 Census 20–59 years N (%)	Cancer deaths 20–59 years N (%)	1996 Census ≥20 years N (%)	Cancer deaths ≥20 years N (%)
411-422	Clerks	159,303 (25.5)	719 (23.4)	164,562 (25.4)	1553 (21.5)
231-235	Teachers	44,490 (7.1)	336 (10.9)	46,086 (7.1)	751 (10.4)
521	Sales workers	43,134 (6.9)	148 (4.8)	44,712 (6.9)	384 (5.3)
611, 612	Farmers	40,245 (6.4)	116 (3.8)	44,328 (6.8)	312 (4.3)
222, 223*	Health professionals	39,246 (6.3)	336 (10.9)	40,419 (6.2)	976 (13.5)
512	Restaurant workers	29,451 (4.7)	124 (4.0)	30,516 (4.7)	358 (4.9)
911	Cleaners	19,803 (3.2)	57 (1.9)	20,889 (3.2)	92 (1.3)
826	Textile workers	13,125 (2.1)	47 (1.5)	13,788 (2.1)	230 (3.2)
	All others	235,251 (37.7)	1112 (36.1)	242,931 (37.5)	2581 (35.7)
	Total	**624,048 (100.0)**	**3079 (100.0)**	**648,231 (100.0)**	**7237 (100.0)**

*And 322, 323.

The three most common sites for cancer deaths were breast, colorectal, and lung—they accounted for 48.9% of all cancer deaths in women ≥20 years (Table 3).

Table 3. Mortality for common cancer sites in New Zealand women, 1988–1997

ICD code	Site	All deaths ≥20 years N	Deaths ≥20 years in NZSCO N (%)	All deaths 20–59 years N	Deaths 20–59 years in NZSCO N (%)
174	Breast	6085	1599 (26.3)	2312	930 (40.2)
153,154	Colon, rectum	5290	1121 (21.2)	969	396 (40.9)
162	Lung	4577	927 (20.3)	953	310 (32.5)
199	Ill-defined	2366	471 (19.9)	375	151 (40.3)
183	Ovary	1674	394 (23.5)	459	190 (41.4)
157	Pancreas	1309	270 (20.6)	174	67 (38.5)
151	Stomach	1150	221 (19.2)	212	73 (34.4)
200, 202	Lymphoid	1128	275 (24.4)	232	92 (39.7)
204-208	Leukaemia	938	198 (21.1)	224	89 (39.7)
180	Cervix	885	205 (23.2)	472	150 (31.8)
172	Melanoma	762	212 (27.8)	276	138 (50.0)
191	Brain	739	220 (29.8)	303	130 (42.9)
150	Oesophagus	664	106 (16.0)	52	20 (38.5)
203	Multiple myeloma	550	119 (21.6)	71	28 (39.4)
182	Body of uterus	550	117 (21.3)	94	45 (47.9)
	All others	3988	782 (19.6)	712	270 (37.9)
	Total	**32,655**	**7237 (22.2)**	**7890**	**3079 (39.0)**

Cancers of occupational interest are shown in Table 4. The risk of death from pleural cancer was increased in clerical workers in both age groups, with the PMR in those aged 20–59 years being 4.26 (95% CI: 1.16–10.91). Altogether, 27 deaths from pleural cancer were recorded during the time period, with all the other deaths from pleural cancer occurring in women whose occupation was not recorded or was inadequately described.

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Table 4. Proportional mortality ratios (PMRs) for cancers of occupational interest by combined occupational group, 1988–1997

Combined occupation	Type of cancer	Deaths 20–59 years N	PMR (95% CI) 20–59 years	Deaths ≥20 years N	PMR (95% CI) ≥20 years
Clerical workers	Lung	65	0.94 (0.73–1.20)	177	0.99 (0.85–1.14)
	Pleura	4	4.26 (1.16–10.91)*	4	2.95 (0.80–7.54)
	Bladder	5	1.48 (0.48–3.47)	30	1.88 (1.27–2.69)*
	NHL	26	1.45 (0.94–2.12)	64	1.43 (1.10–1.83)*
	Leukaemia	17	0.95 (0.55–1.52)	42	1.10 (0.79–1.49)
	All cancers	719	1.20 (1.11–1.29)*	1553	1.18 (1.12–1.24)*
Health professionals	Lung	33	0.91 (0.62–1.27)	131	1.09 (0.91–1.30)
	Bladder	2	1.21 (0.15–4.37)	10	0.85 (0.41–1.56)
	NHL	5	0.56 (0.18–1.32)	38	1.29 (0.91–1.77)
	Leukaemia	15	1.64 (0.92–2.70)	38	1.52 (1.08–2.09)*
	All cancers	336	1.11 (0.99–1.23)	976	1.14 (1.07–1.21)*
Teachers	Lung	19	0.57 (0.34–0.88)*	53	0.57 (0.42–0.74)*
	Bladder	3	2.02 (0.42–5.90)	9	1.03 (0.47–1.95)
	NHL	7	0.90 (0.36–1.85)	23	1.02 (0.65–1.53)
	Leukaemia	5	0.73 (0.24–1.71)	14	0.77 (0.42–1.29)
	All cancers	336	1.23 (1.10–1.37)*	751	1.12 (1.04–1.20)*
Restaurant workers	Lung	16	0.97 (0.56–1.58)	75	1.44 (1.14–1.81)*
	Bladder	0	–	4	0.80 (0.22–2.04)
	NHL	4	0.98 (0.27–2.52)	14	1.10 (0.60–1.84)
	Leukaemia	7	1.76 (0.70–3.62)	10	0.93 (0.45–1.71)
	All cancers	124	0.92 (0.76–1.09)	358	0.97 (0.87–1.07)
Sales workers	Lung	14	0.96 (0.52–1.60)	52	1.14 (0.85–1.49)
	Bladder	0	–	7	1.65 (0.66–3.40)
	NHL	5	1.26 (0.41–2.95)	12	1.04 (0.54–1.81)
	Leukaemia	4	1.05 (0.29–2.69)	9	0.93 (0.43–1.77)
	All cancers	148	1.23 (1.04–1.44)*	384	1.18 (1.07–1.31)*
Farmers	Lung	14	1.00 (0.55–1.68)	50	1.20 (0.89–1.58)
	Bladder	1	1.45 (0.04–8.10)	2	0.49 (0.06–1.79)
	NHL	2	0.59 (0.07–2.12)	10	0.97 (0.46–1.78)
	Leukaemia	3	0.89 (0.18–2.60)	8	0.92 (0.40–1.81)
	All cancers	116	0.97 (0.80–1.17)	312	1.03 (0.92–1.15)
Textile workers	Lung	5	0.91 (0.30–2.13)	33	0.99 (0.68–1.40)
	Bladder	0	–	2	0.53 (0.06–1.90)
	NHL	2	1.60 (0.19–5.77)	10	1.20 (0.58–2.21)
	Leukaemia	1	0.89 (0.02–4.98)	6	0.92 (0.34–1.99)
	All cancers	47	1.03 (0.76–1.37)	230	1.00 (0.87–1.13)
Cleaners	Lung	10	1.21 (0.58–2.23)	15	1.10 (0.61–1.81)
	Bladder	1	2.97 (0.08–16.56)	2	2.30 (0.28–8.30)
	NHL	3	1.54 (0.32–4.50)	4	1.25 (0.34–3.20)
	Leukaemia	0	–	1	0.37 (0.01–2.08)
	All cancers	57	0.86 (0.65–1.12)	92	0.92 (0.74–1.13)

*95% confidence interval excludes 1.00 so the result is statistically significant p <0.05; CI: confidence interval; NHL: non-Hodgkin's lymphoma; PMR: proportional mortality ratios.

Leukaemia in health professionals was significantly increased in those aged ≥20 years (PMR=1.52; 95% CI: 1.08–2.09). Leukaemia among nurses (NZSCO 223, 323) was examined separately: in those aged 20–59 years the PMR was 1.56 (95% CI: 0.81–2.72), and in those aged ≥20 years it was 1.42 (95% CI: 0.96–2.01).

Sales workers had an increased risk for bladder cancer in the older age-group, but this was not significant (PMR=1.65; 95% CI: 0.66–3.40).

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Table 5 shows results for the female reproductive cancers. PMRs were significantly increased for breast cancer among clerical and sales workers and teachers, with the PMR for teachers aged 20–59 years being 1.35 (95% CI: 1.12–1.63).

Table 5. PMRs for female cancers by combined occupational group, 1988–1997

Combined occupation	Cancer site (ICD code)	Deaths 20–59 years N	PMR (95% CI) 20–59 years	Deaths ≥20 years N	PMR (95% CI) ≥20 years
Clerical workers	Breast (174)	220	1.22 (1.07–1.40)*	357	1.23 (1.11-1.37)*
	Uterus (179, 182)	15	1.67 (0.94–2.76)	34	1.41 (0.97–1.97)
	Cervix (180)	34	0.91 (0.63–1.27)	45	0.92 (0.67–1.23)
	Ovary (183)	47	1.34 (0.99–1.79)	85	1.20 (0.96–1.49)
	Total female (ICD174-184)	319	1.21 (1.08–1.35)*	530	1.20 (1.10–1.31)*
Health professionals	Breast	103	1.14 (0.93–1.38)	198	1.13 (0.98–1.30)
	Uterus	8	1.79 (0.77–3.52)	22	1.34 (0.84–2.03)
	Cervix	12	0.65 (0.34–1.14)	23	0.84 (0.53–1.26)
	Ovary	21	1.19 (0.74–1.82)	59	1.31 (1.00–1.69)
	Total female	148	1.12 (0.94–1.31)	309	1.15 (1.03–1.29)*
Teachers	Breast	113	1.35 (1.12–1.63)*	191	1.32 (1.14–1.53)*
	Uterus	7	1.62 (0.65–3.33)	18	1.40 (0.83–2.21)
	Cervix	18	1.07 (0.63–1.69)	21	0.90 (0.56–1.38)
	Ovary	25	1.56 (1.01–2.30)*	48	1.34 (0.99–1.78)
	Total female	164	1.35 (1.15–1.57)*	282	1.28 (1.14–1.44)*
Restaurant workers	Breast	37	0.93 (0.66–1.28)	75	1.00 (0.78–1.25)
	Uterus	3	1.47 (0.30–4.31)	7	0.99 (0.40–2.04)
	Cervix	11	1.40 (0.70–2.51)	14	1.21 (0.66–2.03)
	Ovary	6	0.76 (0.28–1.66)	17	0.88 (0.51–1.40)
	Total female	57	0.98 (0.74–1.27)	114	0.99 (0.81–1.19)
Sales workers	Breast	49	1.44 (1.07–1.91)*	83	1.28 (1.01–1.59)*
	Uterus	3	1.60 (0.33–4.69)	8	1.28 (0.55–2.52)
	Cervix	4	0.62 (0.17–1.59)	7	0.73 (0.29–1.50)
	Ovary	5	0.71 (0.23–1.66)	10	0.59 (0.28–1.08)
	Total female	61	1.22 (0.94–1.57)	109	1.10 (0.90–1.32)
Farmers	Breast	36	1.00 (0.70–1.39)	60	0.95 (0.73–1.22)
	Uterus	2	1.07 (0.13–3.86)	7	1.23 (0.49–2.53)
	Cervix	10	1.37 (0.66–2.51)	12	1.19 (0.62–2.08)
	Ovary	9	1.28 (0.59–2.44)	19	1.20 (0.72–1.87)
	Total female	58	1.10 (0.83–1.43)	99	1.03 (0.83–1.25)
Textile workers	Breast	13	0.98 (0.52–1.67)	40	0.98 (0.70–1.34)
	Uterus	0	–	2	0.42 (0.05–1.54)
	Cervix	4	1.44 (0.39–3.68)	7	1.25 (0.50–2.57)
	Ovary	2	0.75 (0.09–2.70)	10	0.86 (0.41–1.58)
	Total female	19	0.96 (0.58–1.50)	60	0.94 (0.71–1.21)
Cleaners	Breast	10	0.51 (0.25–0.94)*	14	0.56 (0.31–0.95)*
	Uterus	0	–	1	0.57 (0.01–3.17)
	Cervix	6	1.53 (0.56–3.34)	7	1.57 (0.63–3.23)
	Ovary	5	1.26 (0.41–2.95)	9	1.57 (0.72–2.98)
	Total female	21	0.73 (0.45–1.12)	31	0.83 (0.57–1.18)

PMR: proportional mortality ratios.

Results for cancers (not shown elsewhere) where n ≥3, and at least one PMR was statistically significantly increased are shown in Table 6 (there were no PMRs that were statistically significantly decreased that have not been shown elsewhere).

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Table 6. Other statistically significant PMRs by combined occupational group, 1988–1997

Occupational group	Cancer site	Deaths 20–59 years N	PMR (95% CI) 20–59 years	Deaths ≥20 years N	PMR (95% CI) ≥20 years
Clerical workers	Melanoma	33	1.46 (1.00–2.05)	41	1.12 (0.80–1.52)
	Brain	35	1.45 (1.01–2.01)	61	1.60 (1.23–2.06)
	Pancreas	14	1.13 (0.62–1.89)	62	1.36 (1.04–1.74)
	Colon	52	1.11 (0.83–1.46)	162	1.22 (1.04–1.42)
	Rectum	32	1.46 (1.00–2.05)	81	1.41 (1.12–1.75)
Health professionals	Colon	42	1.73 (1.25–2.34)	129	1.41 (1.18–1.68)
	Hodgkin's disease	2	1.78 (0.21–6.41)	6	2.78 (1.02–6.04)
Teachers	Colon	32	1.43 (0.98–2.02)	96	1.35 (1.10–1.65)
	Multiple myeloma	6	2.35 (0.86–5.12)	18	1.72 (1.02–2.72)
Sales workers	Oral cavity	1	4.46 (0.11–24.85)	4	4.23 (1.15–10.83)
	Rectum	6	1.24 (0.46–2.71)	27	1.81 (1.19–2.63)
	Brain	7	1.42 (0.57–2.92)	16	1.82 (1.04–2.95)
Restaurant workers	Thyroid	1	2.72 (0.07–15.16)	7	4.82 (1.94–9.93)
Farmers	Peritoneum	3	5.95 (1.23–17.39)	3	3.28 (0.68–9.59)
Textile workers	Stomach	3	2.39 (0.49–6.98)	15	1.84 (1.03–3.03)

*There were no significantly low PMRs for any site or occupational group that has not been shown elsewhere.

An increased risk for colon cancer was seen for clerical workers, health professionals, and teachers, with the PMR for health professionals aged 20–59 years being 1.73 (95% CI: 1.25–2.34).

Cancer of the brain was significantly increased in clerical workers in both age groups, with the PMR being 1.60 (95% CI: 1.23–2.06) in the older age-group. Health professionals had a significantly increased risk for Hodgkin's disease in the wider age-group (PMR=2.78, 95% CI: 1.02–6.04). Cancer of the peritoneum was significantly increased in farmers aged 20–59 years, with the PMR = 5.95 (95% CI: 1.23-17.39). Cancer of the stomach was also increased in textile workers with the PMR in those aged ≥20 years being 1.84 (95% CI: 1.03–3.03).

Discussion

This paper represents the first systematic examination of cancer mortality records (including the female reproductive cancers) for women by occupation in NZ. Few cancers which already have well-known occupational associations, such as lung or pleura, had significantly increased PMRs, although the PMR for pleural cancer in clerical workers was significantly increased in the 20–59 year age group (four deaths).

These deaths could represent intermittent exposure to asbestos in the workplace (e.g. clerical staff visiting hazardous areas), or environmental exposure, for example a family member working with asbestos and bringing dust home on clothes.[19] In the latest annual report available from the National Asbestos Register for the period March 1992–July 1998, nine cases of mesothelioma in women were reported, which was approximately half that recorded on death certificates.[20]

Clerical workers also had increased risks for cancer of the bladder, brain, colon, and rectum which have also been observed elsewhere.[11,15]

Leukaemia was significantly increased in health professionals in the ≥20 year age group. When this was examined for nurses alone, the PMR was still increased but was

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of borderline significance. There is conflicting evidence of an association between exposure to some antineoplastic drugs in the clinical setting and leukaemia, but there is little information about handling practices in NZ in the past.[21] Ovarian cancer and Hodgkin's disease were also slightly increased in health professionals, a finding also seen elsewhere.[12,15]

Farmers had a significantly increased PMR for cancer of the peritoneum, although only three cases were recorded. It is likely this is a chance finding, as it was not seen in similar datasets for male farmers in NZ.[22] Most studies of male farmers have found that farmers tend to have lower risks for tobacco and alcohol related cancers, but higher risks for cancers of the haematopoietic and lymphoreticular systems in particular, with the concern being the exposure to pesticides.[23]

For women, of current interest is exposure to endocrine disrupting pesticides such as the organochlorines and breast cancer in female farmers with descriptive and analytical studies being undertaken. To date the results have not been consistent.[24,25] Farmers did not have an increased risk for breast cancer in this study, nor did they have an increased risk for NHL.

Teachers had a significantly increased risk for of death from cancer of the breast, an association seen in some other descriptive studies, but not confirmed in one case-control study.[11,13,26] Teachers also had an increased risk for colon cancer which has been associated with sedentary occupations and lack of physical exercise.[27]

Restaurant workers had a significantly increased PMR for cancer of the lung and thyroid in those ≥20 years of age. An increased risk for lung cancer has been seen in similar studies.[11,13,15] The finding for thyroid cancer is unusual and is probably due to chance; it has not been seen in other similar studies, although there is some suggestion that iodine intake to which iodised salt contributes, or fish consumption, may influence thyroid cancer incidence.[11–15,28]

In a recent study of bladder cancer incidence based on notifications to the NZ Cancer Registry in 2001 it was estimated that of the 48 cases of bladder cancer notified and investigated among women, 2 (4.2%) were considered to be "probable" cases, and 1 a "possible" case of occupational origin.[29]

The relevant occupation of the two "probable" cases was considered to be that of textile worker, where relevant occupation was based on information regarding the risk of bladder cancer obtained a priori from the literature. In our study, two deaths from bladder cancer were recorded for textile workers over the 10-year period.

Sales workers had a non-significantly increased risk for bladder cancer in the wider age-group. A recent meta-analysis of bladder cancer in sales workers concluded that a small risk remained which was not due to publication bias.[30] Textile workers had an increased PMR for cancer of the stomach, although the number of deaths was small.

Stomach cancer has been strongly associated with lower socioeconomic status. It has also been associated with dusty occupations, particularly in studies of men, and associations have been seen in female textile workers elsewhere.[11,27,31,32]

The methodological issues associated with examining cancer by occupation in women using routinely collected data have been reviewed.[7] The main problems relate to sample sizes, accuracy, and completeness of the data. In a UK analysis of

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occupational mortality in women from 1979–90, 45% of women at the 1971 census and 48% at the 1981 census had a codeable occupation.[11]

Overall, 30% of the deaths among women aged 30–74 years during the time period could be used in the analysis. In the UK, data were examined for two age ranges; 20–59 years to investigate deaths during working life, and 20–74 years.

The UK data examined in detail major female occupational groups: teachers, health-related professions, farmers, textile workers, and entertainment and catering workers.[11] A novel approach was applied to routinely collected cancer registration data which involved a graphical display of empirical Bayesian risk estimates, a method which takes some of the limitations of routinely collected data into consideration, particularly the problem of identifying anomalous associations when making multiple comparisons.[32]

Cancer registrations were examined among UK women aged 20–74 years for the time period 1981–1987, where 22% of registrations had a codeable occupation, resulting in 119,227 cancers available for analysis.[13] Data for an extended time period (1971–1990) were also examined for women 20–74 years of age which found that 24.1% of cancer registrations had a codeable occupation, producing 381,915 cases for analysis.[14]

The NZ data presented here had a higher overall level of female cancer deaths with a codeable occupation of 39%, but only 3079 deaths available for analysis. By 1997 over 50% of deaths had a codeable occupation, which would have made the NZ data more useful for analyses of this type. However, it is unfortunate that Statistics NZ stopped coding occupation from death certificates from 1999 onwards, so that this data is now no longer routinely available, although narrative data are still collected. Also, occupation is no longer coded by the NZ Cancer Registry.

The Cancer Registry has not retained occupation for registrations prior to 2000, so registration ratios were not examined. In the Nordic countries, use of a personal identification number (PIN) in mortality records, cancer registrations and the census allows accurate matching of individuals across databases.[15]

Standardised mortality ratios have not been calculated here, as the numerator to denominator bias is considered to be much greater for women than it is for men; that is, the occupation as recorded on the death certificate is not the same as that recorded in the census.

In a recent NZ study, probability matching between census and mortality records for men aged 25–64 years was carried out, which found that only 47% of linked deaths had an occupation recorded in census data collected 2–3 years previously, although 84% of men had an occupation recorded on their death certificate.[33]

Use of the PMR means that only data from the mortality records are examined. Because it is a proportion, if the PMR in one occupation and site is increased, then it may be decreased in another. Similarly, in analyses of this sort, multiple comparisons are being made and 5% of cancer sites may have significantly increased or decreased PMRs by chance alone. The effects of information bias on the PMR estimates in studies of this type are largely unknown. However, restricting the analysis to those aged 20–59 in the first instance is thought to decrease the effects of such bias by increasing the specificity.

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Similarly, restricting the denominator to all employed women also increases the specificity, and may reduce confounding due to parity.[11,13] An underestimation of the PMR could occur due to an individual changing their occupation or retiring during the prediagnosis symptomatic stage of certain cancers. Due to the long latency of many occupational cancers, the occupation recorded on the death certificate may not reflect the relevant exposure of a job held many years previously.[13]

With increasing numbers of women entering the paid workforce, with the concomitant increased risk of exposure to carcinogenic and non-carcinogenic hazards, it is becoming increasingly important that national health records (mortality, cancer registry, and hospital discharge data) are routinely examined for possible associations with occupation. All of these databases should record the occupation of the individual concerned.

Guidelines should be provided to those involved in gathering this information (e.g. funeral directors and hospital staff) so that the importance of obtaining an accurate description of the occupation is understood. The occupation to be obtained needs to be defined (e.g. most recent occupation versus longest held), and recorded in sufficient detail. The need for this has recently been re-iterated in the latest report from NOHSAC.[6]

From the results found here, together with those from overseas studies, a retrospective cohort study of health professionals (including nurses) in NZ may be warranted to assess their cancer risks derived from their occupational environment.

Competing interests: None.

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Women with breast cancer in Aotearoa New Zealand: the effect of urban versus rural residence on stage at diagnosis and survival

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Abstract

Aim To investigate the effect of urban versus rural residence on stage at diagnosis and survival for women with breast cancer in Aotearoa New Zealand.

Methods Women with breast cancer registered in the New Zealand Cancer Registry between 1998 and 2002 were identified, and data extracted on age, ethnicity, domicile code, date of diagnosis, stage, and date of death where death occurred. Domicile codes were used as the linking variable to allocate urban/rural status, and a deprivation score to each case. Regression analysis was performed to investigate the relationship between urban/rural residence and breast cancer stage at diagnosis and survival, whilst controlling for the confounding variables of age, ethnicity, deprivation, and cancer stage (in survival analysis).

Results Urban/rural residence did not have any statistically significant effect on breast cancer stage at diagnosis or survival.

Conclusions This study did not show an urban/rural disparity in breast cancer outcomes, suggesting that geographic location does not affect access to diagnosis, or the effectiveness of breast cancer treatment.

Urban/rural health inequalities have been identified and prioritised in several countries during the past decade. Australia, the United States, and Canada have all found that people living in regional and remote areas have higher mortality rates than people living in urban and suburban areas.[1–5] The major contributors to excess mortality in regional and remote areas appear to be circulatory disease, injury (intentional and unintentional), respiratory disease, and cancer.[1,2]

With respect to cancer, both later stage at diagnosis and poorer survival have been shown in rural residents. Campbell et al investigated over 60,000 patients in Scotland diagnosed with one of six common cancers, and increasing distance from cancer centre was found to be associated with poorer survival. Moreover, a follow-up study by the same research group found that those living further from cancer centres were more likely to present with advanced cancer at diagnosis, and this was thought to account for most of the rural survival disadvantage.[6,7]

Similar results have been found for rural residents with cancer in the United States, France, and Australia.[8–10] Regarding breast cancer specifically, a systematic literature review revealed at least three studies showing rural residents to be more likely to be diagnosed at a later stage of breast cancer than their urban counterparts.[11–13] There was only one study that suggested a survival disadvantage for rural women with breast cancer.[14]

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In New Zealand (NZ), while there are concerns about access for rural patients, little national research compares health outcomes of urban and rural residents. Two of the only such studies done in NZ (on breast and upper gastrointestinal cancer) did not show any difference in cancer outcome by urban/rural residence.[15,16]

This study set out to further explore the question of possible urban/rural health disparity, looking at a recent cohort of women with breast cancer, and using a number of different classification systems for urban and rural residence.

Methods

Women with a diagnosis of breast cancer (ICD-10 code C50) in the New Zealand Cancer Registry (NZCR) between 1 January 1998 and 31 December 2002 were identified (n=11,340); 13 women appeared in the dataset twice because they were registered for a second breast cancer.

Data on date of diagnosis, stage at diagnosis, age, ethnicity, domicile code, and date of death (where death occurred) was supplied by the New Zealand Health Information Service (NZHIS). Domicile code was then matched to an urban/rural residence group and a deprivation score using the NZ Deprivation Score (NZDep) 1996.[17]

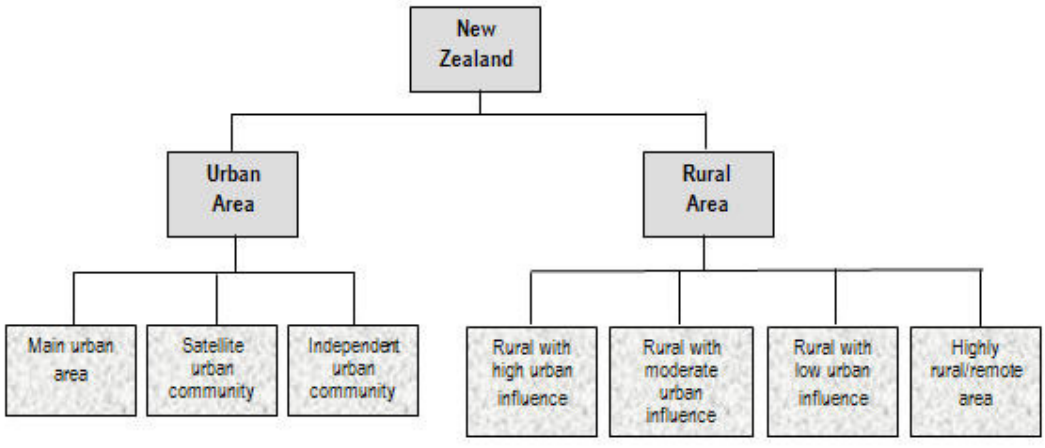
Urban and Rural were classified in three different ways. Firstly the standard Statistics New Zealand classification, based on population size, was used to divide the cohort into main urban areas (≥30,000 population), secondary urban areas (10–29,999 population), minor urban areas (1000–9999 population), and rural areas (<1000 population).[18]

The second classification used was the Urban-Rural Profile Classification, which is based on a comparison between a person's residential address and their workplace address. Main urban areas remain the same, but two other urban categories are defined by the percentage of residents who are employed in a main urban area (see Figure 1).

Satellite urban communities have 20% or more of their working population employed in main urban areas, whilst independent urban communities have less than 20% of their workers employed in main urban areas. The previously defined rural areas are split into four categories, again on the proportion of residents employed in urban areas. This classification thus defines urban and rural areas on the strength of social and economic ties to urban centres, and aims to capture more of the heterogeneity that exists in rural areas.

A rural area with high urban influence (with many residents working in a nearby urban area) is likely to have ready access to urban amenities and services, whereas a rural area with low urban influence will be much more isolated from such services.[18]

Figure 1. Urban-Rural Profile Classification[18]



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The third method for classifying urban or rural residence was to use distance from major cancer centre. Circles were drawn on a large map in bands of distance around the six major cancer centres (Auckland, Hamilton, Palmerston North, Wellington, Christchurch, and Dunedin). Each case's domicile code was located in one of the distance bands of 0–10, 11–25, 26–50, 51–100, 101–200 and >200 kilometres.

Ethnicity, age, and socioeconomic status have all been shown to affect cancer stage at diagnosis and/or survival,[19–22] and were thus deemed to be important confounding variables requiring adjustment in multivariate regression analysis.

Adjustment for cancer stage was also done in the survival analysis. NZCR prioritised ethnicity codes were collapsed into three groups: Māori, Pacific, and non-Māori/non-Pacific—any indication of Māori ethnicity means the individual is prioritized to the Māori ethnic group; age was also entered as a categorical variable in 15-year age brackets. One of the age brackets (50–64 years) was the eligible age-range for BreastScreen Aotearoa during the time of this study. Deprivation score was included in the models as a continuous variable

Logistic regression was used to investigate the effect of urban/rural residence on stage at diagnosis. Stage was dichotomised into "early stage" (localised disease with no nodal involvement = 0) and "late stage" (regional/remote disease = 1). Hosmer-Lemeshow goodness of fit tests confirmed that the logistic model was an adequate fit for the data for all analyses.[23] Cox proportional hazards regression was used for survival analysis.[24] Survival time was the time from breast cancer diagnosis to death (in days) for cases who died. For women still alive, survival time was deemed to be censored at February 2006 (in accordance with the most up to date mortality data in the NZHIS data extract). Stata® version9 was the statistical package used.[25]

Results

In the 5 years spanning 1998–2002 there were 11,340 cases of female breast cancer registered in the NZCR. Table 1 shows that approximately three-quarters of women were ≥50 years of age. Most of the cohort were of non-Māori/non-Pacific ethnicity (89.2%); 8.2% were identified as Māori and 2.7% as Pacific.

Stage at diagnosis was fairly evenly split with 45.5% at "early stage" (localised disease) and 37.1% at "late stage" (regional and remote disease). For 17.4% of cases the stage was recorded as not stated/not known, and this was similar for both rural and urban women. In the 4406 women aged 50–64 years, who would have been eligible for BreastScreen Aotearoa, 53.9% were categorised as "early stage", 34.6% as "late stage", and only 11.5% as stage not stated/not known.

Main urban areas were home to 71.6% of the study cohort according to the population size-based classification, while 18% lived in secondary and minor urban areas, and just over 10% lived in rural areas. In comparison, using the Urban-Rural Profile Classification, 73.3% lived in main urban areas, 3.3% in satellite urban communities, 13.3% in independent urban communities, and 10.2% collectively in rural and remote areas.

Just under a third of the cohort lived within 10 km of a cancer centre. Another third lived between 11–50km, 15% lived between 51–100km, and the remaining 22.3% lived over 100 km away from a cancer centre.

In the analysis of the effect of urban/rural residence on breast cancer stage at diagnosis, the 1977 cases with stage not stated/not known were excluded (thus leaving 9363 cases).

The number of cases in the highly rural/remote, and distance >200 km categories was very small, and thus these categories were analysed together with the rural area with low urban influence and 101–200 km distant groups respectively.

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Table 1: Characteristics of the study cohort

Characteristic		Number	Percentage
Age (years) (n=11,340)	≤34	296	2.6
	35–49	2642	23.3
	50–64	4406	38.9
	65–79	2757	24.3
	≥80	1239	10.9
Ethnicity (n=11,340)	Non-Māori/Non-Pacific	10,111	89.2
	Māori	926	8.2
	Pacific	303	2.7
Stage at diagnosis (n=11,340)	Early stage	5156	45.5
	Late stage	4207	37.1
	Not stated/not known	1977	17.4
Urban-Rural Population Category (n=11,337*)	Main urban	8118	71.6
	Secondary urban	1020	9.00
	Minor urban	1020	9.00
	Rural	1179	10.4
Urban-Rural Profile Category (n=11,303†)	Main urban	8285	73.3
	Satellite urban	368	3.3
	Independent urban	1501	13.3
	Rural-high urban influence	196	1.7
	Rural-mod urban influence	256	2.3
	Rural-low urban influence	583	5.2
	Highly rural-remote	114	1.0
Distance from cancer centre (km) (n=11,301‡)	0–10	3444	30.5
	11–25	2402	21.3
	26–50	1269	11.2
	51–100	1671	14.8
	101–200	2210	19.6
	>200	305	2.7

*3 cases unable to be assigned an Urban-Rural Population Category (because no domicile code recorded in registry); †37 cases unable to be assigned an Urban-Rural Profile Category and ‡39 cases unable to be assigned a distance (3 with no domicile code and other women living in island, oceanic, or inlet areas).

Table 2 shows the results of three separate logistic regressions. Urban/rural residence, however classified, did not have any significant effect on the odds of late stage at diagnosis for women diagnosed with breast cancer in NZ. There was also no trend to increasing odds with increasing rurality or distance.

Table 3 shows the results of Cox Proportional Hazards Regression. There was no statistically significant effect associated with place of residence, except for those women living 51–100 km distant from a cancer centre, who appeared to have better survival. This isolated finding is dubious, particularly as it is unsupported by a trend to better or worse survival amongst the other distances.

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Table 2. Odds ratios for late stage diagnosis by residence in urban and rural area

Urban/Rural Group	Odds of late-stage diagnosis (adjusted for ethnicity, age, deprivation)	95% confidence interval	P value
Main urban area	1		
Secondary urban area	0.92	0.80–1.07	0.291
Minor urban area	1.03	0.89–1.20	0.696
Rural area	1.00	0.88–1.15	0.961
Main urban area	1		
Satellite urban community	0.89	0.70–1.13	0.330
Independent urban community	1.01	0.89–1.14	0.906
Rural area with high urban influence	1.21	0.89–1.66	0.224
Rural area with moderate urban influence	1.07	0.81–1.42	0.627
Rural area with low urban influence/remote	0.92	0.77–1.09	0.327
0–10 km	1		
11–25 km	0.94	0.83–1.05	0.270
26–50 km	1.07	0.92–1.24	0.367
51–100 km	1.03	0.90–1.17	0.707
>100 km	1.06	0.94–1.20	0.313

Table 3. Hazard ratios by residence in urban and rural area

Urban/Rural Group	Hazard ratio (Adjusted for stage, age, ethnicity, deprivation)	95% confidence interval	P value
Main urban area	1		
Secondary urban area	0.91	0.80–1.04	0.152
Minor urban area	1.01	0.88–1.14	0.937
Rural area	1.02	0.90–1.16	0.753
Main urban area	1		
Satellite urban community	1.04	0.85–1.28	0.679
Independent urban community	0.99	0.89–1.11	0.903
Rural area with high urban influence	0.88	0.65–1.21	0.441
Rural area with moderate urban influence	1.05	0.82–1.36	0.686
Rural area with low urban influence/remote	1.07	0.92–1.25	0.385
0–10 km	1		
11–25 km	0.94	0.85–1.05	0.270
26–50 km	0.99	0.87–1.12	0.836
51–100 km	0.86	0.76–0.96	0.011
>100 km	1.06	0.95–1.17	0.296

Discussion

The results of this study show that urban/rural residence, however classified, does not affect stage at diagnosis, or survival for women with breast cancer in NZ. This suggests that access to, and effectiveness of screening services, primary care, and specialist cancer services is equitable regardless of whether women live in cities, towns, or rural areas. However it is noted that stage at diagnosis and survival do not solely relate to access/effectiveness of care. For example, a low-grade tumour is more likely to be diagnosed at an early stage regardless the timeliness or effectiveness of care.

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Previous cancer research in NZ that has included a geographic analysis has similarly not found differences in stage at diagnosis or survival by urban/rural residence. Armstrong and Borman found no difference in stage of breast cancer by urban/rural group for either Māori or non-Māori women.[15] Gill and Martin found that increasing distance from cancer centre was not associated with poorer survival from upper gastrointestinal cancer.[16] Our study, which used three different measures of urban/rural residence, is consistent with this previous research.

Several factors may explain why urban/rural residence does not affect breast cancer stage at diagnosis. The nationally coordinated breast screening programme (BreastScreen Aotearoa: BSA) encourages equitable screening for rural and urban women. BSA has mobile/outreach services, and is accompanied by stringent quality standards that help to ensure quality and consistency throughout the country.[26]

Equitable access to early diagnosis of breast cancer in primary care for both urban and rural women is supported by the existence of formal guidelines for early diagnosis of breast cancer in primary care.[27] Furthermore the natural history of most breast cancers is relatively indolent,[28] meaning that any small delay in detection of breast cancer for rural women would be unlikely to substantially affect the stage at diagnosis. Superimposed on these factors, is the very high awareness of breast cancer in the community (arising from strong public health messages, the popular media, and women's health advocacy groups) which is likely to prompt both rural and urban women to seek early medical advice for breast complaints.

The lack of urban/rural difference in survival for women with breast cancer may also be explained by a number of factors. Specialist cancer services are configured in a way that attempts to balance centralisation with local access. The six regional cancer centres provide overall regional coordination, as well as providing clinics in hospitals outside their main centre. So while initial oncology appointments and radiotherapy must be done at the main centre, follow-up appointments and chemotherapy may be done at peripheral hospitals.[29]

Furthermore, geographic distances that must be covered to reach a major hospital (for cancer treatment) are not as vast in New Zealand as in some countries in which survival differences have been found (e.g. Australia).[8] Non-governmental organisations (such as the Cancer Society) also work hard to ensure that assistance is available to support rural women to be able to attend specialist treatment (e.g. volunteer drivers, petrol vouchers).

There are some acknowledged limitations to this study. For a very small percentage of rural addresses, the automated domicile coding software can have difficulty assigning a domicile code. For example, a non-specific rural address (such as R.D. 2) may be geocoded to the rural mail delivery centre of the nearest urban area, which will have an urban domicile code. Thus a small number of rural cases may have been categorised into an urban group, possibly leading to a slight underestimation of the effect of rural residence on stage at diagnosis/survival.[30]

A second limitation is that we analysed deaths from all causes in the survival analysis, rather than just breast cancer deaths. Given that breast cancer is on average a relatively slowly progressive cancer that predominantly affects middle to older aged women, the amount of 'noise' from non-breast cancer related deaths may be significant in the survival analysis. Lead time bias may also have influenced survival

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times, particularly as women in the age-range eligible for screening (50–64 years during the time of this study) were more likely to have their cancer detected earlier than those ineligible for screening.

Finally, the time frame of this study is limited, and the cohort of women diagnosed in 2002 will only have had four years of follow up. It may be useful to re-analyse survival data at a later date.

Conclusion

This study did not show an urban/rural disparity in stage at diagnosis or survival for women with breast cancer in NZ. The results may assist policy-makers in deciding where to focus resources for breast cancer in the future. Since urban/rural residence does not appear to have a major influence, resources could perhaps be directed toward other factors, such as ethnicity, which are known to affect stage at diagnosis and survival for women with breast cancer in NZ.[22]

Competing interests: None.

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Hyperplastic polyposis in the New Zealand population: a condition associated with increased colorectal cancer risk and European ancestry

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Abstract

Aim The hyperplastic polyposis syndrome (HPS) has been described in a subset of patients with multiple or large hyperplastic polyps. HPS is associated with an increased risk of colorectal cancer (CRC). In this report, we review the presentation and management of a series of individuals with HPS.

Methods From 2001, gastroenterologists, surgeons, and histopathologists at Middlemore Hospital were asked to report cases of HPS. Clinical records were retrospectively reviewed to confirm the number and size of polyps and the age at diagnosis, site of involvement in the colon, and nature of surgical procedures performed in cases with CRC.

Results HPS was identified in 24 patients: 14 females and 10 males. Though 46% of patients attending our gastroenterology department are non-Europeans, all HPS cases had European ancestry. A family history of CRC was identified in four patients (16.6%). All patients had small polyps (<5mm) however 15 (63%) had at least one polyp ≥10 mm, the largest being 45 mm. There were 21 CRCs in 14 patients with a mean age at diagnosis of 61 years. The tumour site was known in 19 CRC, and 16 of these (84%) occurred in the proximal colon. Synchronous cancers were identified in four patients and metachronous tumours in two patients. Twenty-two surgical procedures were performed in 17 patients. Three patients underwent prophylactic surgery due to polyp burden or dysplasia.

Conclusion HPS is rarely encountered but is associated with a significant risk of CRC and is found in the European component of the New Zealand population. Identification of this syndrome has implications regarding management and surveillance for both the individual patient and their first-degree relatives.

Hyperplastic polyps, characterised histologically by serrated glandular architecture, are common lesions observed at the time of colonoscopy. For many years they were largely ignored and thought to be of little consequence to the patient. However, this assertion has recently been challenged by several findings.

Molecular genetic abnormalities—such as mutations in oncogenes including *KRAS* and *BRAF*—have been identified in hyperplastic polyps,[1,2] thus redefining them as neoplasms. Furthermore, though the majority of hyperplastic polyps are unlikely to undergo malignant transformation, recent reports have indicated that a subset of lesions with altered morphology may serve as precursors to sporadic colorectal cancer (CRC) with microsatellite instability (MSI).[3–6] Therefore, it has become increasingly apparent that hyperplastic polyps are a heterogeneous group of lesions which encompasses the majority of classical hyperplastic polyps, and a minority of more

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advanced or variant lesions such as sessile serrated adenomas, traditional serrated adenomas, and mixed polyps which account for less than 10% of the total[2,5–8] and which are associated with increased malignant potential.[1]

Though they share the feature of serrated glandular architecture, sessile serrated adenomas (also known as sessile serrated polyps) are distinguished from traditional serrated adenomas by their lack of classical adenomatous dysplasia. The descriptors 'sessile' versus 'traditional' are central to the distinguishing but still evolving terminology. The progression of variant hyperplastic polyps to malignancy has become known as the serrated pathway,[9] and represents an alternative developmental model for CRC, in addition to the traditional adenoma-carcinoma sequence.[1,10]

A subset of patients, in which hyperplastic polyps are unusually large or numerous, was first described in 1977.[11] Subsequently, during efforts made to distinguish such patients from those with familial adenomatous polyposis (FAP), hyperplastic polyposis was described as a rare condition in young males associated with no significant risk of malignancy.[12].Now known as hyperplastic polyposis syndrome (HPS), the condition is characterised by multiple serrated polyps, often accompanied by a lesser number of adenomatous polyps, a predilection for the proximal colon, and an increased risk of CRC.[13–16]

The World Health Organization (WHO) Classification of Tumours defines hyperplastic polyposis as:

- **(A)** the presence of 30 or more hyperplastic polyps spread throughout the colon, ***or***
- **(B)** at least 5 hyperplastic polyps proximal to the sigmoid colon with two or more being large (>10 mm) ***or***
- **(C)** any number of hyperplastic polyps in a first degree relative of an individual with HPS.[17]

Recent modifications to the WHO criteria have decreased criterion (A) from 30 to 20 polyps throughout the colon, and this has been applied in this study.[18] Patients need only meet one of these three criteria in order to be classified as HPS. In addition, Higuchi and Jass have suggested that variant hyperplastic polyps, such as sessile serrated adenomas, traditional serrated adenomas, and mixed polyps, are counted in the total and that the polyp count can be cumulative over time.[19] Such polyps have only been widely recognised in relatively recent times, and the formulation of the WHO criteria pre-dated their introduction.

HPS is a relatively rare condition whose ethnic prevalence, genetic predisposition, risk factors, and natural history remain to be defined. In this report, we present data on a group of 24 New Zealand HPS patients, and review their presentation, clinicopathological features, colorectal cancer frequency, family history of colonic neoplasia, and clinical management, in order to contribute to the body of knowledge which will inform future clinical guidelines for the management of this condition.

Methods

From 2001, gastroenterologists, colorectal surgeons, and histopathologists at a single centre (Middlemore Hospital, South Auckland) attending a joint weekly histopathological review meeting of unusual gastrointestinal pathology presenting at the hospital, were asked to report individuals in whom HPS was suspected.

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The clinical records of those patients identified as fulfilling at least one WHO criterion for HPS were retrospectively reviewed to confirm the number, size, and histology of hyperplastic polyps. Important histological features noted were the presence of variant serrated architecture, and evidence of dysplasia and/or carcinoma. In patients with a personal history of CRC we recorded the age at diagnosis, site of the tumour in the colon, the occurrence of synchronous or metachronous tumours and the TNM and Dukes stage of the tumours.

The nature of surgical procedures performed in those with and without CRC was also determined. The mode of presentation was assessed as was the presence of a reported family history of colorectal neoplasia.

Results

From 2001 until 2005 at Middlemore Hospital (a hospital serving a multiethnic population of approximately 400,000 people) 24 patients were identified with HPS and all were of European descent. This is of interest as the catchment population is comprised of Māori (17%), Polynesian (21%), and Asian (16%) with less than 46% being Caucasians. There were 14 females and 10 males.

Reasons for presentation are shown in Table 1, and clinical details for each case in Table 2. Hyperplastic polyp numbers ranged from 5 to more than 50 and in 6 patients were described as "too numerous to accurately count." All patients had small polyps (<5 mm) present in the left and right colon, with 15 of 24 patients (63%) having at least one polyp greater than 10 mm in size. Twenty-three patients (96%) had at least one adenoma in addition to multiple hyperplastic polyps.

Table 1. Modes of presentation

Mode of Presentation	Number of Patients
Anaemia	4
Altered bowel habit	5
Abdominal pain	7
Rectal bleeding	5
Weight loss	1
Follow up previous pathology	5
Positive family history	3

Fourteen of the 24 patients (58%) had a personal history of CRC—and in 6 patients, CRC occurred prior to a diagnosis of HPS. A total of 21 CRCs were identified in these 14 patients including 2 metachronous and 4 synchronous lesions. In a single case, 3 synchronous lesions were present. The mean age at CRC diagnosis was 61 years. Tumour location was determined in 19 of 21 CRCs, being proximal to the splenic flexure in 16 (84%).

Available tumour stage information revealed 6 to be Dukes stage A, 4 stage B, and 3 stage C. The distribution of TNM stages for CRC was unremarkable. One patient had bilateral mastectomies 30 years prior to their diagnosis of CRC but had no known family history of CRC whilst another patient had a personal history of endometrial carcinoma but has not, to date, developed CRC. In total only 4 (17%) patients have a known family history of CRC and 2 are individuals with a personal history of CRC.

Cases which reported adenomas with either villous or serrated components, or with high-grade dysplasia were more likely to have synchronous CRC (p=0.018).

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Table 2. Summary of clinicopathological features in 24 cases with hyperplastic polyposis syndrome

Case #	Sex	No of hyperplastic polyps	Max size (mm)	No./nature of adenomas	Variant lesions/dysplasia	Personal history of CRC (site)	Age at diagnosis of CRC	Family history CRC
1	M	22	7	3TVA	HGD	AC	64	Unknown
2	F	29	8	1TVA	Focal HGD	No	NA	N
3	F	Multiple	5	2TVA	Moderate dysplasia, IC	Sigmoid, caecal	60, 66	N
4	F	37	9	1 mixed	IC	Caecal ×2	59, 59	N
5	F	50	45	Mulitiple TVA	Mild-Moderate dysplasia	Caecal ×2	72, 72	Y
6	F	Multiple	15	Not known	Moderate dysplasia	No	NA	N
7	M	30	20	Not known		Caecal	62	N
8	F	>50	20	0		HF	62	N
9	M	18	15	TVA	IC	AC (in polyp)	69	N
10	F	>30	30	1 small	Mild dysplasia	N	NA	Y
11	M	>50	120	Not known	Mild-moderate 1 mixed	N	NA	N
12	M	Multiple	4	Not known	Mild-Moderate dysplasia	Site Unknown	42, 68	N
13	M	20	7	Not known	Mild-Moderate dysplasia	N	NA	N
14	F	30	8	Not known	Mild-Moderate dysplasia	N	NA	N
15	F	36	10	Not known	Mild-Moderate dysplasia	AC	58	Y
16	M	19+	15	Serrated Number not known	LGD			N
17	M	20	10	1	LGD			Y
18	F	49	5	2	HGD	TC	70	N
19	F	Multiple	8	Serrated Number not known	HGD right colon	TC	73	N
20	F	Multiple	15	0	N	N		N
21	M	40–50	16	Serrated 1 TVA	Moderate dysplasia	Sigmoid	51	N
22	F	>28	13	1	Moderate dysplasia	No	NA	N
23	M	Multiple	18	1 serrated		Caecal ×2	61, 61	N
24	F	20 (2>10mm right colon)	15	1		AC×2 synchronous	78, 78	N

Legend: M=male, F=female, TVA=tubulovillous adenoma, HGD=high-grade dysplasia, IC=invasive carcinoma, LGD=low-grade dysplasia, AC=ascending colon, HF=hepatic flexure, TC=transverse colon, NA=not applicable.

Immunohistochemistry for mismatch repair proteins was available on seven tumours, and two of these showed loss of MLH1. Germline investigations failed to find a mutation in one case, and searching is ongoing in the other.

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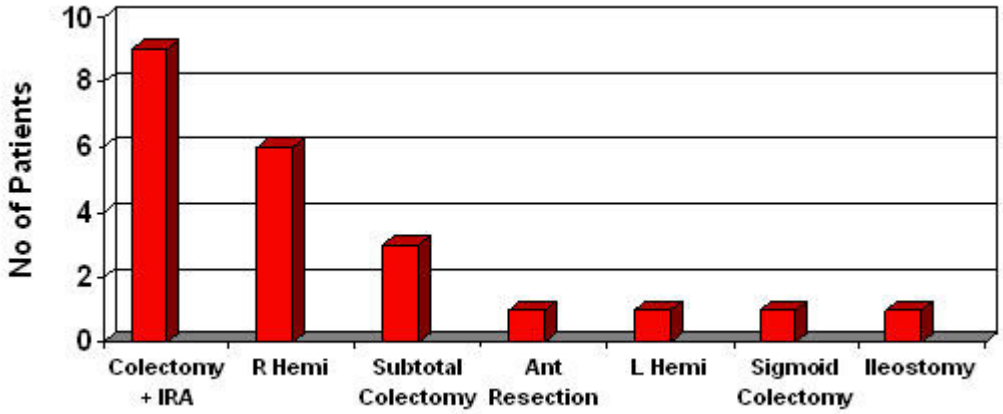
To date, 17 patients have undergone a total of 22 surgical procedures, comprising 9 total colectomies with ileorectal anastamosis (IRA), 6 right hemicolectomies, 3 subtotal colectomies, 1 anterior resection, 1 left hemicolectomy, 1 sigmoid colectomy, and 1 total colectomy with ileostomy. A summary of surgical procedures is shown in Figure 1.

Figure 1. Surgical outcomes



Three patients underwent prophylactic surgery due to polyp burden and the presence of dysplasia, making safe colonoscopic surveillance impossible. Two patients (one of whom had a left hemicolectomy 6 years previously for CRC) underwent total colectomy with IRA, and another a subtotal colectomy with ongoing surveillance of the remaining colon.

To date, one-third (8/24) of patients have undergone a gastroscopy (the majority for the investigation of anaemia) and none have been found to have hyperplastic polyps in the upper gastrointestintal (GI) tract.

Discussion

HPS is a relatively late onset disorder often identified in the sixth or seventh decade of life, though young-onset cases have been reported.[20,21] Characteristically, a diverse group of polyps will be present including small hyperplastic polyps, larger atypical or advanced lesions, and apparent traditional adenomas.[15,22,23] Polyp numbers vary from 5 to several hundred, however, most cases report a polyp count of between 40 and 100.[24]

The mean age at diagnosis of CRC (61 years) in our current study is older than for other CRC syndromes (FAP, HNPCC), though earlier than that reported for unselected CRC.[25] All patients had small hyperplastic polyps present throughout the colon, and in 63% of cases, at least one larger than 10mm. Importantly, at least one adenoma was identified in 96% of cases.

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The presenting features of this series of HPS patients are interesting in that many would have no recognised link with the final diagnosis of HPS. In the absence of large polyps or a coexisting carcinoma, multiple smaller polyps would not be expected to cause overt or occult bleeding or result in pain. HPS is also a condition with increasing awareness of its malignant potential.[6,14–16,22,24,26–28] Since patients with CRC are more likely to present for symptomatic reasons, it is difficult to assess what proportion of cases overall will develop a malignant lesion, however, patients with large, atypical, and dysplastic polyps appear to be most at risk.[14]

In our study population, HPS was associated with a significant risk of CRC (58%), consistent with that reported by others,[14,24] and with the presence of adenomas characterised by villous or serrated components, or high-grade dysplasia. A subset of sporadic CRC develops via the serrated pathway. The somatic molecular features of HPS lesions are comparable with those identified in their sporadic counterparts, particularly, activating mutations in *BRAF*,[1,29,30] and hypermethylation of gene promoters[31] with or without microsatellite instability.[6,32] Increased methylation of gene promoters is evident even in the normal mucosa of individuals with HPS,[31,33,34] and may indicate that a genetic defect in the regulation of promoter methylation underlies this disorder.

BRAF mutation is frequently seen within sporadic cancers developing via the serrated pathway, and approximately one-half of these show a high level of MSI resulting from methylation-induced inactivation of *MLH1*.[1,35] Our finding of loss of expression of MLH1 in 2/7 CRC tested, therefore, is consistent with these and previous reports of MLH1 expression loss in HPS.[6,36]

Proximal hyperplastic polyps have different morphological characteristics to those in the distal colon, however evidence suggests that these differences are in growth regulation rather than cellular differentiation, reflecting points along a spectrum of disease and the aquisition of different genetic aberrations.[37] For example, even though rare cases have been reported,[34,38] *KRAS* mutations are more frequently seen in common distal hyperplastic polyps than in HPS whilst methylation is more likely to be present in HPS in proximal lesions.[2,34] Importantly, though hyperplastic polyps were observed throughout the colon in our current series of HPS cases, 84% of CRC developed in the proximal colon.

A positive family history of colorectal cancer in patients with HPS has been reported by several investigators.[16,24,39,40] Rashid et al[16] have described 3 kindreds in which there were 2 or more individuals with HPS. In addition, a family history of colorectal cancer was noted 3 of 11 (27%) cases of HPS. Jeevaratnum et al,[40] described a single family where a mother and five of her offspring developed colorectal cancer but without features of FAP or HNPCC. This family demonstrated multiple, large, hyperplastic polyps as well as microsatellite instability in a proportion of their colorectal cancers.

In a study of 38 patients with HPS, Chow et al found that 19 (50%) had a first-degree relative with colorectal cancer, and 2 had a family history of HPS.[39] Lage and colleagues also reported a family history of colorectal neoplasia in 6 of 12 (50%) patients with HPS.[24] The presence of a family history of CRC is low in our series (17%) but is not dissimilar to that in another published series.[14] Taken together, the preceding data suggest that HPS may represent a novel familial colon cancer

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predisposition. Though rare individuals have been reported with germline sequence variations in *MYH* and *EphB2*, the underlying genetic abnormality in the majority of cases of HPS remains to be identified.[39,41]

Interestingly, all cases of HPS in our study were of European descent, a striking finding given that almost 50% of the patient population covered by our gastroenterology service are non-Europeans. A difference of this magnitude is unlikely to be due to chance, though cultural differences such as diet may play a role. At present there is no available data in the literature regarding ethnic variations in the incidence of HPS, and further studies will need to be carried out to confirm our findings.

Amongst our cohort, 71% of patients had undergone a colonic resection, the majority in the context of management of CRC. However three patients underwent prophylactic colectomy due to the limitations of colonoscopic surveillance in those individuals with multiple polyps. The role of prophylactic surgery is likely to become greater with increasing clinician awareness of HPS as a pathological entity with a high risk of CRC. Furthermore, colonoscopic surveillance strategies need to be devised for patients with hyperplastic polyps and HPS.[42]

In summary, HPS is not commonly encountered in the New Zealand population, but is associated with an increased risk of CRC, and European ancestry. Recognition of this syndrome is important as it may significantly alter patient management and influence colonoscopic surveillance advice for both the individual and their first-degree relatives.

Competing interests: None.

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The influence of hospital environment on postoperative length of stay following major colorectal surgery

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Abstract

Introduction Elective colorectal resection is associated with a postoperative stay (LOS) of 7–10 days. Counties Manukau District Health Board (DHB) has two sites for elective colorectal surgery: Manukau Surgery Centre (MSC)—a stand-alone elective surgical site; and Middlemore Hospital (MMH)—a general hospital. MSC opened in 2001 and it was noted that patients recovered more quickly there than patients operated on at MMH. It was thus our aim to identify if LOS following major elective colorectal surgery is influenced by hospital environment.

Methods 294 consecutive patients undergoing elective colorectal resection between January 2002 and October 2005 at the two facilities were analysed. Confounding factors (age, gender, race, duration of surgery, ASA grade, colonic vs rectal surgery, stoma/no stoma) were identified and corrected for using a multivariate Poisson log-linear regression model.

Results Patients who underwent surgery (colonic=227, rectal=67) at MMH (n=210, median length of stay 11 days) had a LOS 1.52 times longer (95%CI 1.28–1.81) than those who had their surgery at MSC (n=84, median length of stay 7 days). This figure was corrected for all other variables ($p<0.0001$).

Conclusion Because MSC and MMH are both part of the same DHB, share the same surgeons, and service an identical population, it can be concluded that environmental differences are likely to be influential in the recovery process. However, further research is required to elucidate the significance of individual factors.

Under conventional care, elective colorectal resection is associated with a postoperative inpatient stay of 7–10 days.[1] The possibility of an earlier discharge is advantageous to both patient and institution—as a faster recovery and shorter length of stay allow the patient a more rapid return to normal life and there are obvious savings in healthcare costs.

Thus a shorter length of stay following surgery has been the aim of many research facilities around the world. The most established regimens to emerge from such institutions are the Fast-track or Enhanced Recovery After Surgery (ERAS) programmes, which promote an early discharge by modifying conventional protocols utilising evidence based perioperative care.[2] However, despite the increasing popularity of these programmes, there has been little focus on the impact of the hospital environment on recovery. In fact, ward environment and design are not recognised as playing a role in any published ERAS programmes.[3]

Environmental factors were recognised many years ago as being influential in determining the outcome of patients recovering in hospital. In the 19th Century, Florence Nightingale observed differences in survival rates between various hospitals.

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She attributed these findings to variations in design and environment such as crowding, lighting and ventilation.[4] Nevertheless, very few studies have been performed investigating the relationship between the perioperative hospital environment and outcome after surgery.

Manukau Surgery Centre (MSC) is a stand-alone public institution purpose built for the Counties-Manukau District Health Board (CMDHB) for exclusively elective surgical procedures. It was opened in 2001 and is located several kilometres from Middlemore Hospital (MMH), the base hospital for the CMDHB. Both facilities share the same surgeons and service the same population.

At the time of this study, patients undergoing colorectal surgery were generally arbitrarily allocated to either institution by the operating surgeon according to operating list availability. A few years after MSC opened, it was noted by surgical management that patients undergoing elective colorectal resection there appeared to recover more quickly than those operated on at MMH—thus suggesting that the environment in which a patient recovers from surgery might influence postoperative length of stay.

The aim of this study was therefore to identify if a relationship exists between the length of stay in hospital following major elective colorectal surgery and the environment in which procedure and recovery are undertaken correcting for the obvious clinical variables involved.

Methods

A retrospective database was constructed of 294 consecutive patients undergoing major elective colorectal resection between January 2002 and October 2005 at Middlemore Hospital or Manukau Surgical Centre (prior to the introduction of an ERAS programme). Data was obtained from online patient information and individual files, and entered into an electronic worksheet (Microsoft Excel, Redmond, CA, USA).

Postoperative hospital length of stay was defined as the number of days from the index operation to the date of discharge. Prior to analysis, several factors were identified which could potentially contribute to confounding of results. These included:

- *Age*—at the time of surgery.
- *Gender*
- *Race*—there was a great diversity in the range of ethnic groups seen. These were subsequently divided into 5 subgroups to allow for analyses: European (including New Zealand and Other European), Asian (including Indian and Chinese), Māori, Pacific Islander and Other (any race which did not fall under the above).
- *Duration of surgery*
- *ASA* (American Society of Anaesthesiologists) score – this is a physical-health status classification system. All patients undergoing surgery are assigned an ASA score from I to V by the anaesthetist, with progressively higher scores indicating increasing preoperative morbidity.
- *Type of surgery*—divided into colonic and rectal procedures (Table 1).
- *Stoma*—presence or absence.

Individual values for the parameters listed above were placed in a multivariate Poisson log-linear regression model. This was used because the dependent variable, postoperative hospital length of stay, is a count. Furthermore, it corrects for all other independent variables allowing a true inference to be made with relation to a particular parameter i.e. a result obtained for any one parameter was corrected for all the others.

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The model was fitted with all first order interactions to obtain an estimate of the scale parameter from the deviance. This scale parameter was included in the final model to adjust for overdispersion (where scatter around the regression model is too large by the standards of Poisson variability).[5]

Dummy variables were set up for categorical variables. The resulting regression coefficients were exponentiated to obtain rate ratios, and a 95% confidence interval (CI) was calculated by exponentiating 1.96 (multiplier from the normal distribution) times the standard error. For categorical variables, the rate ratio represents the rate in that group compared to a pre-defined reference group (usually the group with the largest patient numbers). For continuous variables, it represents a one unit change. Statistical analyses were carried out in SAS ('Statistical Analysis System') using the PROC GENMOD for logistic regression.[6] Significance was defined as being present if $p<0.05$.

Table 1. Number and type of colorectal procedures at each site

Procedures	Middlemore Hospital	Manukau Surgery Centre	Total
Colonic procedures			
Right hemicolectomy	80	38	118
Left hemicolectomy	49	24	73
Transverse colectomy	1	0	1
Total colectomy	15	6	21
Hartmann's procedure	13	1	14
Rectal procedures			
Abdominoperineal resection	18	3	21
Low anterior resection	34	12	46
Total	**210**	**84**	**294**

Table 2. Patient demographics

Variables	Middlemore Hospital	Manukau Surgery Centre	Total
Number of patients	210	84	294
Mean age (years)	67 (range: 19–89)	67 (range:19–89)	67 (range: 19–89)
Male:Female	101:109	32:52	133:161
Procedure			
Colonic	158	69	227
Rectal	52	15	67
Ethnicity			
European	161	66	227
Asian	13	4	17
Māori	11	7	18
Pacific Islander*	8	3	11
Other	17	4	21
Stoma present:stoma absent	74:136	23:61	97:197

*Mostly of Samoan, Tongan, Niuean, or Cook Islands origin.

Table 3. The effect of age on postoperative length of stay. Odds ratios describe the relative increase in hospital stay

Age (years)	Number of patients	Odds ratio (95%CI)	P value
<60	71	Reference Group	
60–69	68	1.23 (1.00–1.52)	0.0500
70–79	105	1.15 (0.93–1.41)	0.1904
80–89	50	1.62 (1.28–2.04)	<0.0001

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Table 4. The effect of race on postoperative length of stay. Odds ratios describe the relative increase or decrease in hospital stay

Ethnicity	Number of patients	Odds ratio (95%CI)	P value
European	227	Reference Group	
Asian	17	0.82 (0.60–1.13)	0.2193
Māori	18	1.08 (0.81–1.44)	0.6159
Pacific Islander	11	0.92 (0.62–1.35)	0.6577
Other	21	0.98 (0.74–1.29)	0.8747

Table 5. The effect of presence or absence of a stoma on postoperative length of stay. Odds ratios describe the relative increase in hospital stay

Variable	Odds ratio (95%CI)	P value
Stoma present versus stoma absent	1.03 (0.82–1.29)	0.7907

Results

Operative procedures and patient demographics are shown in Tables 1 and 2. The median postoperative length of stay for the entire cohort of patients at Middlemore Hospital (n=210) and Manukau Surgery Centre (n=84) was 9 days (range: 4–97). Postoperative mortality was 1.7%.

Differences in the perioperative hospital environment had a significant impact on postoperative length of stay ($p<0.0001$). Patients who underwent surgery at MMH (median length of stay 11 days) stayed in hospital postoperatively 1.52 times longer (95%CI 1.28–1.81) than those who had their procedure and recovery at MSC (median length of stay 7 days). These figures are corrected for all other variables.

Because a multivariate Poisson log-linear regression model was used, it was possible to identify if any of the other parameters played a role in postoperative length of stay *independent* of perioperative environment. These results are outlined briefly below:

- *Age* was found to significantly alter postoperative length of stay ($p<0.0001$). Values were also broken down into 10-year brackets and compared with a <60-year-old reference group (Table 3). This showed that whilst there was a trend towards an increase in the length of stay in the 60–69 and 70–79 year old groups, this finding was not significant. However, after the age of 80, there was a significant increase in the length of stay following major colorectal surgery.
- *Gender* did not play a significant role in postoperative length of stay.
- *Race* was found to have no significant bearing on postoperative length of stay. The 'European' group was used as the reference group because it had the largest number of patients (Table 4).
- *Duration of Surgery* (mean duration 123 minutes) was found to significantly affect the postoperative length of stay ($p=0.0017$). For every extra hour spent in theatre, length of stay increased 1.15 times (95%CI 1.05–1.25).

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- For every 1 unit increase in the *ASA grade*, the postoperative length of stay increased 1.15 times (95%CI 1.06–1.26).
- *Type of surgery* did not alter the postoperative length of stay.
- The presence of a *stoma* did not significantly alter the postoperative length of stay (Table 5).

Discussion

This study aimed to look at the influence of perioperative hospital environment on postoperative length of stay. Patients who were operated on and recovered in an exclusively elective surgical facility (MSC) had a significantly shorter length of stay (4 days) than those who had their surgery and recovery in a large general and acute hospital (MMH). This finding was independent of possible confounding factors such as age, gender, race, duration of surgery, ASA grade, type of surgery, and the presence or absence of a stoma.

Before concluding that differences in environment are responsible for the results seen, it is important to exclude other factors. Both MSC and MMH are part of the same District Health Board and hence service the same catchment population. Additionally, they both have identical discharge criteria.

Allocation to undergo elective colorectal resection at either institution in the time frame investigated was perceived to be mostly arbitrary, and dependent on logistic factors such as surgeon and list availability. However, selection inconsistencies may have developed in that it may have been that some surgeons preferred to perform more complex cases at MMH (this would allow easier access to services such as radiology, ICU and an 'acute' theatre should a complication develop). However if this was a significant issue then its significance would have been offset by correction for patient factors such as age, ASA grade, procedure type and duration of surgery.

Surgeons working for CMDHB rotate between MMH and MSC. At the time of this study surgeons were allocated, on average, 1 day of elective surgery at MSC per fortnight, performing the remainder of their surgery at MMH (this is the reason for so many more elective operations being undertaken at the latter). No surgeon operated exclusively at either facility.

Thus the results seen are not likely due to variations in surgical or perioperative practices related to the primary surgeon. Registrars coordinated clinical care over both sites and thus this level of care was the same also. Conversely, the house officers and nurses do not rotate between the two facilities. Nurses at both sites receive the same level of teaching and training. Administrative and non-clinical staff (such as secretaries and orderlies) work exclusively at one centre, but are not likely to directly influence perioperative practice.

Very little literature has been published on the influence of hospital environment on postoperative length of stay. Studies have broadly suggested that the built environment can influence patient outcomes by reducing anxiety, increasing social interactions and modifying patient behaviour.[7–9] However, the applicability of these findings to our sample population is not known.

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The most obvious difference in environment between the two institutions is the inclusion of acute patients in the surgical wards of MMH. Acute admissions are associated with diagnostic uncertainties, observations throughout the day and continual assessment and initiation of therapeutic measures. It thus follows that a ward with acutely-admitted patients will have more interruptions and will be noisier than one which is exclusively elective.

It has been shown that patients are more disturbed by what is happening to other patients than to themselves, and auditory cues associated with such procedures cause increased levels stress.[8,10] This may in turn be associated with disrupted sleep in elective (and other acute) patients. Furthermore, patients who have undergone acute surgery are likely to be 'sicker' in the postoperative period. This may mean they consume a greater proportion of the time of nurses on the ward, at the expense of elective patients. They are also likely to receive more attention by junior medical staff on the daily ward rounds than elective patients. Thus, excluding elective patients from this environment into an area specifically designed for rehabilitation may positively influence recovery.

'Personal control' is a concept which has been used to describe the ability of patients to influence situations or environments which they encounter during hospitalisation. It is directly linked to a patient's perception of their emotional comfort (an integral part of the recovery process) and as such is believed to affect physical comfort and outcome.[11] Within the in-patient context, personal control is thought to be influenced by interactions with nurses, daily hospital routines, and the physical ward setting.[12,13] Thus factors which promote the personal control of patients may indeed greatly enhance their potential to recover whilst in hospital.

Physical ward environment can positively and negatively influence personal control and patient comfort.[12,14] Numerous differences exist in the lay out of MMH and MSC. For instance, the latter exhibits a simpler ward design – a single corridor leading to the nursing station—than MMH (two parallel corridors of identical rooms, with a number of interconnections between corridors). Additionally, MSC has easier access to shower, toilet, tea/coffee, refrigeration, and phone facilities, and a closer proximity of single-bedded rooms to the nursing stations. It also has more single and double-bedded rooms than MMH (characterised by mostly four-bedded rooms), affording its patients fewer disruptions.

In response to the results of this study modifications have recently been made to the surgical wards at MMH to make the built environment more similar to MSC. These changes occurred after the study period.

Several other minor environmental factors may also be important in altering postoperative recovery. Examples include differences in sunlight, temperature and ambient noise between the wards at different centres.[9,15,16]

In summary, patients undergoing elective colorectal resection at an exclusively elective-surgical facility spent a significantly shorter time (4 days) in hospital postoperatively than those at a mixed acute and elective institution. Because both centres are part of the same District Health Board, share the same surgeons and service an identical population, it can be concluded that environmental differences are likely to be influential in the recovery process. However, further research is still required to fully elucidate the significance of individual factors.

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If these findings are confirmed then the implications for ERAS programmes are significant and consideration of the hospital environment should be a part of the design and implementation of a comprehensive perioperative care programme.

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Mosquitoes feeding on brushtail possums (*Trichosurus vulpecula*) and humans in a native forest fragment in the Auckland region of New Zealand

José G B Derraik, Weihong Ji, David Slaney

Abstract

A study was carried out to identify the native and exotic mosquito species that feed on possums (and also humans) during daytime in a native forest fragment in the Auckland region. Twenty-two possums were handled in spring 2005, and 21 in the following summer. A total of 32 female mosquitoes were collected while handling the possums (22 mosquitoes were on humans—all introduced *Aedes notoscriptus*; 10 on possums—9 *Ae. notoscriptus* and 1 native *Coquillettidia iracunda*). These results support previous findings that *Aedes notoscriptus* may regularly take blood meals from brushtail possums in New Zealand, as happens in Australia. Significant is the record of *Coquillettidia iracunda* feeding on a possum, which seems to be the first record of a native mosquito feeding on these animals in New Zealand. The potential public health implications of these findings are discussed.

To date there has not been a confirmed, indigenously acquired mosquito-borne virus infection in humans within New Zealand.[1] However, it seems that it is just a matter of time before an arboviral outbreak occurs.[2-4] Ross River virus (RRV) is the most likely arbovirus to cause an outbreak in New Zealand, as it is the most common aetiologic agent of recognised arboviral disease in Australia.[2,5]

Brushtail possums (*Trichosurus vulpecula* Kerr) are known competent hosts of RRV.[6,7] Serological survey data confirmed that possums in Australia are commonly exposed to RRV in the field, where they are natural blood source for mosquitoes.[7,8]

As a result, if an outbreak of RRV does occur in New Zealand, the virus could potentially become endemic due to the widespread and abundant presence of possums throughout the country.[9] In Australia for instance, brushtail possums have been suggested to be responsible for maintaining RRV epidemics in urban areas, where they are likely to be a major vertebrate host for this virus in certain areas.[7,8]

Very little is known about the feeding habits of native mosquitoes, but it seems that most species are primarily ornithophilic (bird-feeders) as a result of New Zealand's evolutionary history and the consequent absence of terrestrials mammals other than bats.[9] An exception amongst native mosquitoes breeding in freshwater seems to be *Coquillettidia (Coquillettidia) iracunda* (Walker) as this species will aggressively bite humans.[10,11]

In contrast to the native mosquitoes, invading mosquitoes tend to be opportunistic feeders and are usually anthropophilic (human feeders).[12]

This study aimed to identify the native and exotic mosquito species that feed on possums during daytime in a native forest fragment in the Auckland region. In addition, it is important to assess whether the same species that feed on possums also

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feed on humans, as it could create suitable conditions for the transmission cycle of RRV if the mosquito happens to be a suitable vector.

Materials and Methods

The chosen field site was an indigenous forest fragment of approximately 12 hectares located at Coatesville reserve (36°42´S, 174°48´E), in the Auckland region, New Zealand. The site consists of mixed podocarp-broadleaf forest, lying within a heterogeneous rural landscape matrix, with the peripheral vegetation consisting of exotic pastures, orchards, pine plantations, and private gardens. Sampling was carried out in the daytime during spring (September 2005) and summer (February-March 2006).

Brushtail possums are nocturnal animals and were trapped overnight. Each animal briefly anesthetised using Isoflurane®, so a series of measurements could be taken and data loggers placed on the animals as part of an ongoing research project.[13]

Adult mosquitoes were trapped (using a plastic container) while biting between 8:30 am and 1:00 pm. Each possum was handled for approximately 10 minutes, during which time mosquito sampling was carried out for approximately 4 minutes. During each procedure, sampling (i.e. collecting any mosquitoes on humans and possums) was also carried out for approximately 4 minutes on one of the two persons carrying out the procedure. All specimens collected were frozen and then placed in ethanol, for later identification.

Results and Discussion

A total of 22 possums were handled in spring 2005, but no mosquitoes were observed biting humans or possums. However, in the following summer, 21 possums were handled, during which time 32 female mosquitoes were collected while biting (Table 1); 22 of these mosquitoes were collected on humans, all being the introduced species *Aedes (Finlaya) notoscriptus* Skuse. Nine were *Ae. notoscriptus* mosquitoes collected on possums. The only other species recorded was one *Cq. iracunda* mosquito trapped while feeding on a possum (Table 1).

Table 1. Daytime collection of mosquitoes while biting humans and possums in Coatesville forest, Auckland region

Species	Season	Host	
		Human	Possum
Coquillettidia iracunda	Spring 2005	–	–
	Summer 2006	–	1
Aedes notoscriptus	Spring 2005	–	–
	Summer 2006	22	9

The absence of mosquitoes in the spring sampling was most likely a result of the lower than average rainfall and relatively mild temperatures. In the summer collection, although the number of mosquitoes recorded was relatively low, valuable information was obtained. Note that both *Ae. notoscriptus* and *Cq. iracunda* will seek hosts in the daytime within a forest environment.[10,14] Therefore, the low abundance observed was a likely result of the climatic conditions at the time, in particular the extremely low rainfall recorded in the Northland/Auckland regions in the preceding weeks.[15]

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Nonetheless, during this study *Ae. notoscriptus* was most often collected on humans, adding support to other studies indicating that it is anthropophilic.[8,16] This exotic mosquito is the predominant peridomestic mosquito in its native Australia,[17] and this pattern is being observed in many areas in northern New Zealand.[9]

Aedes notoscriptus is believed to be an important RRV vector in urban areas in Australia,[18-21] and it could potentially play a similar role in New Zealand. Apart from being anthropophilic, the results obtained here support the evidence obtained by Bullians and Cowley,[22] indicating that *Ae. notoscriptus* may regularly take blood meals from brushtail possums in New Zealand, as it happens in Australia.[8]

As previously pointed out, brushtail possums are likely to be an important vertebrate host for RRV in certain urban areas in Australia.[7,8] Therefore, since *Ae. notoscriptus* is a RRV vector,[8] these two Australian exotic species could possibly lead to endemic cycles of RRV in New Zealand, if the virus were to arrive here.

Significant is the record of the native *Cq. iracunda* feeding on a possum. Although only a single specimen was collected, this seems to be the first record of a native mosquito feeding on *T. vulpecula* in New Zealand. *Coquillettidia iracunda* is an aggressive biter that is readily attracted to humans and other animals such as dogs,[10] and some populations of this species are known to produce high densities seasonally.

Coquillettidia iracunda is closely related to a number of overseas disease vectors in the same subgenus (*Coquillettidia*), such as the Australian *Coquillettidia* (*Coquillettidia*) *linealis* (Skuse) that is a highly efficient laboratory vector of RRV, with this virus also having been isolated from this species in the field.[23] Therefore, *Cq. iracunda* could in theory pose a threat to public health as a potential arbovirus vector in New Zealand.

It should be noted however, that this work followed a window of opportunity. Sampling in other sites and during twilight and night-time hours would provide more comprehensive data on the range of species feeding on brushtail possums in New Zealand.

Competing interests: None.

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Human papilloma virus vaccines and their role in cancer prevention

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Abstract

The introduction of the human papilloma virus (HPV) vaccine is the single most important advance in the prevention of cervical cancer since the introduction of cervical cytology half a century ago. Vaccination should ideally occur prior to a female's first sexual experience. This article suggests that the HPV vaccine should be publicly funded in New Zealand.

Increasing epidemiological evidence during the 1960s and 1970s pointed to a sexually transmitted factor as the cause of cervical cancer.[1] During the 1980s and 1990s, epidemiological and molecular research increasingly implicated the human papilloma virus (HPV) as the primary aetiological agent.[2]

In 1995, the International Agency for Research on Cancer (IARC) stated that HPV types 16 and 18 are carcinogenic with limited evidence for the carcinogenicity of HPV 31 and 33.[3] HPV DNA can be detected in 99.7% of cervical cancers.[4,5]

An updated IARC Monograph (2006) has concluded that there is sufficient evidence for the carcinogenicity of HPV 16 in the vulva, vagina, penis, and anus and limited evidence for the carcinogenicity of HPV 18 in these organs.[6] The relative risks are about 10 for cigarette smoking and lung cancer, 50 for hepatitis B virus (HBV) and liver cancer, and between 200 and 400 for HPV 16 & 18 and cervical cancer.[7]

It is estimated that three-quarters of women are exposed to at least one HPV infection during their life—with a prevalence exceeding 20% in young women in many Western communities, falling to 5–10% by age 30, and thereafter levelling out at 5% through middle life.[8]

Half of all women have had at least one HPV infection within 5 years of initiating sexual intercourse.[9] There appears to be a lower prevalence in young men.[10]

Of the more than 100 molecularly characterised HPV genotypes, approximately 40 can be found in the genital tract. These can be divided into high risk (HR) oncogenic and low risk (LR) types. The most common HR HPV are types 16 and 18—these account for about 70% of all types found in cervical cancer worldwide (Oceania 77%).[11] HPV types 6 and 11 have been reported in 70% to 100% of genital warts. However co-infection with other HPV types is also common.[12,13]

HPV infects the basal keratinocytes and replicates within differentiating cells. Approximately 90% of women clear a specific HPV type within 2 years.[14] When the immune response fails to clear the infection, it becomes persistent and there is an increasing risk of developing high grade cervical intra-epithelial neoplasia (CIN) or cancer.

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Persistent infections may induce chromosomal instability resulting in loss and gains of chromosomal material in affected cells. However, the virus may remain in a 'latent' state in the basal epithelium for many years before entering an active phase of replication leading to infection.

Among women with persistent HPV infection, additional cofactors for cervical cancer include tobacco smoking,[15,16] hormonal contraception,[17] parity,[18] and possibly other sexually transmitted infections (STIs).[19] Host immunity plays an important role in influencing the natural history of HPV infection—for example immunosuppression due to HIV or organ transplantation is associated with an increased risk of genital cancer.[20–24]

Eighty percent of cervical cancers occur in the developing world.[25] In New Zealand, the incidence and mortality from cervical cancer is falling as a consequence of the organised National Cervical Screening Programme (NCSP) which was initiated in 1990.[26]

In 1995,[27] there were 232 new cervical cancer cases and 95 deaths, in 2002 this had fallen to 180 cases and 65 deaths.[28] A recent audit revealed that only 20% of women with cervical cancer had had regular smears in the 6 years prior to diagnosis. For those with advanced squamous cancers, only one-third had ever had a smear.[26]

The NCSP detects 4000 new cases of CIN 2/3 annually. In addition, there is an even greater burden of minor cervical cytology abnormalities. Prevention of HPV infection would lead to a large reduction in the number of cervical cytology abnormalities and the associated emotional, physical, and economic sequelae. Whilst the new HPV vaccines offer this prevention opportunity, vaccination will not eliminate these conditions nor the need to screen for them.

The incidence of the less common HPV-related vulval and anal pre and invasive cancers is increasing.[29,30] The incidence of anal cancer is high amongst men who have sex with men (MSM) and this risk is further increased with HIV.[31] Rarely, HPV causes recurrent respiratory papillomatosis in infants and adults.

The reported prevalence of visible genital warts in the USA is 1%.[32] The cumulative self-reported incidence of genital warts at 32 years in the Dunedin Multidisciplinary Health and Development Study was 10.2% in men and 12.2% in women.[33]

The principal reason for the development of HPV vaccines is the prevention of HPV-related lower genital tract malignancy, particularly the cervix. The prevention of genital condyloma is a secondary consideration. However genital warts do cause significant psychological morbidity and very substantial healthcare costs.

The inclusion of males in a vaccination programme warrants consideration from the perspectives of reduced transmission and incidence of HPV infection including genital warts, the 'herd effect' and the prevention of anal and penile cancers. However, further data from male vaccination studies are required before firm recommendations can be made.

Vaccination against HPV may be 'prophylactic'—given before exposure to the virus, or 'therapeutic'—given following infection. Therapeutic vaccines are still in the early stages of development and are unlikely to be available for at least a decade.

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Prophylactic vaccines that protect against HPV are subunit vaccines composed of the HPV L1 major capsid protein similar to that used in the hepatitis B vaccine. The virus-like particle (VLP) in the vaccine does not contain viral DNA and is therefore neither infectious nor oncogenic. The vaccines are generally administered on day 1, month 1-2 and month 6. The vaccines are highly immunogenic, and although the duration of immunity is unknown, stable protection has been so far observed for 5 years to date.[34]

In 2002, Koutsky et al reported the first randomised double-blind placebo-controlled trial of a monovalent HPV 16 VLP vaccine in 2400 young women.[35]This vaccine was 100% effective in preventing both HPV 16 infection and HPV 16-associated cervical intraepithelial neoplasia for at least 3.5 years after vaccination[36]. 99.7% of vaccinated women seroconverted, i.e. becoming anti-HPV 16 antibody positive.

Merck & Co (Gardasil—marketed by Commonwealth Serum Laboratories in New Zealand) and Glaxo Smith Kline [GSK] (Cervarix) have both developed candidate vaccines:

- Gardasil, which obtained licensure in July 2006, contains VLPs for HPV types 16, 18, 6 & 11.
- Cervarix VLPs for HPV types 16 and 18.

Gardasil is licenced in females aged 9–26 and males 9–15 years. It is anticipated that Cervarix will be licenced later in 2007.

For subjects immunised according to the FUTURE I protocol (seronegative and DNA-negative for a particular HPV type at day 1 and remained DNA-negative for that type at month 7) the vaccine was 100% effective at preventing all external anogenital and vaginal lesions and all cervical lesions associated with that HPV type.[37–41]

The FUTURE II study demonstrated 98% effectiveness at preventing HPV 16 and 18-related high-grade cervical lesions in at-risk women immunised according to protocol.[39]

Moreover, an intention-to-treat analysis (including all eligible subjects regardless of their HPV status at the start of the study or whether they followed study protocol) found that the vaccine reduced the disease incidence by 73% and 55% respectively.[39–41]

In the cross protection efficacy analysis, some protection was observed against genital disease caused by 10 non vaccine genetically related HPV types.[42]

The quadrivalent HPV vaccine induces high efficacy and stable anti-HPV levels for at least 5 years.[43] Vaccination also induces robust immune memory.[43] These findings suggest the efficacy of this vaccine will be long lasting.

Phase III data from the GSK vaccine (Cervarix) have demonstrated 100% efficacy against persistent infection and 93% against cytological abnormalities associated with HPV 16 & 18 with follow-up extending to 4.5 years.[44,45] This study suggested the possibility of protection against related HPV genotypes.

Theoretically, widespread vaccination may allow less common genotypes to replace the vaccine types but expert opinion believes this is unlikely.[46]

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Both vaccines are safe and well tolerated, the majority of adverse events (94%)[34] were reported as mild or moderate, with injection site reactions the most common. No serious adverse reactions have been reported.

Vaccination should ideally occur prior to a female's first sexual experience. In New Zealand, this occurs for most females during their mid-adolescence.[47] Since there is a scheduled vaccination at 11 years, this is the optimum time to administer the vaccine. Furthermore, higher immune responses are achieved in younger recipients.[48]

As the HPV vaccination consists of three doses, an additional two vaccination visits will be required. Recently benefits have been demonstrated to women exposed to HPV infection in the 24 to 45 year age group.[49] A catch-up vaccination programme for adolescent females and women up to age 26 needs to be considered for reasons given above.

The role of male vaccination has yet to be defined. The implementation of the HPV vaccine will require health professionals to discuss sexual health issues with parents of pubescent children. Health professionals' attitudes are a key influence in the parental decision to vaccinate children.[50,51]

A challenge for health professionals will be to address parents' moral concerns that are associated with the vaccination of their pubertal child against a sexually transmitted infection (STI). Common fears about STI vaccinations include the erosion of 'family values' and a possible increase in unsafe sexual activity.[50]

The key messages for health professionals to convey are the:

- Long-term protective benefits of preventing most HPV infections.
- Significant reduction in HPV-related disease and deaths.[52]

Appropriate vaccination implementation strategies that account for cultural differences will require community consultation. Health professionals offering this vaccine need to be provided with evidence-based recommendations to assist them in the effective promotion of the vaccine.

In the meantime, organised cervical screening will need to continue unchanged. While certain cost effectiveness models[53] have demonstrated the benefits of HPV vaccination, the widespread introduction and success of such programmes will be dependant on coverage, pharmacoeconomic evaluation, and community and political acceptance.

The introduction of the HPV vaccine is the single most important advance in the prevention of cervical cancer since the introduction of cervical cytology half a century ago.

Many lives were lost in the 30-year interval between the first recommendation for national cervical screening in New Zealand and its eventual introduction following the Cervical Cancer Inquiry in 1988.[54,55]

It is to be hoped that government, health professionals, and public embrace this opportunity to prevent cervical and other HPV-related cancers as well as emotional, physical, and economic sequelae related to the screening and management of precursor lesions.

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A case of late-onset severe cardiotoxicity from 5-fluorouracil therapy resulting in death

Namal Wijesinghe

Abstract

This case highlights the possibility of late-onset severe cardiotoxicity resulting in sudden cardiac death from 5-fluorouracil (5-FU) therapy. Late-onset cardiotoxicity of 5-FU, after initial tolerance, has not been reported before.

Cardiotoxic effects of the cancer drug, 5-fluorouracil (5-FU), are well documented. This usually presents as angina with or without electrocardiographic evidence of ischaemia. These effects are usually reversible within 24 hours after cessation of 5-FU therapy. However, more serious effects including myocardial infarction, acute heart failure, and sudden cardiac death can occur rarely.

Myocardial ischaemia can precipitate in patients with underlying coronary artery disease (incidence: 4.5%) and without coronary artery disease (incidence: 1.1%).[1] The myocardial ischaemia caused by 5-FU is thought to be due to coronary artery spasm.[2,3] Cardiotoxicity can occur with continuous infusion, intravenous bolus, and oral forms of 5-FU therapy.

The onset of 5-FU cardiotoxicity is usually within 48–96 hours after the commencement of therapy.[4] Onset of cardiotoxic effects of 5-FU after the first week of commencement of therapy has not been reported before.

Case report

A 70-year old man suffered a sudden cardiac arrest from ventricular fibrillation. He was resuscitated with cardiopulmonary resuscitation and defibrillation. His electrocardiogram after the resuscitation revealed widespread 5 mm ST segment elevation in the anterior leads. He was brought forward for an urgent primary angioplasty.

Surprisingly, his coronary arteries were normal and did not require coronary intervention. Other causes of ventricular tachyarrhythmia including electrolyte imbalances and concurrent therapy with arrhythmogenic medications were excluded.

He was transferred to the intensive care unit for ventilation and further management. However, he remained in a deep coma. His life support was withdrawn 3 days later after the confirmation of brain stem death. A post-mortem examination was not held after his death.

He had been started on FOLFIRI—a combination drug of 5-FU, irinotecan, and folinic acid (leucovorin)—9 months previously as palliative chemotherapy for a disseminated colonic cancer after surgical excision of the primary cancer from left colon.

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He had received 9 fortnightly cycles of irinotecan 330 mg (180 mg/m^2) + folinic acid 725 mg (400 mg/m^2) intravenous infusion over 2 hours followed by 5-FU 725 mg (400 mg/m^2) intravenous bolus with subsequent intravenous infusion of 4400 mg (2400 mg/m^2) over 46 hours.

This treatment had been given over a 9-month period. However, there were two 2-month intervals free of chemotherapy as he developed diarrhoea that was thought to be a side effect of FOLFIRI therapy. There was no evidence of cardiotoxicity during the 9-month period of treatment until the sudden cardiac death. The last cycle of FOLFIRI therapy had been given 3 days before this event.

Discussion

The man's massive myocardial infarction leading to sudden cardiac death was thought to be from severe coronary artery spasm caused by 5-FU. However, late-onset cardiotoxicity is unusual after a period of initial tolerance of this therapy.

This case highlights the possibility of late presentation of severe cardiotoxic effects in patients treated with 5-FU even if they have tolerated the therapy during the initial period. Careful surveillance is needed throughout the period of therapy to identify cardiotoxic effects of 5-FU. This includes questioning about angina-like chest pains after commencement of 5-FU therapy and either exercise or pharmacological stress testing in asymptomatic patients.

5-FU therapy should be discontinued if there is evidence of significant coronary spasm.

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Leiomyosarcoma of the scrotum—a rare tumour

Kheman Rajkomar, Ian Mundy

Abstract

We present the case of a 76-year-old man with a leiomyosarcoma of the scrotum. The difficulty in achieving an oncologically safe margin reflects the tumour biology. An aggressive initial resection is required at the time of the first operation.

Leiomyosarcomas of the scrotum are very rare soft tissue sarcomas, with only about 29 cases reported in the world literature,[1] such that a GP would usually see such a tumour every 20 years.[3] Those involving the tunica vaginalis or the spermatic cord are more frequent.[2]

Clinically, paratesticular leiomyosarcomas manifest as painless scrotal lumps of several months to years duration occurring in patients with a mean age of 51 years.[4]

This tumour is of mesenchymal origin. The diagnosis of malignancy is based on the mitotic rate (2–10 mitosis/HPF),[5] although the presence of nuclear pleomorphism, vascular invasion, tumour depth, and infiltration and the percentage of tissue necrosis are also considered.[2] The method of spread is primarily hematogenous—to lung, liver, and bone.

Due to the rarity and heterogeneity of soft tissue sarcomas there have been only a few studies done, which would explain the lack of a uniform follow up strategy or postoperative management.[6]

One of the controversial issues regarding the surgical management of scrotal leiomyosarcomas has been the definition of an adequate resection margin. The case reported here illustrates the need for an aggressive initial management of scrotal leiomyosarcomas, with a proper resection margin to prevent local recurrence.

Case report

A 76-year-old man was referred to a urologist in September 2004 for the management of a left-sided scrotal mass that had been steadily enlarging over 2 months. On examination, a hard and nodular lump, measuring 3.8 cm across, was found on the left scrotal wall. It was fixed to the lower pole of the left testicle, with no inflammation or ulceration of the overlying skin. An ultrasound revealed a solid, vascular mass that was separate from the testicle and epididymis. As a malignancy could not be excluded, excision was recommended.

At operation, a 4×4 cm lesion was found in the dartos. The tunica vaginalis was not opened. Macroscopically it had a smooth shiny outer surface with a homogeneous solid cream cut surface and small foci of haemorrhage without the presence of central necrosis. Microscopically it was a spindle cell tumour with 2–8 mitotic figures per high power field and associated nuclear pleomorphism.

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Immunostaining showed the presence of desmin and smooth muscle actin. A diagnosis of leiomyosarcoma was made. The macroscopic margin taken was considered insufficient. Hence further margin clearance was planned.

In mid-October, a disc of tissue measuring 6 cm across was resected around the previous site of the lesion, down to the tunica vaginalis. The testicle was left *in situ*. The deep end of the excised tissue had focal hard areas, which on histology showed residual tumour extending to the margins.

A month later he underwent a further excision of the left hemiscrotum. The testis was removed. Three biopsies were taken at the medial, inferior, and lateral margins. Unfortunately the latter was positive.

He was brought back to theatre for the forth time in December. The margin extended 3 cm medial to the previous scar, laterally to the left groin fold and proximally to just around the base of the penis. Tissue was resected down to the bulbospongiosus muscle. Biopsies sent for frozen section analysis were negative. The wound was closed primarily with no graft or flap and histologically there was no residual tumour

His latest follow-up at 3 months showed no evidence recurrence.

Discussion

The main problem in this case was incomplete resection margin. The need for a proper clearance finds its root in the pathology of soft tissue sarcomas. These grow by radial expansion, infiltrating the local tissues as they proliferate. They lack a surrounding capsule so that an excisional biopsy with a macroscopically clear margin will often leave microscopic tumour behind.[5] Catton et al[7] have reported a 27% microscopic residual tumour detection rate in cases of 'completely excised' tumours. Studies at the MSKCC[8] have indeed confirmed that the recurrence rate in the presence of a positive margin is increased 2.4-fold.

In recurrence of the tumour or failure of clearance of the margin necessitates further excision, which is fraught with problems. Firstly, there is often a loss of anatomical planes due to the process of fibrosis shortly after surgery, which hampers the surgeon's physical appreciation of the operating field.[9] Secondly, there is the additional risk of spillage or local spread of tumour through each operation.[10] Inadequate clearance eventually causes a vicious cycle of repeat surgery and repeat spillage.

It is clear that the proper resection of a soft tissue sarcoma requires a surrounding margin to be excised. The actual size of an oncologically safe margin is not clearly defined, due to the rarity of the tumour and the lack of studies done on those tumours. McKee et al[10] showed that the local recurrence-free interval at 5 years is higher with a margin of >10 mm (84%) than margins of 0 mm (58%) or 1–9 mm (58%). The similar rates in the latter two groups suggest that a less than optimal margin is as good as no margin at all. As suggested above, it could be explained by residual microscopic disease but it could be the result of spillage of tumour cells at time of surgery or the presence of discontinuous nests of tumour cells.

A margin of <10 mm is also associated with increased risk of metastasis although other factors such as tumour size and grade also come into the equation.[10]

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This case demonstrates the need for an adequate surgical margin. An early diagnosis will rely on a high degree of clinical suspicion right at the outset and confirmation with frozen section. However, if a conservative excision has been made initially and a diagnosis of sarcoma made unexpectedly, as in this case, then a re excision with a margin of 1 cm should be the next step.

Studies have shown that the best chance for a cure with this type tumour resides with surgical excision.[11] The role of radiotherapy has not been well defined.

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Solitary subcutaneous metastatic deposit from hepatocellular carcinoma

Yazan A Masannat, Rajgopal Achuthan, Kailas Munot, William Merchant, Jim Meaney, Michael J McMahon, Kieran Horgan

Abstract

Hepatocellular carcinoma is the most common primary tumour of the liver. Metastasis is frequent in these aggressive tumours and is commonly to the lungs, regional lymph nodes, or bone. Metastasis as a discrete subcutaneous nodule has not been described before. We report a case of hepatocellular carcinoma with a solitary subcutaneous metastatic deposit identified 18 months after the initial hepatic surgery.

Hepatocellular carcinoma is one of the most frequent cancers occurring in males across the World, although it is relatively rare in Western countries.[1] Early diagnosis and resection offer a prospect of cure, but due to the lack of early symptoms the diagnosis is often made when it has metastasized. Extra-hepatic metastasis is reported in 40-85% of cases, the commonest sites are lung, regional lymph nodes, and bone.[2]

Cutaneous/skin metastasis from hepatomas is unusual but has been described in the literature.[3,4] There are no reports of patients presenting clinically with a subcutaneous metastasis. One case was found incidentally at autopsy out of 120 hepatoma cases.[2]

Case report

A 63-year-old Caucasian male was referred to our hospital in December 1996 with dyspeptic symptoms. Physical examination was normal while abdominal ultrasound scan demonstrated a solitary solid lesion in the right liver lobe. Magnetic resonance imaging (MRI) scan showed an inhomogeneous high signal intensity on T2 weighted scan. The signal characteristics were in keeping with the diagnosis of hepatocellular carcinoma. Serum alpha-fetoprotein levels were normal at 5ng/ml and hepatitis screen was negative. The patient underwent laparoscopy, biopsy, and frozen-section histological confirmation of the diagnosis, and proceeded to have right hepatectomy. Histopathological analysis confirmed the diagnosis of hepatoma with clear excision margins and surrounding cirrhotic changes.

Eighteen months following surgery, the patient presented with a mass in the medial aspect of his left calf and was referred to the soft tissue sarcoma clinic. Clinically the mass measured 5×6×4cms and was free from skin but appeared tethered to the underlying fascia.

MRI scans revealed a subcutaneous mass closely applied to the superficial surface of the medial head of the gastrocnemius muscle with a number of serpiginous structures entering the lesion in keeping with tumour related vessels (Figure 1). The mass showed contrast enhancement and radiologically was in keeping with subcutaneous metastasis. No underlying bony abnormality was seen. Staging investigations did not reveal any other suspicion of metastatic disease and alpha-fetoprotein levels were normal.

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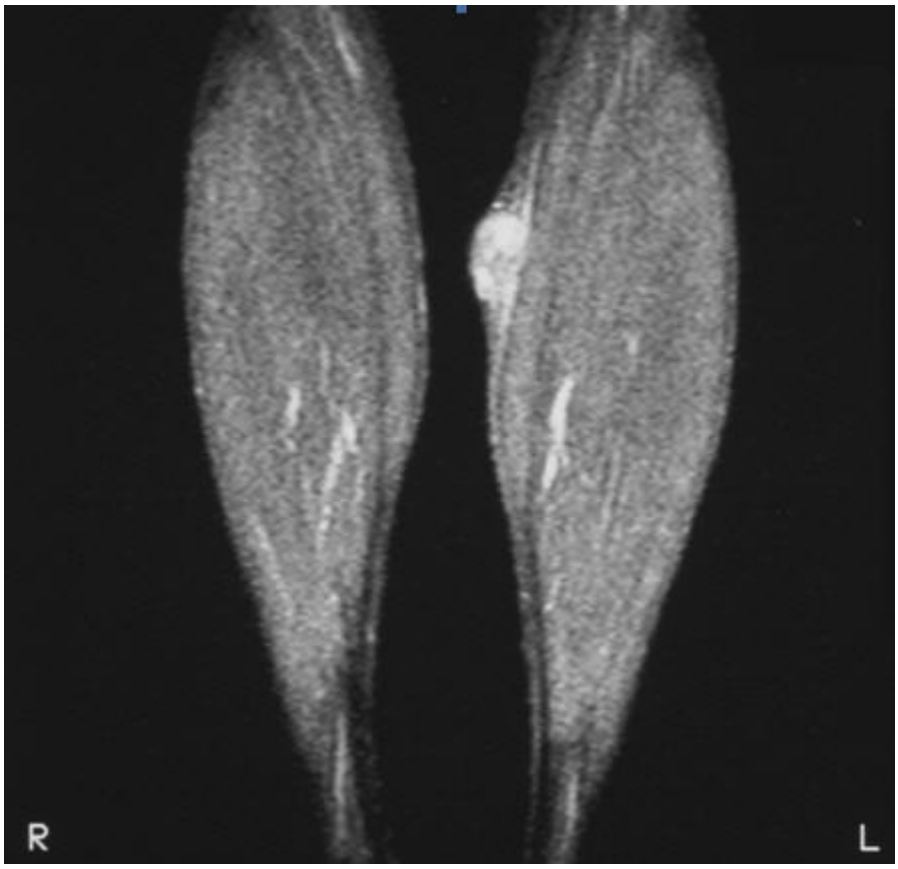
The mass was excised and histopathology revealed a multi-nodular tumour consistent with metastatic hepatocellular carcinoma with clear excision margins. The patient died 52 months following his initial presentation from a cerebrovascular accident.

The patient was regularly followed up in the outpatient clinic and had regular scans that did not show evidence of recurrence. Laparotomy for perforated duodenal ulcer six months prior to death did not reveal evidence of intra-abdominal metastasis.

There was no evidence of recurrence when he died and no post-mortem examination was carried out.

Figure 1. MRI scan of the leg showing the subcutaneous metastatic nodule superficial to the medial head of the gastrocnemius muscle. The mass shows contrast enhancement and radiologically is in keeping with malignancy, most likely a metastasis to the subcutaneous tissue. No underlying bony abnormality is seen



Discussion

Liver malignancies are classified into primary and secondary or metastatic lesions. In Western countries, metastatic involvement of the liver from other cancers is more common than primary cancers.

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If untreated; primary carcinoma of the liver is a rapidly fatal disease with mortality rates approaching 95% within 6 months of diagnosis.[2] Extra-hepatic metastasis ranges from 40–85% and is commonly to the lungs, regional lymph nodes, bone, and adrenal glands.[1,2,5] Other unusual sites of metastasis have been reported including the CNS,[6] oesophagus,[7] and the heart.[5]

Only 0.1–2.3% of malignancies of any type metastasise to skin. Metastasis to subcutaneous tissue or muscle is even less frequent.[8] There have been reports of subcutaneous seeding of needle tracts following biopsy and even after percutaneous ethanol injection therapy for hepatocellular carcinoma.[9,10] However, subcutaneous metastasis from a hepatoma has only been described as a post-mortem finding in a single case.[2]

In this case, MRI revealed a subcutaneous mass with features in keeping with metastasis (Figure 1). Though the radiology was not independently diagnostic, the diagnosis of metastatic hepatoma was likely in view of the past history.

In light of the clinical suspicion and radiological findings, a wide local excision was planned without resorting to core biopsies. Preoperative staging investigations were nevertheless organised which excluded further foci of metastatic disease. The histology of the excised specimen revealed cords and trabeculae of epithelial cells forming a sinusoidal pattern in keeping with metastasis from a liver primary.

Optimal management of any soft tissue mass comprises full clinical assessment, appropriate radiological investigations and sampling of the mass for histological examination. Adherence to such protocols avoids inappropriate surgery and allows planned radical excision for tumours such as soft tissue sarcomas or even isolated metastatic deposits such as in the case described.

In the absence of detectable distant metastases, excision of an isolated hepatoma metastasis can provide worthwhile disease-free survival duration and palliation.

Surgical treatment for hepatocellular carcinoma is the only modality that offers a chance of cure.[2] Despite potentially curative local surgery, distant metastasis can occur.

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Cervical screening legislation is unethical and has the potential to be counter-productive

Katharine Wallis

Abstract

Part 4A of the Health Act 1956—'National Cervical Screening Programme' (NCSP)—provides programme evaluators with unprecedented powers of access to personal health information, overriding both a woman's right to health information privacy and a doctor's duty of confidentiality. Such overriding of important ethical concepts is not justified, at least in the primary care setting where much of the information that may be accessed is irrelevant to a programme evaluation and that which is not irrelevant is not essential.

In addition to being unethical, Part 4A is unnecessarily offensive to practitioners: it imposes increased compliance costs onto practitioners who take cervical smears, it threatens them with hefty fines for non-compliance, and also introduces liability into previously protected quality assurance activities.

By offending both women and practitioners, and by undermining the trust that necessarily exists between them, Part 4A risks the support of those on whom the NCSP relies for its ongoing success—women and practitioners.

Background

Part 4A of the Health Act 1956—'National Cervical Screening Programme' (NCSP)—was developed in response to recommendations from the Gisborne Cervical Screening Inquiry.[1] This Inquiry found that the NCSP had failed in Gisborne, and that it had been allowed to run unchecked for nearly a decade since its introduction, in part because the programme "lacked the essential components of an effective cervical screening programme when it was first established" and that it "failed to exercise or to exercise properly legal powers that were available [to enable it to be effective]".[2]

Part 4A authorises a breach of health information privacy and confidentiality

Part 4A of the Health Act was introduced to rectify the perceived problems with the NCSP and to "facilitate the operation and evaluation of [the] NCSP" (s.112A).

To achieve this Part 4A provides that "a screening programme evaluator has full access to all health information" "held by any health practitioner" that relates to any "relevant woman" (s.112X). A "relevant woman" is defined as any woman, dead or alive, "who is enrolled in the NCSP" or "who is not enrolled in the NCSP but who has developed any cervical cancer".

Women may still 'opt off' the NCSP (s.112G) however they may not 'opt out' of these access provisions: should a woman develop cervical cancer (when an evaluator is most likely to want to access her information) then an evaluator may access her

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information regardless. Practitioners must provide the information to the evaluators "free of charge" (s.112ZB) or face a $10,000 fine (s.112ZP).

Programme evaluators have the power to access the entire primary care record pertaining to relevant women—even though much of this information is likely to be irrelevant to an evaluation and some of it may be of a particularly sensitive nature with significant privacy concerns. It is not possible for evaluators to selectively access only relevant information in primary care records (because of the chronological nature of the information) and in any case, evaluators will not know that the information is irrelevant until after they have read it.

This constitutes a breach of women's right to health information privacy, and while this breach may not be a breach of the worst sort (evaluators are not tabloid journalists after all), it remains nevertheless a breach.

The ethical notions of health information privacy and doctor-patient confidentiality

The right to health information privacy is about the right to control the use of one's personal health information and stems from a commitment to autonomy.[3] The Cartwright Inquiry[4] provides an illustration of the harm that may result when autonomy is ignored and, although the circumstances in this situation are somewhat less extreme (women don't stand to die if evaluators access their information without consent), it is the same basic principle of autonomy that is at stake.

The ethical concept of confidentiality is related to, but not identical to, that of health information privacy. Confidentiality pertains to a relationship between two people and is present when one person voluntarily discloses private information, in confidence and trust, to another who pledges not to divulge that information to a third party without permission.[5] Underpinning the concept of confidentiality in healthcare is the need to protect the special relationship, based on trust, which exists between a patient and a doctor. 'Trust' is about keeping promises; when promises are broken, trust is diminished and a relationship is damaged.[6]

Concern for autonomy is not, of course, everything. Nevertheless, if programme evaluations can take place without the violation of autonomy then (unless there are good reasons otherwise) that is the path that should be taken. In the case of an NCSP audit, the 'good reasons' that have been put forward as possible justifications for setting aside a woman's right to health information privacy include validity and cost: if the consent provision is waived then the information of all relevant women can be included in an audit (not just that of consenting women) and at a reduced cost.

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Sufficient women will consent, if asked, and the cost of asking is not prohibitive

The 2002 NCSP audit, conducted under the pre-existing legislation, revealed that it is not necessary to waive women's right to consent in order to successfully evaluate the NCSP:

> "376 (85%) of the eligible women consented to at least one form of data collection and 349 (78%) consented to all forms of data collection. Consent rates for Māori women were the same as those for non-Māori…These results indicate that, with appropriate resources and processes, it is possible to obtain high consent rates from both Maori and non-Maori women for interview and access to medical records."[7]

The 2002 audit, which studied the information of fewer than 400 women, cost in the region of 3½ million dollars.[8] It strains good sense to suppose that, with a budget in the millions, the cost of obtaining consent from the 150–200 women who are diagnosed with cervical cancer in New Zealand each year[9] prior to accessing their personal health information would be considered prohibitive.

And in any case, any saving to the evaluation budget does not equate to an overall saving to the health budget. Part 4A, in an attempt to mitigate the privacy threat that this legislation introduces, provides practitioners with new obligations to provide women with information about "the risks and benefits of participation in the NCSP, who has access to information on the NCSP register, and the uses to which that information may be put" (s.112L).

Part 4A also, in what has been described as a "neat little transfer of risk",[10] provides that practitioners may "oversee that access" by evaluators (s.112X(6))—as if overseeing a breach of privacy somehow lessens the breach. These new duties come at a cost to practitioners making any 'cost savings' afforded by waiving the consent provision in reality more of a 'cost transfer' from the evaluation budget to the primary care budget.

But even if genuine savings were to be achieved by waiving the consent provision, we would not automatically be obliged to take advantage of such savings: there is an important ethical principle at stake here and just because there is a price to pay does not mean we should not pay that price.

Primary care records are not essential to an evaluation of the NCSP

If cost were to be the determining factor, then cheaper and less thorough but still useful programme evaluations could be conducted without the inclusion of primary care information.

In the 2002 programme audit, the auditors claimed that:

> "The most important reason for obtaining primary care records was to ensure that the smear histories of Audit women were as complete as possible."[11]

Smear histories, however, are also available in laboratory records and on the 'reliable' NCSP register ("almost all smears are on the NCSP-R, making it [the register] a reliable source of screening histories and monitoring information"[12]). If cost were to be the determining factor then, it would not be unreasonable for evaluators to rely on the 'reliable' information available from sources other than primary care records. And

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should they do so without consent, they would inflict a far less serious breach of health information privacy.

Primary care records are required to monitor Primary Care Practitioners

The Health Select Committee (which considered the Amendment Bill and recommended waiving the consent provision) claimed, in contrast to the above claims by the evaluators, that:

> "The main purpose for accessing primary health care records is to evaluate whether women who develop cancer or early signs of cancer were properly referred and treated by their general practitioners."[13]

The intention of providing evaluators with unfettered access to primary care records, then, was to monitor the performance of general practitioners.

If evaluators consider that general practitioners are not performing their job adequately then, according to section 112Y, evaluators may pass a woman's information on to the Medical Council "for the purpose of referring a concern about the competence of a health practitioner", having first "obtained the consent of the Director-General".

Evaluators may also pass a woman's personal health information on to the Health and Disability Commissioner, without the woman's consent, "for the purpose of assisting an investigation into concerns about the competence of a health practitioner".

Section 112Y not only provides an additional threat to the privacy of women's personal health information, it also means that, in future, programme evaluations will pose a medicolegal threat to the practitioners whose work forms part of an evaluation.

This medicolegal threat is unhelpful and unnecessarily hostile to practitioners

Evaluators are not competent to assess the competence of practitioners; they are not themselves practitioners, they are not trained in the competence assessment of practitioners nor are they given any guidance in the legislation as to the standards against which they should be judging practitioners.

The impact of any single primary care practitioner on the failure (or success) of the NCSP is likely to be small, and so allowing evaluators to refer individual practitioners is unlikely to have much impact on the success of the NCSP. There is little evidence to show that allowing evaluators to report practitioners leads to any improvement in the NCSP or in the healthcare of women. Although it might be alleged that primary care practitioners claim the obligation of confidentiality merely to hide their incompetence, this does not in fact appear to be the case. The 2002 NCSP audit found that, generally, primary care practitioners were treating and referring women properly.[12]

Unfounded accusations of incompetence against practitioners are not without their harm[14] and the creation of an environment where such accusations are a possibility has the potential to make practitioners less well disposed towards the NCSP and less inclined to encourage their patients to participate in such national screening programmes.

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A less hostile approach to practitioners who participate in audits was taken in the Health Practitioners Competence Assurance Act (HPCAA) 2003. In contrast to Part 4A of the Health Act, the HPCAA aimed to "encourage effective quality assurance activities…by protecting the confidentiality of information…and giving immunity from civil liability to persons who engage in such activities in good faith" (HPCAA s.52).

In any case, it is, and should remain, the prerogative of women to use their personal health information to refer their practitioner to the Medical Council or Health and Disability Commissioner.

This legislation is unethical and has the potential to be counter-productive

It was never necessary to offend women by overriding their right to control access to their personal health information: as the 2002 audit proved sufficient women will consent to access when they are asked.

It was never necessary to offend practitioners by authorising a breach of their ethical duty of confidentiality; nor was it necessary to threaten practitioners with hefty fines for non-compliance nor to impose increased compliance costs for the pleasure of enrolling their patients in the NCSP. Nor was it necessary to permit untrained evaluators to judge and to report practitioners: the failure of the NCSP was never due to incompetent primary care practitioners.

The 2002 NCSP audit identified inadequate screening as the single most important factor resulting the screening programme's failure to prevent cervical cancer.[15] The reasons behind women failing to take advantage of screening opportunities will no doubt be multi-factorial, however, a lack of trust in the medical profession and poor (or non-existent) relationships with practitioners are likely to play a part. Part 4A undermines the trust that a woman necessarily places in her practitioners, meanwhile implying that practitioners are not to be trusted and that it is necessary for evaluators to check up on them.

The common good of a safe and effective screening programme can only be achieved with the goodwill and cooperation of both women and practitioners, and then only if trusting relationships exist between women and practitioners.

By offending both women and doctors, and by damaging the relationship between them, Part 4A risks the very thing that it aimed to preserve: the "continuation of the NCSP". Irrespective of these consequences, however, the legislative changes are unethical and could, and should, be repealed without compromising the safety and efficacy of the National Cervical Screening Programme.

Competing interests: None.

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Division of doctors into classes: an idea to discourage the public visiting chemists, herbalists, or quacks

Based on Wanganui Chronicle article and from editorial in N Z Med J 1908;6(25):26–.

The Wanganui Chronicle has taken up the question, and we reprint a sensible article by that journal. It is time for doctors really to face the position and make up their minds how they will act, for that some change must be made seems quite certain. It looks as if things were tending to a solution on some such lines as these.

That doctors should be divided into three classes, one possessed of the best possible degrees and of the highest scientific attainments, to be paid by the State. These we will call Class I; they should give their time in the main to scientific research in laboratories provided by the State, to preventative medicine, to medico-legal cases, and should be called in consultation in cases of difficulty, the fees for such consultation being paid by the State.

Class II to consist of purely operating surgeons, who by giving their whole time to this work and having a large number of cases, would thus acquire great manual dexterity.

Class III to consist of men with a mere pass qualification, which could be obtained at a less cost than the present degree and in a less time, which would not entail the smattering of Bacteriology, Pathology, and other scientific work which is now forced upon every student; these men would do the bulk of the routine work, attend midwifery classes, do minor surgery, attend to all the minor ailments for a moderate fee; their education would be entirely practical, most of their training would be in outpatient rooms of the hospitals; in this way it is quite possible that in three years quite as useful a practitioner for this class of work would be evolved, as under the present more elaborate and costly system of training.

The modern young physician knows a good deal about Leucocytosis and Opsonins, but very little how to feed a baby or diagnose a simple fever. With this division into classes, there would be less inducement for the public to go to chemists, herbalists, or quacks for minor ailments; counter prescribing by chemists and dispensing by doctor might be forbidden.

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Free Papers

Usefulness of the Cumulative Sum Score Method (CUSUM) in assessing performance of colonoscopy trainees at Middlemore Hospital.

W Stableforth[1], BR Parry[2], S Parry[1]. [1]Middlemore Hospital, South Auckland, [2]Auckland City Hospital, Auckland

Introduction: CUSUM can be used to monitor temporal changes in the performance of operators. It has been used to assess proficiency in laparoscopic cholecystectomy, colorectal and cardiac surgery and in colonoscopy to assess the proficiency of trainees.

Methods: The colonoscopy database at Middlemore Hospital was interrogated for retrospective colonoscopic data from January 2000 to January 2007. The target completion rate (CR) was set at 90%, CUSUM scores were calculated for rotating gastroenterology trainees with prior colonoscopic experience.

Results: Fourteen trainees were identified performing 1306 procedures (mean number of procedures per trainee 93, range 32 to 148). Procedures were performed over a mean of 43 weeks (range 35 to 51). After 30 procedures CUSUM identified 5 trainees achieving and maintaining a 90% colonoscopy CR. Seven trainees demonstrate an initial CR below 90%, of these 3 subsequently improved to a CR of 90% and 4 others failed to improve. Two operators deteriorated after an initial satisfactory performance.

Conclusion: CUSUM analysis of colonoscopy performance for rotating advanced gastroenterology trainees reveals marked variation in proficiency. Assessment of the colonoscopy CR after 30 procedures, regardless of previous experience, identified individuals not making adequate progress and would provide an opportunity to tailor training and supervision. Some trainees will struggle to achieve proficiency and this may be apparent after only 60 procedures.

Upper gastrointestinal bolus obstruction – retrospective analysis of endoscopic findings, histology and acute management.

HY Lee, P Frankish. North Shore Hospital, Auckland

Background: Eosinophilic oesophagitis is an increasingly recognised cause of food bolus obstruction.

Aim: This retrospective analysis aims to establish endoscopic appearances, histological findings and acute management in patients requiring upper gastrointestinal endoscopy for bolus obstruction, thus comparing the incidence of findings consistent with eosinophilic oesophagitis with other causes of bolus obstruction.

Methods: Endoscopy records in North Shore and Waitakere Hospitals over January 2000 to June 2007 were evaluated for patients presenting with dysphagia with bolus obstruction. Endoscopic appearances, histological findings and intervention were evaluated.

Results: Ninety-two (60 males, 32 females; mean age 60 years) patients were identified with dysphagia with bolus obstruction. Common endoscopic findings included: Reflux

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oesophagitis (n=26), benign fibrotic stricture (n=15), oesophageal ridges or rings (n=5), malignant stricture (n=5), Schatzki rings (n=4). Forty-two biopsies results were taken: 28 patients had underlying oesophagitis: reflux-related (n=8), eosinophilic oesophagitis (n=8) and nonspecific (n=12). Seventy-one patients had documented treatment: endoscopic passage into stomach (n=37), endoscopic extraction (n=20), no intervention performed (n=13), endoscopic dilatation (n=7) and intravenous glucagon (n=1).

Of the five patients with oesophageal rings or ridges endoscopically, 4 patients (4 males, 0 females; mean age 39) had histology consistent with eosinophilic oesophagitis. Three patients required endoscopic extraction or removal of obstructing bolus.

Other 4 patients with histological eosinophilic oesophagitis had normal endoscopic findings (n=2) and oesophageal ulcer (n=2).

Conclusions: Findings are consistent with existing data that eosinophilic oesophagitis is a significant cause of bolus obstruction, which primarily affects males of younger age group. The most common cause of bolus obstruction is reflux oesophagitis affecting 28% in this patient group.

Prevalence of autoimmune hepatitis in Canterbury, New Zealand: a retrospective population based survey. JH Ngu[1], K Bechly[1], RB Gearry[1,2], BA Chapman[1], MJ Burt[1], ML Barclay[1,2], CAM Stedman[1,2]. [1]Department of Gastroenterology and [2]University of Otago, Christchurch

Background/Aim: Autoimmune hepatitis (AIH) is a chronic hepatitis that has been described since the 1950s, but its aetiology remains obscure, and there are limited epidemiological data available. We have performed a retrospective population based epidemiological survey of AIH in the region of Canterbury, New Zealand.

Method: 97 cases of AIH were identified by searching all public and private gastroenterology clinic letters in this region from the year 2000 to 2004. This is likely to closely approximate the total number of AIH cases, assuming that such patients will attend a specialist clinic at least once in 5 years. Demographic and

clinical data were extracted from case notes.

Results: Point prevalence on 30 November 2004 was 18.5/100,000. Incidence rate in 2004 was 1.5/100,000. Female to male ratio was 70% vs. 30%. 96% of all cases were Caucasians. Age at diagnosis was between 50 - 69 years in 49% of cases. 40% had cirrhosis at the time of diagnosis. 13% of patients had an overlap syndrome, with 7% and 6% overlap with PBC and PSC, respectively. Percentages of patients with positive SMA, ANA and IgG were 56%, 53% and 92%, respectively.

Conclusion: AIH is frequently diagnosed in the 6th and 7th decades of life. The prevalence of AIH in Canterbury is higher than in any other published prevalence study.

The demographics of cirrhotic patients in South Auckland. Z Raos, W Stableforth, E Gane, S Gerred. Middlemore Hospital, South Auckland

Aim: To document the numbers, demographic features, and mode of presentation of newly diagnosed cirrhotic patients at Middlemore Hospital over the last six years.

Method: Patients were identified from an electronic database of cirrhotic patients seen by the Middlemore gastroenterology service between January 2001 and January 2007. A retrospective review of the case records was performed.

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Results: Four hundred and thirty one cirrhotic patients were seen during the study period, 89 were diagnosed prior to 2001 and were not analysed further. The number of cirrhotic patients seen annually in our liver clinics has risen from 159 in 2001 to 310 in 2006, 64% were male. The primary underlying liver diseases were: hepatitis B (33%), alcoholic liver disease (24%), hepatitis C (18%), non-alcoholic fatty liver disease (16%), and other cause (9%). The ethnic mix was: Europeans (42%), Pacific Islanders (22%), Asians (16%), Indians (10%), and Maori (9%). The mean age at presentation was 51 years in those with viral cirrhosis and 61 years in those with non-viral cirrhosis ($P < 0.0001$). The mean Child's-Pugh and MELD scores were 7 and 11 respectively. Half (53%) of patients were symptomatic at presentation. Liver specific symptoms included: Jaundice (36%), ascites (24%), encephalopathy (14%), and GI bleeding (7%). Thrombocytopenia was seen in 55%. Hepatocellular cancer was present in 2%.

Conclusions: The number of cirrhotic patients seen in our clinics has doubled over the last 6 years. We diagnose one new case every week. All the major ethnic groups are affected and the proportion presenting with advanced symptomatic disease remains high.

Treatment outcomes at Waitemata Health using combination Pegylated Interferon and Ribavirin therapy for Chronic Hepatitis C. N Tindle, R Tonkin, S Williamson, D Ray-Chaudhuri, P Frankish, J Perry. North Shore and Waitakere Hospitals, Auckland

Background/Aims: Pegylated Interferon and Ribavirin (PEG/RBV) is currently the most effective treatment available for Chronic Hepatitis C Virus (HCV). The aim of this study was to assess the treatment outcomes for patients receiving PEG/RBV in the Waitemata Health area and to compare these with other regional and international data.

Patients and Methods: One hundred and thirty patients with HCV received PEG/RBV over the 4 year period studied (2002 – 2005). Detailed patient data was gathered from electronic, clinical and laboratory records. 72% were male, 76% were Caucasian, 73% were genotype 1 (G1), 24% were genotype 2 or 3 (G2/3) and 43% had advanced fibrosis (F3-4).

Results: In 113 treatment-naive patients: Rates of sustained virological response (SVR) were 53% overall; 55% for G1 (35% in 23 with F3-4, 63% in 60 with F0-2); 48% for G2/3 (86% were F3-4, SVR rate was 75% in 4 patients with F0-2). In patients completing treatment, SVR rates were 73% for G1 without advanced fibrosis. In 18 patients who were re-treated with PEG/RBV, SVR rates were 33% overall. On multivariate analysis, older age ($p=0.036$), and advanced fibrosis ($p=0.17$) were independently associated with a poorer outcome.

Conclusion: SVR rates achieved in our centre are comparable with the published regional and international experience. Older patients and those with advanced fibrosis were less likely to achieve an SVR in our cohort.

The safety of gastrointestinal procedures in patients following acute coronary events. M. Alansari, J Hill, F Weilert, A Smith, G Dickson, and J Brooker. Gastroenterology Department, Waikato Hospital, Hamilton

Background: The use of endoscopy in the era of modern cardiac revascularisation techniques has not been fully evaluated.

Aim: To assess the complications of endoscopy in patients with GI bleeding or iron deficiency anaemia (IDA) and a recent history of cardiac ischaemic event or percutaneous coronary intervention (PCI).

Methods: A retrospective chart review over 24 months. Inclusion criteria: gastrointestinal haemorrhage or IDA, within one month of an ischaemic cardiac event or PCI.

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Results: 57 patients were identified with either overt bleeding (22) or IDA (35). The cardiac history consisted of NSTEMI in 41, PCI in 3 and angina in 13. Three patients had received GPa2b3 inhibitors, 6 Clopidogrel, 41 aspirin, 15 heparin and 8 warfarin.

42 patients underwent investigation {21/22 (95%) with overt bleeding and 21/35 (60%) with IDA}, of whom 40 (95%) underwent gastroscopy and 17 colonoscopy.

Investigations led to significant findings in 17/21 (81%) patients with overt bleeding and 15/21 (71%) with IDA. The findings were peptic ulcer (15), and gastritis (4) in the overt group. In the non overt group the findings were gastritis (6), GAVE (1), small intestinal bleeding (3), and significant colonic findings (2).

Complications within 30 days of endoscopy included: 7 recurrent GI bleeding, one death from recurrent NSTEMI and ongoing small intestinal blood loss. One patient had NSTEMI 1 hour after gastroscopy with full recovery. One patient had a TIA after two weeks.

Seven patients with IDA (7/35) were not referred for investigation. The reason for not referring them was stated to be because of longstanding IDA in 5, and was not documented for the remaining two.

A further 8 patients were referred to Gastroenterology, but investigations were not performed, because four were medically unstable, in 3 because of recent NSTEMI and one because the investigation of IDA could be postponed

Conclusions: This data indicates that judicious gastrointestinal investigation of patients following acute cardiac events/PCI is safe, clinically useful, with a high yield of significant pathology in the upper GI tract.

A prospective study of the rate of fibrosis progression in recurrent Hepatitis C. KC Ekanayake, MY Yeong, E Gane. New Zealand Liver Transplant Unit, Auckland City Hospital

Introduction: Chronic hepatitis C has become the leading indication for liver transplantation. HCV re-infection is universal and may lead to recurrent cirrhosis and graft loss. Factors linked with more rapid disease progression include HCV genotype, donor age and over-immunosuppression.

Objective: To assess the rate of fibrosis progression in the allograft and evaluate factors associated with severe recurrence.

Method: All patients transplanted for end-stage hepatitis C underwent annual liver biopsies, which were reviewed by a single Histopathologist (MLY). Fibrosis stage and inflammatory grade were scored according to the Metavir system. Multivariate analysis was performed to determine the association between rate of fibrosis progression and host (age, gender), donor (age, gender), viral (genotype) factors and immunosuppression (treatment of rejection, choice of CNI). Graft and patient survival was determined by Kaplan-Meier method

Results: Between 1998 and 2007, hepatitis C was the indication for transplantation in 61/252 adult primary transplants (24%). Thirty-eight per cent were genotype 1, 48% Genotype 2 or 3 and 14% unknown. Five year patient survival was 87% and 5 year graft survival was 82%. After a median follow-up of 3 years, 14 have developed advanced recurrent hepatitis C – 2 cholestatic hepatitis, 12 cirrhosis. Of these, 8 have developed graft failure, of whom five died and 2 were re-transplanted (both of whom subsequently died). The only independent factors associated with severe recurrence were infection with HCV Genotype 1 and administration of pulse steroids for acute rejection.

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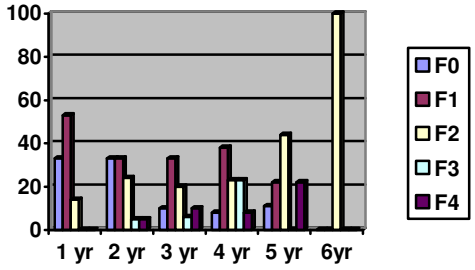

Conclusion: Recurrent hepatitis C leads to accelerated fibrosis progression, with 20% developing cirrhosis and 12% HCV-related graft failure by 5 years post-transplant. The decreasing donor supply is likely to prevent future re-transplantation for recurrent hepatitis C. New strategies are desperately needed to improve long-term outcomes, including avoidance of adjuvant immunosuppression and use of perioperative molecular antiviral prophylaxis.

Antiglycan antibody testing in inflammatory bowel disease: A pilot validation study. D Luo, A Jafer, AG Fraser, R Amerataunga, P Austin. Department of Gastroenterology and Hepatology and Immunopathology laboratory, Labplus, Auckland City Hospital

Aim: We aimed to validate the sensitivity, specificity, positive predictive value and negative predictive of a new antibody assay (Anti-Laminaribioside Carbohydrate Antibodies ALCA, Anti-Chitobioside Carbohydrate Antibodies, ACCA, Anti-Mannobioside Carbohydrate Antibodies AMCA and Anti-saccharomyces cerevisiae antibodies, ASCA - IBDX™ (GlycoChip; Glycominds, Ltd, Lod, Israel)) in patients with established Inflammatory Bowel disease (IBD) in preparation for a longer term study to test patients with Indeterminate Colitis.

Methods: Sera from patients with well established Crohn's disease from a previous study were tested. The control group consisted of non-hospitalized Ulcerative Colitis (UC) patients. Single batch testing was undertaken at Labplus. Anti-neutrophil cytoplasmic antibody (ANCA) was tested in patients who were tested negative for the combined panel. We also collected clinical information on disease activity and extent.

Results: Thirty patients with well established CD were tested. There were thirty seven controls with established UC with a mean duration 7.5 years. The assay's sensitivity was 67%, Specificity 86.4%, PPV = 80%, NPV = 76%. Out of the 20 CD patients who tested positive 15 were positive for gASCA, 2 for AMCA, 5 for ALCA and 2 for ACCA. Five patients tested positive for p-ANCA.

Conclusion: This test has a modest sensitivity and negative predictive value, good specificity and positive predictive values and may be useful for distinguishing CD from UC.

Immediate and 30-day complications of endoscopic retrograde cholangiopancreatography: Auckland Hospital experience in 2004–2005. JC Hsiang, MR Lane, PYN Wong. Gastroenterology Department, Auckland City Hospital, Grafton, Auckland

Aim: A prospective audit of Endoscopic Retrograde Cholangiopancreatography (ERCP) procedures carried out between December 2004 and November 2005 at Auckland City Hospital. The aim was to evaluate the immediate and late complications associated with ERCP and compare with the previous study done at the same centre

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Methods: Consecutive patients undergoing ERCP at Auckland City Hospital during the study period, were prospectively audited. Patient demographics, procedure details, and immediate and late complications were all recorded.

Results: 321 ERCP procedures were audited. The most common indications for ERCPs were deranged liver enzyme tests, choledocholithiasis and cholangitis. The most common underlying pathologies were choledocholithiasis (36.4%), malignancy (22.7%) and biliary stricture (7.8%). Diagnostic ERCP was performed in 17.1% and therapeutic ERCP in 82.9% of the patients. ERCP was unsuccessful in 9.3%. The immediate and overall 30-day complication rates were 3.7% and 23.4% respectively. The 30-day complication rate of using the Consensus criteria was 5.9%, (9.6% including stent-related complications). Pancreatitis occurred in 9 patients (2.8%) and was more common in more difficult (Grade 3) cases (12.5%), 10(3.1%) patients died within 30 days none from ERCP related complications

Conclusion: Over the years, there has been an increasing prevalence of therapeutic ERCP and a more possibly a technically more difficult casemix. This has been associated with a significant ERCP failure rate, morbidity and mortality. Results however are comparable to published data.

Endoscopic management of large adenomatous and malignant polyps: role of endoscopic mucosal resection. R Ogra. Department of Gastroenterology, Middlemore Hospital, Otahuhu, Auckland

Introduction: Endoscopic resection techniques offer a safe alternative to surgery for removal of large and highly dysplastic lesions of the colon

Aim: To assess the safety and effectiveness of endoscopic management of large (including highly dysplastic and malignant) sessile colorectal polyps.

Methods: Patients with large colonic polyps >2cm were identified using the Endoscribe database. Data obtained included demographics; polyp type, size, location, histology, removal methods including surgery, complications and recurrence.

Results: From 1996 to August 2007 224 large sessile polyps were identified. Mean polyp size was 3.25±1.5 Cm.Adenocarcinoma was present in 21(9.4%). Fifty six (25%) underwent surgical resection of whom 27 (48%) patients experienced complications of which 37% were serious and 4 (16%) developed recurrences. EMR was performed on 191(85%) polyps with primary success rate of 79% and recurrence rate of 28(16%). Ten (64%) of these were eradicated with second EMR and 5 (3%) underwent surgery for multiple recurrences. Half of the polyps displayed high grade dysplasia or adenocarcinoma. Of the 21 cancers found 5 went directly for surgery and 16 underwent EMR at the time of polyp diagnosis. Nine went for surgery 8 of whom did not show any cancer in the surgical specimen. Seven were not operated for various reasons and continue to do well 18.6±15 months after EMR. The complications associated with EMR were Bleeding 7 (3.7%) and one microperfoartion treated endoscopically. Only 2 patients required surgery for bleeding. The rest either settled spontaneously or were treated endoscopically.

Conclusions: Endoscopic mucosal resection of large and malignant polyps is very safe and successful and prevents surgery and its attendant complications in a large group of patients.

Relative incidence of *Mycobacterium avium* subsp. *paratuberculosis* in a New Zealand population-based cohort of patients with Crohn's disease. RW Bentley [1], RL Roberts[1], RB Gearry[2], JI Keenan[3], MA Kennedy[1], ML Barclay[2]. Department of Pathology[1],

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Departments of Gastroenterology[2] & Surgery[3], Christchurch School of Medicine & Health Sciences, Christchurch

Introduction: The role of *Mycobacterium avium paratuberculosis* (MAP) in Crohn's disease (CD) aetiology remains controversial. Molecular, serological and microbiological studies have indicated a higher incidence of MAP in CD patients compared to controls. Very few studies have investigated the incidence of MAP in peripheral blood. *NOD2* is involved in bacterial sensing via detection of components of the bacterial cell wall and it has been proposed that there is a link between defects in bacterial sensing and inflammatory disorders such as CD.

Aim: To determine the incidence of MAP in patients with CD, and whether there is an association with *NOD2* mutations.

Methods: Blood samples from 361 CD patients and 200 controls, of known *NOD2* genotype, were screened by PCR for MAP-specific IS900 DNA, and ELISA for MAP antigens.

Results: PCR detected the equivalent of 100 MAP cells/ml of blood.

The incidence of MAP-specific IS900 DNA differed significantly between the CD cohort (33.8%) and controls (21.5%), p=0.002 (OR=1.86 [95% CI, 1.247-2.785]). Carriage of one or more *NOD2* mutant alleles was not associated with a significantly higher risk of CD, p=0.234 (OR=0.75 [95% CI, 0.465-1.207]). No significant association was seen for carriage of one or more *NOD2* mutant alleles and MAP status, p=0.871 (OR=0.96 [95% CI, 0.585-1.575]). No significant correlation was found between MAP status and antibody response.

Conclusion: The over-representation of MAP in a large population-based cohort of CD patients supports a role for MAP in the aetiology of CD.

Enterohepatic and Gastric Helicobacter Species in Fecal Specimens of Children with Crohn's Disease. SM Man, L Zhang, AS Day, ST Leach, HM Mitchell. Schools of BABS and Women's and Children's Health, University of New South Wales, Sydney, Australia: Department of Gastroenterology, Sydney Children's Hospital, Sydney, Australia

Background: An inappropriate mucosal immune response to intestinal flora is thought to be integral in the pathogenesis of Crohn's disease (CD). Although several groups of bacteria have been implicated, to date, a single pathogenic organism has not been identified. The mucous-associated enteric Helicobacters are candidates that could contribute to gut inflammation. The aim of this study was to utilize non-invasive methods to investigate children with and without CD for evidence of enteric Helicobacters..

Methods: Faecal specimens were collected and stored at -80˚C until required. The 16S rRNA gene was amplified by PCR from DNA extracted from stool using the *Helicobacteraceae*-family-specific primers, H276f and H676r.

Results: Faecal specimens from 29 children with CD and 37 control children were available. Enterohepatic and gastric *Helicobacter* DNA was detected in 59% (n=17) of children with CD and in 3% (n=1) of the controls. Eleven isolates from children with CD revealed a 96 to 100% similarity to enterohepatic *Helicobacter* species, which includes *H. trogontum*, *H. bilis*, *H. canis* and *H. rappini* with the remaining six isoloates sharing a 99 to 100% sequence similarity to *H. pylori.*

Conclusions: For the first time, enterohepatic and gastric *Helicobacter* species have been identified in faecal specimens of children with CD. Therefore, this non-invasive PCR based methodology may provide a diagnostic assay for enteric *Helicobacter* infections. Furthermore, our data suggests that *Helicobacter* species may have a pathogenic role in CD.

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Ongoing studies are required to further define the role of *Helicobacter* species in paediatric CD.

Exclusive enteral nutrition modulates intestinal flora in children with Crohn's disease. AS Dam WR Eng, ST Leach, L Zhang, HM Mitchell. Schools of BABS and Women's and Children's Health, University of New South Wales, Sydney, Australia: Department of Gastroenterology, Sydney Children's Hospital, Sydney, Australia

Background: Treatment of Crohn's disease (CD) can include enteral nutrition given exclusively (EEN), although the precise mechanisms of action are unknown. The aim here was to examine whether EEN modulates intestinal flora and whether this is one possible mechanism of action.

Methods: Six children, recently diagnosed with CD, were treated with EEN over an 8 week period. Stools were collected prior to treatment and 1, 2, 4, 6, 8, 16 and 26 weeks post commencement of treatment. Seven control children with no gastrointestinal symptoms and a normal diet had stools collected 8 weeks apart. The 16S rDNA gene, extracted from stool, was amplified by PCR for all bacteria (Eubacteria) and each of the groups; *Bacteriodes-Prevotella*, *Clostridium coccoides*, *Bifidobacteria* and *Clostridium leptum*. PCR products were separated by denaturing gradient gel electrophoresis (DGGE) to identify individual bacterial species. The number of bands on DGGE gave an indication of bacterial diversity.

Results: Eubacteria diversity, indicating overall diversity, was equivalent to control at diagnosis but reduced to 50% during EEN with *Bifidobacteria* and *Clostridium coccoides* showing similar results. *Bacteriodes-Prevotella* showed reduced diversity at diagnosis and increased with EEN. In comparison *Clostridium leptum* showed more diversity compared to control at diagnosis, which fell during EEN. Further, *Bacteriodes-Prevotella* (R=0.405, p=0.02) and *Bifidobacteria* (R=0.353, p=0.04) diversity levels correlated with the stool inflammatory marker S100A12.

Conclusion: Bacterial diversity in CD is dissimilar to control at diagnosis and is altered with EEN. Modulation of the intestinal flora may be one possible mechanism by which EEN reduces inflammation in CD.

IL23R R381Q and ATG16L1 T300A are strongly associated with Crohn's disease in a study of New Zealand Caucasians with inflammatory bowel disease. RL Robert[1], RB Gearry[2], JE Hollis-Moffatt [3,] AL Miller[1], J Reid[4],V Abkevich[4], KM Timms[4], A Gutin[4], JS Lanchbury[4], TR Merriman[3], ML BarclayL[2], MA Kennedy[1]. [1]Department of Pathology, University of Otago, Christchurch. [2]Department of Gastroenterology, Christchurch Hospital, Christchurch. [3]Department of Biochemistry, University of Otago, Dunedin. [4]Myriad Genetics Inc, Salt Lake City, Utah, USA

Objective: Separate genome-wide association analyses have identified non-synonymous SNPs in *IL23R* and *ATG16L1* (rs11209026; c1142G>A, R381Q and rs2241880; c1338A>G, T300A, respectively) as strong candidate susceptibility factors for Crohn's disease (CD) in Caucasians. The aim of our study was to test whether these SNPs are associated with CD in a population-based cohort of New Zealand Caucasians with inflammatory bowel disease (IBD).

Methods: Allele frequencies of rs11209026 and rs2241880 were determined in 496 CD patients, 466 ulcerative colitis (UC) patients and 591 controls, respectively. Distribution of the relevant alleles was compared between controls and IBD patients. rs11209026 and rs2241880 genotype distributions were examined both within IBD clinical sub-phenotypes and across *NOD2* genotypes.

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Results: rs11209026 and rs2241880 were both associated with CD (p-value$_{rs11209026}$ = 0.0026; OR, 0.54; 95% CI, 0.36-0.81; p-value$_{rs2241880}$ = 0.0001; OR, 1.41; 95% CI, 1.18-1.67). In addition, there was evidence for association of rs11209026 with UC (p-value = 0.037; OR, 0.66; 95% CI, 0.45-0.98). No significant association was observed between *IL23R* genotype or *ATG16L1* genotype and IBD sub-phenotypes. *IL23R* was associated with CD and UC only in the absence of *NOD2* mutations, whereas *ATG16L1* was associated with CD in the presence and absence of *NOD2* mutations.

Conclusions: We replicated the previously reported associations between CD and rs11209026 and rs2241880, confirming that *IL23R* and *ATG16L1* are susceptibility loci for CD in New Zealand Caucasians. We also provide further evidence for association of rs11209026 with UC and a report of an additive effect between *IL23R* and *NOD2* genotypes in CD.

Discordance between patient satisfaction and QOL scores following treatment for sialorrhoea in Parkinson's Disease. J Brett, A Stocks, A Melchers, D Mok, R Fraser. Swallowing Disorders Clinic, Repatriation General Hospital, Daw Park, South Australia

Dysphagia and sialorrhea occur in up to 78% of patients with Parkinson's disease (PD) and contribute to embarrassment, social isolation and reduced quality of life (QOL). A number of dietary, pharmacological, behavioural and postural strategies, are used to manage these problem but their effect on QOL is unknown.

The aim of this study was to assess the impact of strategies to improve saliva management and QOL. Studies were performed in 5 patients with PD who complained of problems with drooling (4M; 1F, mean age 73.4 years) using subjective (swallowing- and drooling-related quality of life questionnaires (SWAL-QOL and SAL-QOL)), and objective measures (Fibreoptic Endoscopic Evaluation of Swallowing (FEES), Modified Barium Swallow and weight of salivary secretions) to assess swallowing and salivary function before and after a coordinated treatment program for sialorrhoea. Satisfaction with treatment was determined with a 5 point Likert scale (1=ineffective, 5 = very effective).

Objective assessment of swallowing deteriorated in 3 patients, and SWAL-QOL scores were worse in two. SAL-QOL scores also deteriorated in 3 patients despite a reduction in salivary weight in two. At FEES reassessment, 4 patients had no change in secretion status while 1 had deteriorated slightly. Patient satisfaction scores with sialorrhoea management strategies were satisfactory to very satisfactory (Likert score 3-5) in all 5 patients (4 prescribed medications, 1 behavioural therapy only).

These data suggest that whilst patients are satisfied with secretion management strategies, this does not translate directly to improved QOL scores possibly reflecting the complexity of swallowing related dysfunction in neurological degenerative conditions.

Diagnostic yield and clinical outcomes in 200 consecutive patients referred for Wireless Capsule Endoscopy. D Luo, PYN Wong, MR Lane, D Rowbotham

Aims: To assess the diagnostic yield of the first 200 referrals for capsule endoscopy (CE) to our unit. Secondary aims were to review the patient characteristics, referral patterns, number of prior investigations, technical success, final diagnosis, complications and clinical outcomes.

Methods: Retrospective chart review of patients who underwent CE in a single centre between September 2001 and December 2005.

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Results: 200 patients (mean age 55.33,104 males) with obscure gastrointestinal bleeding (OGIB) (75 overt, 92 occult) and 33 with suspected small bowel Crohn's disease, underwent CE. Fifteen were lost to follow-up. CE yielded positive findings in 86% with overt OGIB, 73% occult OGIB and 23% of suspected Crohn's disease; the overall positive diagnostic yield was 76%. The most frequent findings were angiodysplasia 32 (%), Crohn's ulceration 25 (%) and NSAID induced lesions 18 (%). The bleeding remained obscure in 58 (31%); 31 (17%) required a further hospitalisation and 23 (12%) required further blood transfusions. CE resulted in definitive treatment in 57(31%) patients.

Conclusions: CE has a high diagnostic yield especially overt OGIB. It is safe and led to definitive treatment in about a third of patients with obscure GI bleeding. We believe if CE is used early in the workup of overt OGIB gastrointestinal bleeding it could considerably shorten the time to diagnosis and it could spare a number of alternative investigations with lower diagnostic yield.

Outcomes of Transjugular intrahepatic porto-systemic shunting at the New Zealand Liver Transplant Unit. D Luo, E Gane, A Lim, A Holden. New Zealand Liver Transplant Unit and Department of Radiology, Auckand City Hospital

Aims: To review the clinical outcomes of patients referred for Transjugular Intra-hepatic Porto-Systemic Shunting (TIPSS) and to review the impact of covered stents.

Methods: Retrospective review of all TIPSS between November 1996 and June 2007. Baseline data (age, gender, Child pugh score (CPS), Model for End-stage Liver disease (MELD) score, International Normalised Ratio (INR), blood results, primary liver disease, indication, technical success and clinical outcomes were recorded.

Results: 62 patients (42 males, 20 females, mean age 46 years, range 9-62 years) underwent a TIPSS. The primary liver disease was alcoholic liver disease in 19 patients(31%), Hepatitis C in 11 patients(18%) and Hepatitis B in 7 patients (11%).Twenty eight patients (45%) had diuretic resistant ascites and 20 patients had variceal bleeding. Four (6%) patients underwent TIPSS prior to a surgical procedure to reduce peri-operative risk. Twenty (32%) patients had a covered stent and 7 (35%) patients required revision. Forty two (68%) had an uncovered stent and 13 (30%) needed revision. Twenty three patients (37%) were subsequently successfully transplanted. Thirteen patients died (21%). Complications included hepatic infarction in 3 (5%) patients, chronic hepatic encephalopathy in 3 (5%) patients and liver capsule perforation in 1(2%) patient.

Conclusion: TIPSS is an effective means of reducing portal hypertension in a carefully selected group of patients with a low complication rate.

Increased susceptibility of steatotic and steatohepatitic livers from *foz/foz* mice to hepatic ischaemia reperfusion injury (IRI). NC Teoh[1], J Williams [1], CZ Larter [1], RS McCuskey[2], GC Farrell[1].[1]Gastroenterology and Hepatology Unit, ANU Medical School at The Canberra Hospital, ACT and [2]Department of Anatomy and Cell Biology, University of Arizona, Tucson, USA

Hepatic steatosis is associated with increased operative morbidity/mortality from IRI after liver resection or transplantation. We have previously shown that a human annexin V homodimer, Diannexin protects against IRI in normal lean mouse liver. We developed a dietary model of fatty liver disease in *foz/foz* mice with features resembling human metabolic syndrome and hepatic steatosis/steatohepatitis.

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Aims: (1) To study whether fatty livers in *foz/foz* mice are more susceptible to IRI than lean liver. (2) Whether Diannexin (1mg/kg body weight) protects against IRI in fatty livers.

Methods: In mice subjected to partial hepatic ischaemia (90 min) followed by reperfusion (24hr), hepatic IRI was assessed by serum ALT, area of hepatic necrosis, and microcirculatory blood flow by *in vivo* microscopy.

Results: Hepatic IRI in *foz/foz* mice fed a high-fat diet (HFD) was significantly greater than HFD-fed wildtype (wt) littermates or wt fed normal chow (NC) (ALT 15400 ± 7260* vs 1700 ± 300* vs 550 ± 291 U/L, *p< 0.001), and area of hepatocyte necrosis (>50%) with steatosis or steatohepatitis, compared to 30 ± 5.8% in lean livers. Diannexin failed to protect HFD-fed foz/foz or HFD-fed wt mouse livers from IRI. The architecture of the hepatic microvasulature was distorted and narrowed by enormous lipid-filled hepatocytes; this caused microcirculatory dysfunction evidenced by reduced numbers of perfused sinusoids.

Conclusions: Steatotic livers from *foz/foz* mice are more susceptible to IRI. The mechanisms of injury in fatty liver subjected to IRI differ from those in lean liver and may be related to initial distortion of the hepatic microvasculature.

The rate of complications in elective percutaneous liver biopsies – A retrospective analysis of over 450 consecutive procedures. K van Harselaar, R Howard, I Cammack, L Colbourne, M Hamilton, G Karageorge, V Kong, B La Hood, S Derrett, M Bell, R Lubcke*, M Schlup*, M Al'Freah*, M Schultz*. Department of Preventive and Social Medicine, University of Otago, Dunedin School of Medicine and *Department of Gastroenterology, Dunedin Public Hospital, Otago District Health Board, Dunedin

Background: Percutaneous liver biopsy is standard practice to assess tissue damage in chronic and acute liver disease.

This study aimed to assess the rate of complications following liver biopsy and the impact of pethidine as a pre-procedural analgesia on post-procedural complications.

Methods: A retrospective audit was carried out on all percutaneous liver biopsies performed during 2001-2006. Hospital databases, individual notes and drug charts were consulted for demographics, indication, rate of minor and major complications, frequency and timing of analgesia and other relevant events.

Results: 465/534 liver biopsies were analysed. Indications included: Hepatitis C (38.1%), abnormal liver function tests (17.2%), methotrexate therapy (12.5%), Hepatitis B (4.3%), others (28%). 154 pts. (33.8%) had complications with females having a significantly higher rate than males (39% vs. 29%; p=0.022). The only major complication was a pneumothorax (n=1; 0.2%), minor complications (33.8%) included: pain (31.8%) requiring non-opiate (8.6%) and opiate (23.2%) analgesia, nausea/vomiting (1.1%), hypotension (0.9%), vasovagal episode (0.2%). 20.4% pts. required post-procedural analgesia within 2 hours, 3.7% between 2-4 hours and 7.1% > 4 hours post-procedure. There was no difference in the complication rate in relation to pre-procedural pethidine but pts. who received pre-procedural pethidine required less opiate analgesia.

Conclusion: The minor complication rates in this study were comparable with previous studies, whilst the major complication rates were lower. Pain was the most common complication and the need for analgesia more than 2 hours post-procedure was low. As a consequence of this finding, patients may only need to be observed for 2 hours post-procedure.

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Liver resection for Hepatocellular Carcinoma in New Zealand. A Bartlett, J McCall, J Koea, A Holden, M-L Yeong, N Gurusinghe, E Gane

Hepatocellular carcinoma arises predominantly in patients with chronic liver disease. In New Zealand, Hepatitis B and C are the most important causes of chronic liver disease and thus hepatocellular carcinoma. The options for treatment of hepatocellular carcinoma are limited by the type and degree of underlying liver disease. Curative treatments offered in NZ for HCC are liver resection, liver transplantation and tumour ablation.

53 Patients underwent partial hepatectomy for HCC with curative intent during the study period of 99 months. Of these, 72% had underlying liver disease, predominantly chronic Hepatitis B infection. Over half (57%) of these patients underwent major resections. Forty three percent of these had histologically proven cirrhosis.

Postoperative morbidity and mortality occurred in 41.5% and 7.5% respectively. Median follow up was 34 months and survival probabilities at 1, 3 and 5 years were 74.1%, 54.1% and 42.6%. Forty seven percent of patients suffered disease recurrence over the study period with a median disease free survival of 13.8 months. The probability of disease recurrence at 1, 3 and 5 years were 35.2%, 49.4% and 55.9%. Of those who developed recurrence 76% died with a median time to death from diagnosis of disease recurrence of 7.8 months.

The results of this review show that with careful patient selection, liver resection for HCC can achieve good long term patient survival and acceptable risks.

The outcomes of cirrhotic patients in South Auckland. W Stableforth, Z Raos, E Gane, S Gerred. Middlemore Hospital, South Auckland

Aim: To document the mortality and liver transplant rates of newly diagnosed cirrhotic patients at Middlemore Hospital over the last six years and to examine baseline factors that may predict survival.

Method: Patients were identified from an electronic database of cirrhotic patients seen by the Middlemore gastroenterology service between January 2001 and January 2007. A retrospective review of the case records was performed.

Results: 342 patients were diagnosed with cirrhosis over the six year period (median follow-up 2.8 years). During this time there were 95 deaths (27%) and 23 liver transplants (7%). Hepatocellular cancer (HCC) was seen in 43 (13%). Transplant free survival (TFS) at 1, 3, and 5 years was 81%, 70%, and 61% respectively. The TFS according to the Child-Pugh (CP) grade was: CP(A) 97% at 1 year, 90 % at 3 years; CP (B) 75% at 1 year, 59% at 3 years; CP (C) 52% at 1 year, 34% at 3 years. Other baseline predictors of death / transplant included: hyponatraemia (HR 5.7, 95% CI: 3.2-10.1), Symptomatic presentation (HR 4.0, CI: 2-7-5.9), age > 55 years (HR 1.7, CI: 1.2-2.6), and the MELD score . Baseline factors that did not predict TFS included patient gender and the presence of thrombocytopenia.

Conclusions: Almost twenty percent of newly diagnosed cirrhotics will die or require transplant within 1 year of diagnosis, and 40% will do so within 5 years. There are a number of clinical and laboratory parameters that can help predict survival.

Outcome and prognostic factors on 57 cases of infective endocarditis in a single centre. C Wong, G Porter, C Young, J Tisch. Cardiology Department, Tauranga Hospital, Tauranga

Introduction: Despite improvement in medical care, the mortality and morbidity of Infective endocarditis (IE) remains high. Our aim was to define the factors predicting the outcome.

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Methods: A single centre retrospective review of all cases of IE for a 5 year period from Jun 2002.

Results and Discussion: There were 57 episodes of IE in 47 patients. Seventy percent were definite IE using modified Duke Criteria (2000). Forty-five episodes were native valve endocarditis, the remaining were prosthetic valve endocarditis and one case of pacemaker lead endocarditis. The mitral valve was most commonly involved. The most commonly isolated organisms were Streptococci (37%) and Staphylococcus Aureus (35%). Eight patients had recurrent endocarditis within the study period. Five cases (8.5%) had early recurrence of endocarditis within 60 days. Twelve patients (26%) died during follow-up (mean 14 months). There was no significant increase in mortality of patients with history of recurrent endocarditis (38% vs 28%; p=0.39). There was a trend towards increased recurrence of IE with immunosuppressed status (50% vs 18%; p= 0.06). Staphylococcus Aureus was associated with increased mortality or need for valve surgery (OR 4.5; 95% CI 1.38-14.8), risk of neurological events (OR 8.9; 1.5-52), renal failure (OR 7.2; 1.7-30) and thrombocytopenia (OR 5.6; 1.4-22). Haematological parameters, renal function or inflammatory markers were not shown to be predictive of increased mortality or need for valve surgery.

Conclusion: The mortality of IE remains high. This patient cohort showed better result than previous studies but conclusions are limited by small sample size.

The micro-organism involved is more predictive of mortality or need for surgery than is recurrent endocarditis.

Thromboprophylaxis in general medical patients - a retrospective audit. F Findlay, E Ellis, L Schonegevel. Department of General Medicine, Christchurch Hospital

Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE) are common complications in general medical patients. A number of international trials and recent Meta analyses have confirmed the benefits of appropriate prophylaxis with unfractionated or low molecular weight heparins.

The aim of the audit was to assess the practice of the general medicine department at Christchurch Hospital, with regard to identification and documentation of risk factors, contraindications to prophylaxis and use of appropriate prophylaxis with heparins and graduated compression stockings.

We carried out a retrospective audit of the patients admitted during May 2006 by reviewing the clinical notes and drug charts. We used the best practice guidelines for Australasia as the standard against which practice was compared.

We reviewed the notes of a total of 466 patients. The mean age was 70 years, with 183 (39%) being over 80 years. 209 (45%) patients were classified as high risk, of these 61 had a contraindication to anticoagulation, 27 received low molecular weight heparin for another reason, 14 received prophylactic low molecular weight heparin and 107 eligible patients (51% of the high risk group) did not receive any prophylaxis. Documentation was generally poor with only 11% of patients having risk factors documented. During the 8 weeks following index admission 6 (1.3%) patients went on to develop DVT or PE, none of these patients had been given prophylactic heparin.

In conclusion there was poor documentation and low uptake of DVT/PE prophylaxis in general medicine at Christchurch hospital and ongoing education and guidelines may be required.

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Proportional classifications of COPD phenotypes. SE Marsh[1], J Travers[1], M Weatherall [2], MV Williams[1], PM Shirtcliffe[1] AL Hansell[3], MR Nowitz[2,4], JB Soriano[5], RW Beasley[1,6]. [1]Medical Research Institute of New Zealand, Wellington, New Zealand. [2]Wellington School of Medicine & Health Sciences, Wellington, New Zealand. [3]Department of Epidemiology and Public Health, Imperial College London, UK. [4]Pacific Radiology Limited, Wellington, New Zealand. [5]Fundació Caubet–CIMERA Illes Balears, Bunyola, Spain. [6]University of Southampton, Southampton, United Kingdom

Background: Chronic obstructive pulmonary disease (COPD) encompasses a group of disorders characterised by the presence of incompletely reversible airflow obstruction, with overlapping subsets of different phenotypes including chronic bronchitis, emphysema or asthma. The aim of this study was to determine the proportion of adult subjects >50 years within each phenotypic subgroup of COPD, defined as a post-bronchodilator $FEV_1/FVC < 0.7$, in accordance with current international guidelines.

Methods: Adults aged >50 years derived from a random population-based survey undertook detailed questionnaires, pulmonary function tests and chest computed tomography scans. The proportion of subjects in each of 16 distinct phenotypes was determined, based on combinations of chronic bronchitis, emphysema and asthma, with and without incompletely reversible airflow obstruction, defined by a post-bronchodilator FEV_1/FVC ratio of 0.7.

Results: A total of 469 subjects completed the investigative modules of whom 96 (20.5%) had COPD. Diagrams were constructed to demonstrate the relative proportions of the phenotypic subgroups in subjects with and without COPD. 18/96 (19%) subjects with COPD demonstrated the classical phenotypes of chronic bronchitis and/or emphysema, but no asthma; asthma was the predominant COPD phenotype being present in 53/96 (55%). When COPD was defined as a post-bronchodilator $FEV_1/FVC <$ lower limit of normal, there were a third fewer subjects with COPD and a smaller proportion without a defined emphysema, chronic bronchitis or asthma phenotype.

Conclusion: This study provided proportional classifications of the phenotypic subgroups of COPD which can be used as the basis for further research into the pathogenesis and treatment of this heterogeneous disorder.

Are results of magnetic resonant imaging (MRI) after a cerebrovascular cccident (CVA) helpful in selecting patients for transoesopahgeal echocardiography (TOE) to find a cardiogenic source of embolism? N Wijesinghe, LW Chan, D Jogia. Department of Cardiology, Waikato Hospital

Background: Our aim was to study whether the findings of MRI of brain after a CVA are helpful in selecting patients for TOE to find a cardiogenic source of embolism.

Method: Retrospective chart review in all the patients admitted to Waikato Hospital with a CVA and had both MRI of brain and TOE between 01.01.2002 to 31.12.2006.

Results: Seventy-three patients (63%males, 37% females; mean age 44.3 years) fulfilled above inclusion criteria. All the patients were in sinus rhythm. MRI demonstrated ischemia in solitary focus in 19 (26%), multiple unilateral foci in 11 (15%), multiple bilateral foci in 23 (32%) and no evidence of ischemia in 20 (27%) patients. There were 43 non-lacunar infarcts, 8 lacunar infarcts and 2 lacunar + non-lacunar infarcts. TOE demonstrated 2 (3%) aortic arch thrombus/plaques, 13 (18%) patent foramen ovale, 1 (1.4%) atrial septal defect, 1 (1.4%) left atrial mass and 53 (73%) normal patients. No patient was found to have an intracardiac thrombus, spontaneous echo contrast or an atrial septal aneurysm. A cardiac source of embolism was found in patients with solitary ischemic focus - 5/19 (26%), multiple unilateral ischemic foci – 5/11 (45%), multiple bilateral ischemic foci – 4/23 (17%), anterior circulation

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infarcts – 9/31 (29%), posterior circulation infarcts – 8/24 (33%), non-lacunar infarcts – 13/43 (30%), lacunar infarcts 1/8 (12.5%) and normal 3/20 (15%).

Conclusion: Non-lacunar infarctions are more likely to have a cardiac source of embolism compared to lacunar infarction. Lacunar infarcts are less likely to benefit from TOE when searching for a cardiac source of embolism.

Is free drug metabolic clearance impaired in the elderly? JM Butler, EJ Begg. Department of Clinical Pharmacology, Christchurch Hospital, Christchurch

Metabolic drug clearance (CL) has been shown to be impaired in the elderly for high CL drugs, but there have been conflicting results for low CL (capacity-limited) drugs. A limitation of the studies of capacity-limited drugs is that most assessed CL using total concentrations (protein bound plus free drug). This could obscure a difference in the true CL of free drug.

Total CL is a valid measure for drugs with low protein binding. Seven studies of antipyrine and five studies of theophylline demonstrated reductions in CL of 20-52% and 22-35% in the elderly respectively. For paracetamol, (previously quoted as unchanged), four studies in fact demonstrated reductions in CL of 8-35%.

For highly protein bound drugs, free CL is the appropriate parameter because free concentrations mediate drug action, and because protein binding may be reduced in the elderly. The literature was reviewed to test the hypothesis that, in the elderly, capacity-limited highly protein bound drugs will show decreased free CL, but may not show decreased total CL.

Data using actual free drug concentrations are limited. Four studies of naproxen showed reduced free drug CL of 50% or more. Two studies of valproate showed reduced free CL of 39% and 65%. Two studies of ibuprofen showed reduced free CL of S-ibuprofen, of 21% and 28%. There was some evidence for reduced CL of oxaprozin, temazepam, lorazepam, diazepam, phenytoin and warfarin.

The combined results of all the above studies support the hypothesis that metabolic CL is impaired in the elderly, and that this effect is masked if highly protein bound drugs are assessed using total drug CL. Confirmation of these findings in future studies would mean profound implications for drug dosing in the elderly.

The role of sympathetic nerve responses in Takotsubo cardiomyopathy. Z H Zhang, D Jardine, J Lainchbury. Christchurch Hospital

Introduction: Takotsubo cardiomyopathy, also called transient left ventricular apical ballooning, broken heart syndrome, is a sudden onset, stress-induced cardiomyopathy with normal coronary arteries. The aetiology of Takotsubo cardiomyopathy is unclear. Coronary microvascular dysfunction and excessive catecholamine secretion have been speculated as possible causative mechanisms.

Aim: To evaluate sympathetic and haemodynamic responses in patients with Takotsubo cardiomyopathy when undergoing sympathetic stimulation tests.

Methods: Patients with previously diagnosed Takotsubo cardiomyopathy underwent sequential mental stress (calculation and reading mismatched colour stroop chart), hand grip, and hand in ice (2 minutes), and nitroprusside injection. Continuous heart rate, blood pressure, sympathetic nerve activity (from superficial peroneal nerve) and doppler echocardiography (for diastolic LV parameters) are recorded for analysis.

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Results: Over the last 12 months, 14 patients have been identified. We report the preliminary data for 5 patients.

The differences between pretest and post test (n=5)

	Baseline (Mean+/-SD)	Mental stress with math	Mental stress with reading Stroop chart	Hand grip	Hand in ice	Nitroprusside injection
MBP (mmHg)	100 ±19	Δ6.8 ±9.5	Δ2.2 ±8.5	Δ12.2 ±12	Δ21.8 ±11.9	Δ21.4 ±15.8
HR (bpm)	70 ±9.6	Δ7.2 ±6.4	Δ3.4 ±4.7	Δ8.8 ±3.3	Δ9.2 ±5.4	Δ10.4 ±6.7
Nerve burst frequency of MSNA (burst/min)	36 ±8.7	Δ14.6 ±10.2	Δ12 ±8.8	Δ10.4 ±3.8	Δ22.2 ±7.5	Δ26.2 ±12.9

1. For each response, changes of blood pressure, heart rate and burst frequency in muscle sympathetic nerve activity (MSNA) were within normal limits for our laboratory.

2. No major changes in diastolic/systolic LV function were seen.

Conclusions:

1. Takotsubo cardiomyopathy is not an uncommon condition.

2. Sympathetic nerve responses to various stimulations are not exaggerated.

3. The mechanism of Takotsubo cardiomyopathy remains unclear.

Improving the use of DVT prophylaxis in general medical inpatients. N Smith. Wellington Hospital, Wellington

Deep vein thrombosis is a common, but often unrecognised cause of morbidity and mortality in medically ill patients. DVT prophylaxis is routine in many surgical units, and relatively uncommon in general medical units, yet 50- 70% of symptomatic thromboembolic events occur in non-surgical patients.

Prophylaxis with low molecular weight heparin in medical patients reduces the risk of DVT without increasing the risk of bleeding.

The American College of Chest Physicians recommends that acutely ill medical patients admitted to hospital at moderate to high risk of DVT should receive prophylaxis with low molecular weight heparin.

Despite the strong evidence for therapy and the recommendations of large consensus groups, prophylaxis among medical inpatients remains low around the world. Reported rates range from 28% (UK) to 11% (Auckland, NZ).

I undertook an audit to investigate current rates of DVT prophylaxis in general medical inpatients at Wellington Hospital. An audit of 249 patients admitted over one month found that 60 patients (25%) were at moderate or high risk for development of thromboembolic disease. Of those patients two received treatment with low molecular weight heparin. This audit confirmed the low use currently of DVT prophylaxis.

A quality assurance programme was developed to address this situation. This consisted of the development of a DVT prophylaxis protocol, education of medical staff, providing staff with card sized copies of the protocol to carry, and the use of reminder stickers. These interventions were introduced in June 2007 and the audit was then repeated in September 2007.

Pyogenic Spinal Infections in Older People in Canterbury - An Audit. CD Hutchinson, HC Hanger, T Wilkinson, A Pithie. Canterbury District Health Board, Christchurch

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Background: Pyogenic spondylodiscitis is differentiated pathologically from other spinal infections, as it is a primary process of the intervertebral disc space. We wonder if this differentiation is relevant clinically as the presentation and management appear similar.

Aims: To examine the patterns of disease involved in spontaneous discitis in the older population of Canterbury and compare this to the cases of non-discitis pyogenic spinal infections with respect to incidence, demography, presentation and outcome.

Methods: We undertook a retrospective case-note audit of patients aged 65 years and older presenting to Christchurch Hospital, Canterbury, between January 1, 2000 and December 31, 2005 with a discharge diagnosis of spontaneous pyogenic spinal infection using ICD 10. We compared the data of patients with primary discitis with other spinal infections.

Results: Forty-one cases were identified, thirty discitis, eleven other. Mean age was 79.6 years and 75.4 years respectively. The lumbar spine was most commonly infected in discitis and thoracic in others. The mean delay to diagnosis was 34 days in both groups and most patients presented with back pain, elevated CRP and positive MRI scans. Staphylococcus aureus was the most common isolate. Mortality appeared higher in the non-discitis group (46% vs 20%, p=0.10) although morbidity in survivors appeared similar.

Conclusion: Spontaneous spinal infection is rare, but should be considered in the older patient with back pain and elevated inflammatory markers. Differentiation between discitis and other pyogenic spinal infections may be important, as mortality may be higher in the latter. The most common infective agent is S. aureus.

Maintaining independence: predicting residential care admission. CP Heppenstall, HC Hanger, TJ Wilkinson. Department of Older Persons Health, Princess Margaret Hospital, Christchurch

Aims: To describe outcomes in frail older patients discharged from a Specialist Older Persons Health (OPH) service. To determine predictors of loss of independence.

Methods: This is a prospective cohort study of patients discharged from a specialist OPH service to their own homes.

Patients being discharged were recruited 24-48 hours prior to discharge. Functional Independence Measure (FIM), cognition (3MS), Geriatric Depression Scale (GDS), frailty, co-morbidities and social supports were recorded.

Results: In the period following discharge most participants remained in their own home. There was however a gradual decline in patients remaining in their discharge domicile, which was linear throughout the follow-up period. There were a high number of readmissions, nearly one-third of the group were admitted once or more. Functional status, cognition, depression and social circumstances were important in predicting outcomes, and were more significant than co-morbidities.

Conclusions: There is a gradual decline in those remaining at home over a three month period, with 9% entering residential care.

Predictors of change in domicile or readmission include a combination of function, cognition, mood and social circumstances.

This study will help identify subcategories of people at the highest risk in order to target interventions to maintain independent living.

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Postural hypotension in the mechanism of transient ischaemic attacks. E Ellis, F Findlay, D Jardine (Department of General Medicine), J Fink (Department of Neurology), Christchurch Hospital, Christchurch

Postural hypotension (PH) is thought to be a rare contributing mechanism in the aetiology of transient ischaemic attacks (TIAs). However PH is common in the elderly but frequently missed and so under-recognised in the pathophysiology of TIAs.

We undertook tilt-testing on patients presenting to Christchurch Hospital with anterior circulation TIAs. Our aim was to determine the incidence of PH before and during head-up tilt and to assess the incidence of tilt-induced TIAs.

Patients over 65 years with anterior circulation TIAs were recruited from our acute service. Patients completed a questionnaire which included recent TIAs, relationship to posture and medication. Head-up tilt testing was conducted with continuous blood pressure (BP) monitoring using digital plethysmography. After 15 minutes of tilt, GTN spray was administered. Patients were observed for TIA onset as BP fell.

To date, 60 patients (36M/24F), mean age 76 yrs (range 65-86) have undergone tilt testing. 46 (77%) patients were taking anti-hypertensive medication. Lying and standing blood pressure had been recorded in only 22 (37%) patients. Mean SBP (with ranges) were: resting horizontal 138mmHg (94-208); at 5 minutes tilt 138mmHg (59 – 230). The SBP nadir was 71mmHg. TIA symptoms and signs were reproduced in 6 patients (10%).

Despite most patients taking hypotensive medication, PH was not well assessed and was difficult to demonstrate during early tilt. Hypotension reproduced focal neurology in 10% of patients, consistent with our hypothesis that some TIAs may occur secondary to regional low flow, rather than an embolic mechanism.

Posters

Audit of the use of Infliximab in Inflammatory Bowel Disease (IBD) in Waitemata District Health Board (WDHB) 2000-2006. G Balbir-Singh, C Young*, P Frankish, RS Walmsley. Department of Gastroenterology, North Shore Hospital, Auckland. *Peninsular Medical School, England

Aim: To describe the use of Infliximab in Crohn's Disease (CD) and Ulcerative Colitis (UC) in Waitemata DHB with reference to disease type, medication at initiation of therapy, side effects and outcomes.

Methods: Retrospective assessment of patients with IBD receiving Infliximab in between Jan 2000 to June 2006 identified from the pharmacy database. Outcome assessments were sourced from clinical records and using the WDHB Concerto Database.

Results: 42 patients (52% female), mean age 33 (range 16-68 years). 40 had CD (16 fistulating, 15 steroid dependant, 26 treatment resistant). 2 with UC; one fulminant, one steroid resistant. Mean follow up 3.4years. 119 infusions, median of 2 (range 1-7)

16 patients were receiving steroids and a second line immunomodulatory drug, 9 steroids alone, 9 immunomodulatory alone and 2 were intolerant of all other medications. (6 records unclear).

Disease activity assessment was only really possible as a Global Rating of the physician or patient. By this method 64% responded/achieved remission, 12% were non responders, 24% unclear. 10 patients still went on to have surgery, including one with UC.

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Side effects occurred in 19%; anaphylaxis in 1, urticaria in 3, oedema in 1, bradycardia 1, chest discomfort 1.

Conclusion: Response and side effects of treatment of IBD with Infliximab appears close to that of published series. There was little objective recording of disease activity on which to base response. The use of concomitant immunomodulatory medication might improve outcomes.

A cross-sectional study of nutritional markers in a population-based Crohn's disease (CD) cohort. JA Hoar, ML Barclay, RB Gearry. Department of Gastroenterology, Christchurch Hospital, Christchurch

CD is a chronic inflammatory condition that can lead to nutritional deficiencies due to malabsorption, anorexia and inflammation. Identification and correction of such deficiencies is a vital aspect of patient management. We aimed to describe the incidence of red cell folate (RCF), vitamins B12 (VitB12) and D (VitD) deficiency and anaemia in a population-based CD cohort.

1421 IBD patients were recruited, representing over 91% of people with IBD in Canterbury, New Zealand (population 464,800). This study was part of a population-based study of genetic and environmental factors associated with IBD. The clinical notes of all patients were screened to confirm diagnosis and extract the lowest recorded concentration of RCF, VitB12, VitD and haemoglobin (Hb) at any time since diagnosis. CD phenotype was classified according to the Montreal classification. The data were analysed descriptively with multivariate logistical regression methods.

Laboratory results were available on 670 (94%), 460 (64%), 137 (19%), 102 (14%) of the 715 CD patients for Hb, RCF, VitD and VitB12, respectively. 461/670 (69%) patients had anaemia identified at some point since diagnosis. Those with perianal disease (OR 2.60 [95%CI 1.69-3.99], extraintestinal manifestations (2.35 [1.42-3.89]), previous bowel resection (2.16 [1.48-3.14]), a diagnosis <17 years of age (2.06 [1.12-3.79]), penetrating (4.06 [2.02-8.14]) or stricturing (2.17 [1.48-3.18]) disease behaviour and ileocolonic disease location (2.08 [1.36-3.19]) were more likely to have anaemia demonstrated. 44/500 (9%) of CD patients were found to be VitB12 deficient. Those with a previous bowel resection (2.09 [1.13-3.88]) and stricturing disease behaviour (2.54 [1.29-5.02]) were more likely to be VitB12 deficient. 102/137 (74%) of CD patients were found to be VitD deficient and was more likely in those with stricturing disease behaviour (2.34 [1.01-5.42]). RCF deficiency was identified in 45/460 (10%) CD patients, although no phenotypic groups were over-represented.

Markers of nutritional deficiency are common in this population-based CD cohort. RCF, VitB12 and VitD were not available in a significant proportion of CD patients, either because of incomplete data capture or because they had not been measured. A multidisciplinary (including IBD nurses) approach to managing CD patients may lead to improved monitoring of these nutritional markers.

Modulation of Human Monocyte Function in NOD2 associated Crohn's Disease by Muramyl Dipeptide. T Chalmers-Watson

Introduction: Crohn's disease is characterised by an abnormal inflammatory response possibly induced by components of enteric bacteria, in genetically susceptible individuals. Mutations in the NOD2 gene are strongly associated with Crohn's disease of the terminal ileum, although the mechanisms by which these mutations cause inflammation remain unknown. Peripheral blood monocytes, a key component of the innate immune system, highly

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express the NOD2 gene, as do intestinal epithelial Paneth cells. Muramyl dipeptide (MDP), a component of bacterial peptidoglycan (PGN), interacts intracellularly with the NOD2 protein, and induces the expression of many inflammatory genes. In human monocytes, this effect is significantly reduced by the carriage particularly of the L1007fsC mutant allele of NOD2. In murine macrophages and human monocytic cell lines, MDP also modulates subsequent responses to PGN and lipopolysaccharide (LPS) although this effect is not well documented in primary human monocytes.

Aims: To determine the effect of inherited mutations in the NOD2 gene on the responses of human monocytes to MDP and other bacterial ligands.

Methods: Monocytes from healthy controls (12), and patients with Crohn's disease who were wild type (12), heterozygous (11) or homozygous (5) with regard to the three common disease-causing mutations in the NOD2 gene were isolated by density gradient centrifugation. Cells were stimulated with bacterial products *in vitro*, with and without prior stimulation or priming with MDP. The transcription of selected cytokine genes was determined by real time quantitative RT-PCR.

Results: Tumour necrosis factor α and interleukin 1β mRNA expression was induced by MDP, PGN and LPS, and responses to MDP and PGN were significantly reduced in monocytes carrying NOD2 mutations. The expression of other cytokines, including transforming growth factor β, was unaffected. The magnitude of responses to MDP was much lower than to LPS; however, priming with MDP significantly diminished subsequent responses to LPS. In monocytes carrying two mutant NOD2 alleles, this modulatory effect was reversed.

Conclusions: The modulatory effect of MDP on cellular responses to microbial ligands, which has already been demonstrated in transgenic mice lacking NOD2, could have an important role in intestinal inflammatory responses, and could provide mechanistic understanding of how mutations in the NOD2 gene may cause Crohn's disease in some individuals.

Resection surgery characteristics in a population-based inflammatory bowel disease (IBD) cohort. Y-H Chang[1], RB Gearry[1], MJ Reilly[1], ML Barclay[1], FA Frizelle[2]. Departments of [1]Medicine and [2]Surgery, Christchurch School of Medicine, Christchurch

Intestinal resection is an important therapy for IBD. Limited recent validated population-based data exist concerning intestinal resection rates in IBD patients. We aimed to determine the rate, and characteristics of patients undergoing resection in a population-based IBD cohort.

1421 IBD patients were recruited, representing over 91% of people with IBD in Canterbury, New Zealand (population 464,800). This study was part of a population-based study of genetic and environmental factors associated with IBD. The clinical notes of all patients were screened to confirm diagnosis and extract surgical data. IBD phenotype was classified according to the Montreal classification. Intestinal resection rates were compared between groups using Chi-square testing.

Patients with IBD-U and those where diagnostic uncertainty existed were excluded. 218/649 (33.6%) patients with CD and 109/668 (16.3%) patients with UC had at least one bowel resection. CD patients aged <17 years at diagnosis (A1) were 1.75 (95% CI 1.07-2.90) and 3.10 (1.78-5.42) times more likely to have a resection than patients diagnosed at 17-40 (A2) and >40 (A3) years of age, respectively. Compared to those with uncomplicated disease (B1),

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patients with stricturing (B2), or penetrating (B3) disease were more likely to require a resection (OR=18.6 (10.4-26.5) and OR= 70.4 (33.5-148)

respectively). Compared to those with colonic disease (L2), patients with ileal (L1) or ileocolonic (L3) disease were more likely to require a resection (OR=6.94 (4.23-10.7) and OR=2.03 (1.27-3.25) respectively). 85/218 (39.0%) CD patients had more than one resection. 109/668 UC patients had undergone a resection and were most likely to be younger (OR=1.78 (0.84-3.76))(A1) and have extensive disease (E3) (OR=3.49 (2.27-5.35)). CD patients with A1, B3 and L1 classifications had the shortest time from diagnosis to first resection. 36/649 (5.6%) CD and 42/668 (6.3%) UC patients had a permanent stoma.

Diagnosis before 17 years of age (A1), complicated disease behaviour (B2/3) and small bowel (L1/3) location were risk factors for both requiring a resection and having an early resection. Diagnosis before 17 years of age (A1) and extensive disease (E3) were associated with colectomy in UC patients. These results provide useful prognostic information from a validated population-based cohort. These results provide useful prognostic information concerning PSI in a validated population-based cohort.

Hepatoma screening and follow up of HBsAg positive tests results at Tauranga Hospital, a 5 year retrospective audit. R Newbury, A Claydon, D Shaw. Tauranga Hospital

Background: Tauranga Hospital serves a population of which 40% identify as Maori. Tauranga district has the highest predicted Maori population growth rate from 2001-2016 of 53%. 5.8% of Maori are HBsAg+. The 5 year survival from hepatoma in New Zealand detected by screening is 52% compared to 2% when symptomatically diagnosed. Only one third of hepatomas are identified through screening.

Aim: 1 To screen for hepatomas more effectively at Tauranga Hospital.

2 Improve referral rates to the hepatitis foundation of HBsAg+ patients.

Methods: (1) Case notes and electronic records were reviewed retrospectively (2002-7) for inpatient episodes coded as either liver cell carcinoma, unspecified carcinoma, liver failure, cirrhosis and several other related codes. (2) HBsAg+ individuals from Medlab database (2002-7) were cross-referenced against the National Database of HBsAg+ persons, to find those not known.

Results: Six hepatomas identified secondary to HBV, one in a screening programme of 6 monthly USS and AFPs.

Medlab identified 1761 HBsAg+ individuals (2002-7), only 1295 were known to the national database. The table below shows the origin of testing for patients unknown to the national database.

Antenatal Screen	Abnormal LFTs	Others
191	51	224
41%	11%	48%

Conclusion: (1) A database for hepatoma screening is needed at Tauranga Hospital. (2) Advice attached to MedLab HBsAg+ results recommending referral to the hepatitis foundation or BOPDHB may decrease HBV mortality and morbidity.

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Attitudes towards exclusive enteral nutrition for Crohn's disease: a survey of Australasian paediatric gastroenterologists. AS Day, T Stephenson, AR Otley. School of Women's and Children's Health, University of New South Wales & Department of Gastroenterology, Sydney Children's Hospital, Sydney, Australia, Department of Pediatrics, Dalhousie University, Halifax, NS, Canada

Background: Although there is much data supporting a role for exclusive enteral nutrition (EEN) in children with Crohn's disease (CD), use of this therapy varies substantially. The aim of this study was to ascertain the reasons for this variation in practice by asking Australasian paediatric gastroenterologists for their attitudes towards EEN.

Methods: Using an existing email network, Australasian paediatric gastroenterologists were asked to provide details of their attitudes towards and use of EEN in children. A specific questionnaire was designed to direct responses, with regards to use EEN, current EEN protocols and patterns of use.

Results: Twenty-one replies were received (50% response rate). Although 12 respondents felt that EEN was an appropriate therapy for CD, only 8 regularly used EEN for their patients with CD. Current use was strongly related to practitioners' experiences of EEN during their gastroenterology training. In those who did not recommend EEN, the reported concerns included compliance, cost and demands on resources. The doctors who do recommend EEN reported that family support, team approach and disease location were important factors for a positive outcome from EEN. Current protocols used by these doctors varied in terms of type of formula, length of therapy and use of concurrent medications.

Conclusions: Although EEN has proven benefits for the management of CD in children, there continue to be various impediments to its use. More consistent protocols for the use of EEN and an improved understanding of the mechanisms of EEN could lead to enhanced use of this therapy.

Eosinophilic esophagitis in children with celiac disease. CY Ooi, AS Day, R Jackson, TD Bohane, V Tobias, DA Lemberg. Department of Gastroenterology and South Eastern Area Laboratory Services, Sydney Children's Hospital: School of Women's & Children's Health, University of New South Wales, Sydney, Australia

Background & Aims: Eosinophilic esophagitis and celiac disease are distinct gastrointestinal disorders. This series of children highlights the possible coexistence of these two conditions. This study also analyzes the epidemiologic and clinical profiles of these patients.

Methods: The medical records of patients diagnosed with celiac disease from 1 April 1999 to 31 March 2007 were reviewed. Patients with co-incident histological diagnosis of eosinophilic esophagitis were retrospectively identified. The presenting symptoms; laboratory evaluation, endoscopic and histopathologic findings; and treatment and follow-up outcomes of these patients were analyzed.

Results: Of the 221 patients with celiac disease, seven (3.2%) were also diagnosed with eosinophilic esophagitis. A majority (6/7) presented with periumbilical pain and diarrhoea. None had dysphagia. Each patient had abnormal celiac screening tests. Three patients had peripheral blood eosinophilia and elevated eosinophil cationic protein. Endoscopic changes of eosinophilic esophagitis and celiac disease were apparent in the majority of patients (6/7). Gluten free diet was instituted in every patient. Topical corticosteroid therapy was commenced in one patient at diagnosis and in another patient after repeat endoscopic and histopathologic evaluation.

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Conclusions: Awareness of the potential coexistence of eosinophilic esophagitis and celiac disease should promote optimal diagnosis of these conditions. Routine esophageal biopsies may be warranted when investigating for celiac disease.

Fistuloclysis and distal feeding. CL Fogarty. Christchurch Hospital

This 58 year-old surgical patient had a jejunal fistula (the small bowel had prolapsed out to become a self-formed stoma) that wasn't healing despite 6 weeks of parenteral nutrition and bowel rest. After e-mail contact with a dietitian at a UK Intestinal Failure Unit, fistuloclysis was commenced. Fistulocylsis is the infusion of enteral feeding into the distal limb of an enterocutaneous fistula.

The aim of the nutrition support was to meet the patient's nutritional requirements using the remaining healthy small bowel by feeding into the jejunum. This would allow her to discontinue TPN and go home prior to surgery to repair the fistula.

A gastrostomy tube was inserted through the fistula into the jejunum and enteral feeding commenced. An acute flare-up of Rheumatoid Arthritis affecting the patient's hands meant she was unable to use a syringe to bolus adequate water flushes to meet her fluid requirements. Infusing feed and water simultaneously using 2 feeding pumps enabled her to meet all fluid and nutritional requirements. The patient was discharged home (after 13 weeks in hospital) with enteral feeding.

The fistula output remained high and the leakage around the wound caused the surrounding skin to become excoriated and painful. After 8 weeks at home, the leakage became intolerable and the patient was readmitted. Surgery was performed 3 weeks later - the fistula was removed. Healing occurred and the patient was discharged home, enjoying her food again. (She had essentially been 'Nil By Mouth' for 5 months prior to surgery.)

A systematic review of case-control studies assessing environmental factors associated with inflammatory bowel disease (IBD). RB Gearry[1], SM Montgomery[2], CM Frampton[3], ML Barcla[3,4]

Department of Gastroenterology,[1] Box Hill Hospital, Melbourne. Enheten for Klinisk Epidemiologi,[2] Karolinska Institutet, Stockholm, Sweden. Departments Medicine,[3] and Gastroenterology,[4] Christchurch School of Medicine and Hospital, Christchurch, New Zealand

The rapid increase in IBD incidence has led to many case-control studies assessing environmental factors that may be associated with Crohn's disease (CD) and/or ulcerative colitis (UC),the methods and results of which vary greatly. We aimed to systematically review all published studies to produce pooled odds ratios for environmental factors, and to examine the validity of the study methods.

Case-control studies assessing environmental factors were identified by searching MEDLINE, EMBASE, and checking reference lists of identified studies. Studies were included if they compared cases with IBD and controls without IBD. For studies in which raw data was presented, pooled odds ratios were calculated for each risk factor. Studies were also scored according to case definition, control selection, adjustment for potential confounders, information bias and external validity.

Ninety studies qualified for inclusion in the analysis. Risk factors that had significant associations with IBD (with greater than two studies) included: cigarette smoking (CD Odds Ratio 1.98 [1.78-2.20], UC OR 0.54 [0.49-0.60]), ex-smoking (UC OR 1.78 [0.61-1.96]), appendicectomy (UC OR 0.30 [0.26-0.34]), oral contraceptive pill use (CD OR 1.96 [1.65-

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2.33], UC OR 1.51 [1.21-1.90]), childhood diarrhoea (CD OR 5.34 [2.04-14], UC OR 4.14 [1.51-11]), hot water tap in home (CD OR 4.00 [2.90-5.40]), being breastfed (CD OR 0.52 [0.39-0.68]), and tonsillectomy (CD OR 1.41 [1.18-1.69]). High intake of refined sugar is consistently associated with the IBD development. While pooling unadjusted odds ratios led to loss of adjustment for potential confounders, the pooled odds ratios did not differ significantly from those reported in individual studies. The quality of case-control studies has improved steadily although inappropriate control selection and not controlling for potential confounders remain the greatest methodological problems.

Established environmental risk factors are consistently associated with IBD across multiple studies. Numerous childhood factors are also associated with IBD but in fewer studies. Future case-control studies must ensure that cases and controls come from the same study base and that attention is paid to controlling for potential confounders.

The effect of reduction of poorly absorbed, highly fermentable short-chain carbohydrates (FODMAPs) on the symptoms of patients with inflammatory bowel disease (IBD). RB Gearry, PM Irving, DM Nathan, JS Barrett, SJ Shepherd, PR Gibson. Department of Medicine and Gastroenterology, Box Hill Hospital, Victoria, Australia

Functional gut disorders (FGD) are more common in IBD patients than the general population. Failure to identify FGD in these patients leads to inappropriate investigation, treatment and continuing symptoms. FODMAPs (fermentable oligo-, di- and monosaccharides and polyols) are rapidly fermented in the colon resulting in luminal distension, pain and bloating while high osmotic activity causes diarrhoea. Dietary FODMAP reduction in patients with FGD leads to significant symptom amelioration, but whether such intervention works in IBD patients is unknown. We assessed the effect of dietary FODMAP reduction in patients with IBD patients without obvious active inflammation but poorly controlled symptoms.

A retrospective audit of IBD patients who had seen a dietitian in our unit regarding gastrointestinal symptom reduction was performed. Patients gave consent before undergoing a structured telephone interview by a non-dietitian investigator. Primary endpoints were a significant improvement in overall or specific symptoms (defined as a >5 point improvement on a scale of -10 (change to worst symptoms possible) to +10 (change to absence of symptoms) in relation to a baseline score of 0 that represented the patient's symptoms at the time of dietary intervention). Assessment was made 3-6 months after dietary intervention Data were analysed descriptively.

72 patients participated in the study (52 Crohn's disease (CD), 20 ulcerative colitis (UC)). At the time of intervention, the most common symptoms were diarrhoea (96%) bloating (81%) and abdominal pain (75%). Abdominal pain (CD $p<0.0001$, UC $p=0.016$), diarrhoea (CD $p<0.0001$, UC $p=0.0002$), bloating (CD $p<0.0001$, UC $p=0.0039$), and wind (CD $p=0.0002$, UC $p=0.0078$), were most likely to respond to dietary intervention. At least 50% of patients had a significant (>5 point) improvement in abdominal pain, diarrhoea and bloating. For CD patients, improvement in pain was associated with a positive hydrogen breath test for fructose malabsorption (OR=5.14 [1.18-22]) and with adherence to a fructose-reduced diet (OR=6.33 [1.44-28]).

Dietary FODMAP reduction IBD patients with FGD is effective in more than 50% of cases. As this is a commonly encountered clinical scenario, this study highlights the need for prospective controlled studies to be performed.

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A simple method for the determination of large bowel mucosal 5-ASA levels using high performance liquid chromatography. ML Haines, R Gearry, R Rose, PR Gibson. Department of Gastroenterology, Box Hill Hospital, Victoria, Australia

5-Aminosalicylic acid (5-ASA) used for the treatment of IBD acts topically at sites of bowel inflammation. Mucosal levels of 5-ASA predict efficacy and may be a surrogate marker for clinical endpoints. Diverse and complicated methods are described for measurement of 5-ASA using high performance liquid chromatography (HPLC). The lowest limit of detection reported is 0.1µg/g.

Aim: To determine a simple, sensitive and reproducible method for the detection of 5-ASA in large bowel mucosa.

Methods: After addition of normal saline, blank colonic mucosal biopsies underwent mechanical homogenisation. Known concentrations of 5-ASA were added. A solid-phase extraction device (Oasis) was used to eliminate interfering substances. Aliquots of 100 µL were injected via Waters autosampler into the HPLC apparatus. A C18 column (150 x 4.6 mm) with particle size 5 µm was used with a mobile phase comprising phosphate buffer (pH 3.5) at flow rate 1.5 ml/min. 5-ASA was detected using a Waters Photodiode Array and expressed as µg /g wet tissue.

Results: At a wavelength of 297.3 nm sharp peaks of 5-ASA were observed (Fig 1). 5-ASA at a concentration range 0.5–100 µg/g was detected (Fig 2). Storage of homogenates at room temperature led to an 85% reduction in 5-ASA concentrations over a 4 day period. However, there was no significant reduction over time at -80°C.

Conclusions: Clean, reproducible peaks with sufficient sensitivity for 5-ASA were achieved with this simple method using HPLC. This method now requires clinical application.

Figure 1

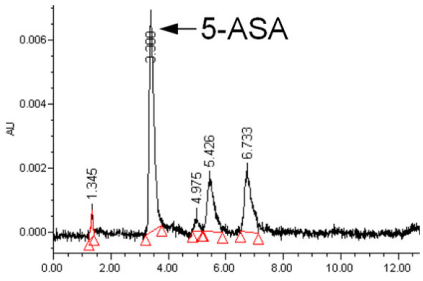
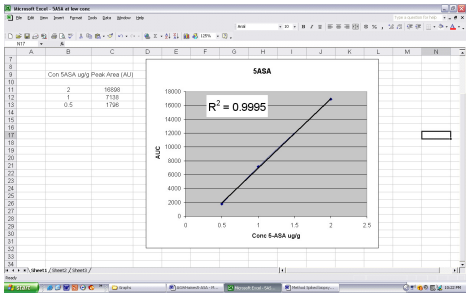


Figure 2



Audit of blood test monitoring for patients on azathioprine or 6-mp for inflammatory bowel disease. JA Hoar, RE Brown, RB Gearry, ML Barclay. Department of Gastroenterology, Christchurch Hospital, Christchurch

Three-monthly monitoring of full blood count and liver function tests is recommended for patients on azathioprine and 6-mercaptopurine (6-MP) for treatment of inflammatory bowel disease (IBD). However, it is likely that monitoring is not consistent amongst patients.

Methods: Data were collected from the case notes of 100 patients with IBD presenting consecutively to the gastroenterology outpatient clinic at Christchurch Hospital. In addition to demographic data, results and frequency of blood tests were recorded, including the four most recently recorded full blood count and liver function tests. Public and private hospital laboratories were contacted by phone for test results when not found in the case notes. Testing

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more than 4 months apart was defined as too infrequent. Highest red blood cell 6-thioguanine nucleotide concentrations (6-TGN) were also recorded.

Results: Of the 100 patients (59 female, 41 male) with IBD, 81 had Crohn's disease and 19 had ulcerative colitis. Eighty-six were on azathioprine (mean dose 128mg [1.75mg/kg], range 25-250 [0.48-5.26]) and 14 were on 6-MP (50mg [0.64mg/kg], range 25-100 [0.36-0.95]). Mean duration of treatment was 39 months (3-21). Blood test monitoring was more than 4 months apart on 22% of occasions, and less than 2 months apart on 50% of occasions. The lowest recorded lymphocyte count was $<1.0x10^9$/L in 56 patients ($<0.5x10^9$/L in 19). There was a significant association between the lowest lymphocyte count and the highest recorded 6-TGN concentration (p=0.02).

Summary: In this group of hospital outpatients with IBD on thiopurine drugs, routine monitoring of full blood count and liver function tests was less frequent than 4-monthly on 22% of occasions. This was despite abnormal liver function results in 21%, and lymphopenia in 56%, of patients when testing was conducted. The frequency of monitoring might be improved by the use of an IBD nurse specialist to coordinate blood test monitoring.

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Dietary supplementation with resistant starch and wheat bran induces greater faecal improvements in ulcerative colitis (UC) in remission compared with controls. SL James, JG Muir, PR Gibson. Monash University Department of Medicine, Box Hill Hospital, Box Hill, Victoria, Australia

Background: Little is known regarding dietary measures to prevent relapse or colonic carcinogenesis in patients with UC. In healthy adults, supplemental dietary resistant starch (RS) and wheat bran (WB) in combination induced a more anti-inflammatory and less carcinogenic luminal environment (Muir JG *et al*, A J Clin Nutr 2004).

Whether the type or magnitude of such changes also occurs in UC where bowel physiology is altered is unknown.

Aims: To compare tolerability of supplementing the diet with RS (Himaize®) and WB and its effects on faecal microenvironment in patients with UC in remission and healthy controls.

Methods: Subjects continued their normal diets, which were supplemented with cereal, bread and muffins low (6 and 0 g/d) or high (20 and 12g/d) in RS and WB for 17 days each, in a randomised cross-over study. Faecal indices, diet, and symptoms were assessed before and during treatment.

Results: Supplements were well tolerated by both groups. Subjects with UC consumed less fibre at baseline (18.8 vs 27.9 g/day) and had a greater increment of fibre intake (43% vs 27%) compared with controls. The high RS/WB diet (UC vs controls) resulted in increased mean stool weight (204 vs 178 g/d), lower pH (6.39 vs 6.67), increased butyrate (total 20.2 vs 15.6 mM/L) and lower phenols (0.20 vs 0.95 ug/g).

Conclusion: RS/WB supplementation in UC induces similar qualitative but quantitatively greater responses in health-promoting indices in the faecal microenvironment than in healthy controls, and is well tolerated. Its value in maintenance of remission warrants investigation.

Chronic hepatitis C treatment and outcome in the East Coast Province, Malaysia. AJ Khairul[1], H Hadzri[1], AR Amran[2], MR Razali[2]. [1]Department of Medicine and [2]Department of Radiology, International Islamic University Malaysia (IIUM), Kuantan, Malaysia

Background: Based on the epidemiological data, Malaysia has a moderate prevalence rate for chronic hepatitis C (HCV) infection. Mode of transmission are mainly via needle prick injury among intravenous drug users and blood transfusion. Patients who fulfill the criteria are chosen for treatment financed by the government. We analysed the treatment outcome of all patients with chronic hepatitis C at Kuantan Hospital, Pahang state, Malaysia from 2005 to mid 2007.

Materials and Methods: Nine patients with chronic HCV had blood test sent for liver biochemistry, renal function, complete blood count, thyroid function and auto-antibody studies, HCV RNA (qualitative and quantitative) for pretreatment, Early Viral Response at 12 weeks of treatment (EVR), End of Treatment Viral Response (ETVR) at 24 weeks (in genotype 2 and 3) or 48 weeks (in genotype 1) of treatment, Sustained Viral Response (SVR) at 24 weeks post treatment and HCV RNA genotyping. The radiologist performed Percutaneous ultrasonography guided liver biopsies. Staging for fibrotic score 0 – 6 used Ishak K et al score. All patients were given the combined subcutaneous (s/c) pegylated interferon alpha 2a (PEGASYS) weekly and oral Ribavirin (COPEGUS) daily. Starting dose was s/c PEGASYS 180mcg except for 1 patient (genotype 3) with body weight of 45 kg who was given s/c PEGASYS 90mcg. Ribavirin was given 1200mg for body weight > 75 kg and 1000mg for < 75 kg.

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Results: Five patients were males and 4 were females. The ages ranged between 18 - 56 years. Ethnic group Malay comprised of 5, followed by Chinese, 3 and Indian, 1. Six patients had raised alanine transaminase (ALT) > 40U/L and 3 patients with normal ALT < 40U/L.

Table 1 Summary of patients parameters and treatment outcome (9 patients)

Genotype	Number Of Patient	Fibrotic score/ patient							HVL/ patient	LVL/ patient	EVR/ patient	ETVR/ patient	SVR/ patient
		0	1	2	3	4	5	6					
1	5	1	4						2	3	5	5	1
3	3		2				1		1	2		3	1
2	1	1							1			Failed treatment	

High Viral Load (HVL), > 400,000IU/mL, Low Viral Load (LVL), > 400,000IU/mL

Four patients with genotype 1 and 2 patients with genotype 3 have not reached the 24 week post treatment duration yet. All patients who achieved EVR and ETVR had HCV RNA qualitative level undetectable at the respective periods and completed treatment without any complication.

Seven patients had mild to moderate thrombocytopenia (75,000-150,000/uL^3). Four patients with moderate leucopenia (2500-4000 cells/uL^3) had s/c PEGASYS reduced. Two patient had haemolytic anaemia (genotype 1 and 3) had Ribavirin reduced. Seven patients had minimal steatosis of the liver pretreatment. Two genotype 1 patients with minimal steatosis, hypertriglyseridaemia and body mass index (BMI) > 25 developed severe hepatitis (ALT > 300 U/L) while on treatment. A repeat liver biopsy for both showed extensive steatohepatitis despite undetectable HCV RNA at EVR and ETVR. Both had ALT levels improved post ETVR. One patient with genotype 2 did not achieve ETVR despite improvement in ALT levels.

Conclusion: We observed that both genotype 1 and 3 chronic hepatitis C patients responded well to the combination treatment. Majority of patients (7 out of 9) developed mild to moderate leucopenia and thrombocytopenia requiring dosage reduction but without affecting the outcome. Patients with BMI > 25 and hypertrygliseridaemia might develop hepatic flare while on treatment despite achieving EVR and ETVR.

Frequency of gastrointestinal diseases/symptoms in a tertiary care hospital of Peshawar.
Hamzullah Khan, Khyber Medical College, Peshawar, Pakistan

Objectives: To determine the frequency of gastro intestinal (GI) diseases/symptoms in a tertiary care hospital of Peshawar.

Methods: A Cross sectional observational study was conducted in Medical department Khyber teaching hospital Peshawar, from August 2005 to march 2006.

A total of 189 patients with established diagnosis of any gastro intestinal disease were randomly selected. Out of total 101(53.43%) were males and 88(46.56%) were females. Relevant information's were recorded on a pre-designed questionnaire was designed in accordance with the objectives of the study.

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Results: The age range of the patients was from 8 years to 82 years with mean age of 47.5 years. The mode age observed was 45 years. Of total sampling (43.91%) were illiterate, primary passed (24.33%), matric education (15.87%), secondary education (11.11%) and (4.76%) patients had degree level education. The gastro intestinal disease pattern was: acute peptic disease/ dyspepsia (15.87%), reflux esophagitis (7.91%), duodenal ulcer (1.5%), gastric ulcer (0.5%), worm infestation (1.5%), esophageal carcinoma (0.5%) and miscellaneous in 136(71.95%) patients. The distribution of the gastro intestinal disease symptoms was: chronic diarrhea (19.04%), vomiting (12.16%), dysentery (6.34%), bleeding per rectum (5.20%), constipation (2.1%), anorexia (1.5%), dysphagia (1.10%) and multiple symptoms were recorded in (24.33%) patients.

Conclusion: Acute peptic disease/dyspepsia, chronic diarrhea dysentery, reflux esophagitis are major gastro intestinal (GI) diseases in our setup. Duodenal and gastric ulcers, carcinoma of gastrointestinal tract, worms infestation, dysphagia and anorexia were not as common.

Risk factors and complications of Hepatitis C in Peshawar (a hospital based study). Hamzullah Khan[1], Ishaq Khattak[2]. [1]Khyber Medical College, Peshawar, Pakistan. [2]Department of Community Medicine, Khyber Medical College, Peshawar, Pakistan

Objectives: To determine the risk factors and complications of hepatitis C in a tertiary care hospital in Peshawar.
Design: Prospective observational study.

Settings: Medicine Department, Khyber Teaching Hospital, Peshawar.

Duration: From April 2004 to June 2005.

Patients and methods: A total of 252 HCV positive patients were selected, 165 were males and 87 were females. Relevant information's were obtained from the patients with the help of a predesignd questionnaire prepared in accordance with the objectives of the study.

Results: The age range of patients was from 11 years to 84 years with mean age of47.5 years. Out of total sampling 137(54.36%) patients had positive family history of hepatitis C virus (HCV). Risk factors distribution was: intravenous drug users 73, HCV positive sexual partners 58(23.01%), blood or blood product transfusion 34(13.49%) and occupational acquired HCV 18(7.14%). Unknown source of HCV transmission was recorded in 69(27.38%). Clinical presentation of HCV positive patient was: Chronic persistent hepatitis 87(34.52%), liver cirrhosis 41(16.26%), hepatocellular carcinoma 2(0.79%) and fulminant hepatitis 2(0.79%). One hundred and twenty patients (47.61%) were asymptomatic or subclinical symptomatic.

Conclusions: Intravenous drug abuse and HCV positive sexual partners (wife or husband) were found as major risk factors of HCV transmission and chronic persistent hepatitis and liver cirrhosis were recorded as major clinical presentations of HCV in our patients.

Risk factors, complications and prognosis of cirrhosis in a tertiary care hospital of Peshawar. Hamzullah Khan, Muhammad Zarif. Khyber Medical College, Peshawar, Pakistan

Objectives: To determine the risk factors, complications and prognosis of cirrhosis in a hospital based study at Peshawar.

Methods: A descriptive Cross sectional study, medical department, Khyber teaching hospital Peshawar, from April 2005 to march 2006.Relevant in formations were recorded from

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patients and treatment chart of the patients, on a questionnaire designed in accordance with the objectives of the study.

Results: A total of 61 patients, 41(67.21%) males and 20(32.78%) females were included. The age range of the patients was from 36 to 75 years with mean age of 57.5 years.Forty-four patients (72.33%) had family history of chronic liver diseases. The risk factors distribution was: Chronic hepatitis "B" infection (13.11%), Chronic hepatitis "C" infection (59.01%), Chronic hepatitis "B" and "C" co-infection (8.19%), Biliary cirrhosis (3.27%), Wilson disease (1.63%) and No risk factors recorded were recorded in (14.75%) patients. Complications of liver cirrhosis recorded were: Ascites (27.86%), Variceal hemorrhage (18.03%), Hepatorenal syndrome (3.27%), Encephalopathies (1.63%), Hepatocellular carcinoma (1.63%) and no complications were recorded in (47.54%) patients. Prognosis of patients with cirrhosis based on modified child's Pugh classification was studied in only 30(49.18%) of patients. Out of thirty patients 25(83.33%) had child's 'A' grade of prognosis, 4(13.33%) Child's 'B' grade and 1(3.33%) Child's 'C' grade.

Conclusion: Chronic hepatitis B and C infections were the major risk factors for cirrhosis. Ascites and variceal bleeding were recorded as major complications of cirrhosis and majority of our patients fit in child's a grade of prognosis with 45% chances of 5 years survival.

Endsocopic mucosal resection (EMR) in upper gastrointestinal tract in Auckland Hospital. T King. Auckland City Hospital, Auckland

Introduction: Endoscopic mucosal resection (EMR) is an alternative to surgical resection for mucosal and possibly submucosal neoplasia in the upper gastrointestinal tract. Endoscopic appearance and ultrasound are valuable to assess invasion. Cases performed at this centre are reviewed.

Methods: A variety of techniques were used. Endoscopic ultrasound service (EUS) was from Northshore hospital. Therapeutic procedures were by one endoscopist and pathology by one pathologist.

Results: 59y Asian had squamous carcinoma of oesophagus staged T1 by EUS. Mucosal resection showed deep invasion. Following radiotherapy no recurrence at 12m. 74y Caucasian had nodular high grade dysplasia (HGD) in Barrett's oesophagus excised by ligation. Mucosal resection of Barrett's later attempted. No dysplasia identified at 3y. 64y Caucasian had nodular HGD in Barrett's oesophagus excised by ligation. Mucosal resection of Barrett's later attempted. Adenocarcinoma present by 4m. 69y Caucasian had nodular HGD at cardia excised by ligation. However no dysplasia identified in resection. 74y Asian had adenocarcinoma at cardia staged T1 by EUS and excised with cap. Histology showed sub mucosal and squamous invasion and recurrent neoplasia at 6w. 71y Indian had antral adenocarcinoma staged T1 by EUS and excised with cap. No recurrence at 3m. 80y Asian with HGD without invasion at EUS sustained perforation of cervical oesophagus during passage of cap successfully repaired with haemostatic clips.

Conclusion: Knowledge of available techniques, complications and indicators of recurrence risk should become part of our daily skillset. Mucosal resection is a useful technique that may avoid surgery in carefully selected patients with superficial neoplastic disease.

Endoscopic ultrasound guided fine needle aspiration for the investigation of pancreatic cystic lesions. D Luo, M Rogers, RS Walmsley. Departments of Gastroenterology and Surgical Pathology Unit, North Shore Hospital, Auckland

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Aims: To review the diagnostic yield, accuracy and complications of EUS guided Fine Needle Aspiration (EUS-FNA) for the investigation of pancreatic cysts. Secondary aims were to review the number of passes made, location and size of lesions.

Methods: Retrospective review of patients referred between September 2003 and June 2007. Patients with a known pseudocyst who were referred from drainage were excluded.

Results: Twenty seven patients (15 M; Mean age 63.7 years, range 39-81) underwent EUS-FNA of pancreatic cysts (average size 3.06 cm; 0.8-6.7cm). Locations of the cysts were; head 14 (52%), body 4 (15%), tail 4, neck 4 and uncinate one patient (4%). Sixteen (59%) were sampled via the stomach and 11(41%) via the duodenum and 1(4%) via the jejunum. The median number of passes was 2 (range 1-7). EUS-FNA yielded a diagnosis in twelve (44%) patients; adenocarcinoma 2 (7%), neuro-endocrine tumour 2 (7%), mucinous tumour 1 (4%), benign cyst-adenoma 1 (4%), non-malignant 4 (15%), pseudocyst 1 (4%). The final diagnosis was available for 9/12 (75%) patients and EUS-FNA had an accuracy of 67% percent. No patients had any complications.

Conclusion: EUS-FNA of pancreatic cysts has a modest diagnostic yield with reasonable accuracy when used for the investigation of pancreatic cystic lesions and had a low complication rate.

Endoscopic ultrasound guided fine needle aspiration for the investigation of pancreatic mass lesions. D Luo, M Rogers, RS Walmsley. Departments of Gastroenterology and Surgical Pathology Unit, North Shore Hospital, Auckland

Aims: To review the diagnostic yield, accuracy and complications of EUS guided Fine Needle Aspiration (EUS-FNA) for the investigation of solid pancreatic masses. Secondary aims were to review the number of passes made, location and size of lesions.

Methods: Retrospective review of patients referred between September 2003 and June 2007.

Results: Forty patients (18 Males, Mean age 62.3 years, range 20-81) underwent EUS-FNA of pancreatic masses (average size 2.07 cm, 0.9-6.5cm). The masses were located in the head 26 (65%), body 8 (20%), tail 3 (7.5%), neck 2 (5%) and were multiple in one patient (2.5%). Twenty-five (63%) were biopsied via the stomach and15 (38%) via the duodenum. The median number of passes was 3 (range 1-8). EUS-FNA yielded a diagnosis in twenty-eight (70%) patients; adenocarcinoma 16 (40%), neuro-endocrine tumour 6 (15%), mucinous tumour 1 (2.5%), adenosquamous carcinoma 1 (2.5%), benign cystic-adenoma 1 (2.5%), IPMN 1 (2.5%), non-malignant 2 (5%). The final diagnosis was available for 24/28(86%) patients and EUS-FNA had an accuracy of 92 percent. Two patients diagnosed with benign disease on EUS-FNA were subsequently found to have a malignancy on other investigative modalities. No patients had any complications.

Conclusion: EUS-FNA is helpful for the investigation of pancreatic masses and has a good diagnostic yield with excellent accuracy and low complication rate.

Management of gastroparesis and phytobezoar in post bilateral sequential lung transplantation patients. D Luo, A Tai, MR Lane, M O'Carroll. Department of Gastroenterology and Hepatology, New Zealand Heart and Lung Transplant Service, Auckland City Hospital, Auckland

Gastrointestinal complications post heart-lung transplantation have been reported in up to thirty five percent of patients. These range from non-specific nausea, dyspepsia, abdominal pain to more significant problems such as gastroparesis and gastric bezoar formation.

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We describe two recent post bilateral sequential lung transplant (BSLT) patients referred by the New Zealand Heart and Lung transplant service to our Gastroenterology service for further management of gastroparesis and gastric bezaor formation.

Gastroparesis occurs in up to a quarter of patients undergoing of patients undergoing bilateral sequential lung transplantation. Gastric bezoars have been reported in lung, liver, pancreas and bone marrow transplant patients. In particular, post BSLT patients with Cystic Fibrosis are noted to have a high incidence of Gastric bezoars.

We successfully managed these cases with naso-jejunal tube placement and four quadrant antral Botulinum A injection. Our patient with a phytobezoar was managed with cellulase and coca-cola for several weeks.

We review the prevalence of gastrointestinal complications post bilateral sequential lung transplantation and the management of gastroparesis and bezoars.

Comparison of endoscopic oesophageal variceal ligation plus propranolol versus endoscopic oesophageal variceal ligation alone in primary prophylaxis of variceal bleeding. Loredana Marian. Chr. Banciu IV. Dept. of Internal Medicine, Univ. of Medicine and Pharmacy Timisoara, Romania

Introduction: Prevention of variceal bleeding, a major cause of morbidity and mortality, is an important goal in the management of patients with portal hypertension (PHT).

Aim of study: To establish the role of propranolol in addition to endoscopic variceal ligation in the prevention of first variceal bleed. In this scope, compared endoscopic variceal ligation (EVL) with propranolol and EVL alone in the prevention of first variceal bleed among patients with oesophageal varices gr.II.

Material and methods: From 30 pantients diagnosed with oesophageal varices gr.II, 15 patients were treated with endoscopic ligations plus propranolol and 15 patients were treated only with endoscopic ligations.

Results: After 6 months no patients who take propranolol had recurrence of varices but 2 patients of group who not recieved propranolol after obliteration of varices had oesophageal varices gr. I.

Conclusion: There was no major complication or bleeding after 6 months but the recurrence of varices is lower if propranolol is added to EVL.

Analysis of the BRAF p.V600E mutation in colorectal cancer tumour samples and associated microsatelite instability. S Mead, T Chan, A Fellows, M Whitehead, P George. Molecular and Anatomical Pathology, Canterbury Health Laboratories, Christchurch

Hereditary nonpolyposis colorectal cancer (HNPCC) is caused by inactivation of the mismatch repair (MMR) mechanism by MMR gene mutation. In some sporadic colorectal cancer (CRC) the BRAF p.V600E mutation is associated with inactivation of the MMR gene MLH1 through promoter hypermethylation. Inactivation of mismatch repair (MMR) genes results in microsatellite instability (MSI) in genomic DNA from CRC tumours. Thus the detection of this BRAF mutation allows the differentiation of MSI-positive sporadic CRC from HNPCC. This has potential time and cost savings when examining for HNPCC, as BRAF p.V600E-positive samples need not be sequenced for MLH1 mutations.

To examine a robust method to screen for the BRAF p.V600E mutation, CRC tumour samples were collected that showed loss of MMR gene expression by immunohistochemistry

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(IHC) analysis. DNA was extracted from paraffin embedded (FFPE) normal and tumour tissue and examined for MSI by multiplex PCR analysis. Samples were then analysed for the BRAF p.V600E mutation using an ARMS assay and the results confirmed by sequencing of the *BRAF* exon 15 region. The correlation of IHC, MSI and *BRAF* mutation data from several CRC patients will be presented.

Infliximab in Crohn's disease: the Auckland City Hospital experience. M Ow, T King. Department of Gastroenterology, Auckland City Hospital, Auckland

Introduction: Infliximab, a monoclonal anti-tumour necrosis factor antibody, is an effective treatment for Crohn's disease refractory to conventional medical therapy. This audit highlights our experience.

Methods: Patients with Crohn's started on Infliximab from January 2005-December 2006 were identified. Information on patient/disease characteristics, response, hospitalisation, surgery, and side effects was analysed.

Results: 22 patients were started on Infliximab during this period, receiving a total of 65 infusions. Median age was 37. 59% were female. 95% were European. Mean duration of disease was 6 years. 15 had inflammatory disease; 6 had fistulising disease; 1 had stricturing disease. Clinical response 1 month post first infusion: in the inflammatory group, response was 63%. Response was higher in non-smokers (63% vs. 50% in smokers), and, patients on immunosuppression (55% vs. 25% for those not on immunosuppression). Most responders had colitis only. In the fistulising group, response was 75%. All responders were non-smokers, on immunosuppression, and had perianal disease only.

Hospitalisation was reduced by 69%; surgical rate was reduced by 43%.

18% were on an 8-weekly infusion regimen. 68% received infusions when required, on average every 11.8 weeks, for persistent/relapsing symptoms. 14% had a one-off infusion.

There were 2 self-limited infusional reactions and 3 localised skin reactions. There were no serious infections or sepsis.

Conclusion: Patient response was comparable to that reported, with greater success in non-smokers and those on immunosuppression. There was demonstrated reduction in hospitalisation and surgical rates, however repeated infusions are required to maintain improvement.

Managing adolescents with inflammatory bowel disease (IBD) – how is it different? Z Raos, S Parry. Middlemore Hospital, South Auckland

Aim: Adolescence is associated with physical and psychological changes that pose specific challenges for the management of chronic disease. We aimed to review these in relationship to the management of adolescents with IBD.

Method: Retrospective review of electronic medical records for patients less than 23 years of age identified from the Middlemore Hospital IBD datebase established in 2003.

Results: 34 patients (19 M,15 F) were identified with a diagnosis of Crohn's disease (27), ulcerative colitis (5) and indeterminate colitis (1). Median age at first presentation was 17 (range 9-22) years. 32 patients required at least one hospital admission with 19 requiring 3 or more admissions. 24 patients received at least one course of steroids and the same number required additional immunosuppression. Bone densitometry was measured in 6. Physical development was difficult to assess - height was not recorded in 18 patients, and pubertal stage documented in only 13.The majority of patients (22/34) patients had at least one clinic

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non-attendance. 18 patients reported problems with treatment compliance. Smoking status was not document in 11. Significant social concerns were documented in 16.

Conclusion: In the majority of adolescents with IBD presenting to our hospital, specific management challenges relating to the physical and psychological changes of adolescence were identified. Clinician education and joint care with the recently established adolescent health team is likely to facilitate assessment and management these needy patients.

Surgery for perianal disease in a population-based Crohn's disease cohort. MJ Reilly[1], Y-H Chang[1], RB Gearry[1], ML Barclay[1], FA Frizelle[2]. Departments of [1]Medicine and [2]Surgery, Christchurch School of Medicine, Christchurch

Perianal disease is a common and disabling manifestation of Crohn's disease (CD). Little has been published concerning the frequency of perianal surgical interventions (PSI) for CD in population-based cohorts.

We aimed to describe the characteristics of PSI in a population-based CD cohort. 1421 IBD patients were recruited, representing over 91% of people with IBD in Canterbury, New Zealand (population 464,800). This study was part of the Canterbury IBD Project, a population-based study of genetic and environmental factors associated with IBD. The clinical notes of all patients were screened to confirm diagnosis and to extract clinical data (including details of PSI) that was then stored on a custom-built database. Rates of perianal surgery were compared between patient groups using Chi-square testing.

Of the 1421 patients with IBD, 649 CD patients were included in the analysis and 66 were excluded because of diagnostic uncertainty early in their illness. 119 (18.3%) of CD patients had undergone at least one PSI. Of these patients, 58 (48.7%), 26 (21.8%) and 35 (29.5%) had undergone one, two or greater than two PSI respectively. There was no significant difference between the sexes for undergoing PSI overall (p=0.22). Those diagnosed at <17 years of age were 2.9 (95% CI 1.5-5.6) times more likely to require a PSI than those diagnosed over the age of 40 years, even when corrected for duration of disease. Those with complicated (stricturing or penetrating) disease were 1.13 (1.06-1.22) times more likely to undergo a PSI. Those with ileal or ileocolonic disease were 2.56 (1.6-4.2) and 1.12 (1.04-1.26) times more to undergo a PSI than CD patients with colonic disease location, respectively. The mean time to first PSI from diagnosis of CD was 34.8 months (23-47 months). Sex, diagnosis age, disease location or behaviour did not influence the time to first PSI. Males were 2.82 (1.32-6.05) times more likely to undergo greater than two PSIs than females.

PSI are frequent in CD patients, particularly those diagnosed young, with ileal disease location and with a complicated phenotype. Males are significantly more likely to require greater than two PSIs than females. These results provide useful prognostic information concerning PSI in a validated population-based cohort.

Endoscopic ultrasound guided fine needle aspiration for the assessment of the mediastinum. RS Walmsley, M Rogers, J Wong, A Stanley, MS Phillips. Departments of Gastroenterology and Respiratory Medicine, and the Surgical Pathology Unit, North Shore Hospital, Auckland

Aim: To review the diagnostic yield, accuracy and complications of EUS guided Fine Needle Aspiration (EUS-FNA) for the investigation of mediastinal masses and lymphadenopathy.

Methods: Retrospective review of all cases referred between September 2003 and August 2007.

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Results: 100 patients were referred; 97 for sampling of lymph nodes, 3 for pleural lesions. 52 patients for possible primary lung cancer, 28 for both diagnosis and staging, 24 for staging only. Diagnostic material was obtained in all cases; 7 small cell carcinoma, 43 non small cell carcinoma (NSCLC), 2 carcinoid tumours. 7 patients with NSCLC came to surgery with no false negative results. 41 patients referred for isolated lymphadenopathy. 16 had sarcoidosis; 11 non-caseating granulomatous inflammation on FNA, 5 needing further mediastinoscopy. 4 patients had lymphoma, 2 diagnsed on FNA alone. Single examples of melanoma, thymoma, metastatic renal cancer and metastatic breast cancer. 4 patients had tuberculosis. No final diagnosis has been achieved in 13. One case had features suggestive of malignancy. Eleven have been followed for up to 3 years with no diagnosis evolving. 4 patients had lymphadenopathy associated with parenchymal lung disease; all showed reactive changes only on FNA. 3 mediastinal pleural lesions showed highly suggestive for mesothelioma (1), fibrosis (1) and atypical mesothelial cells (1) [mesothelioma diagnosed at thoracoscopy].

False negative rates were 0/52 for lung cancer, 5/16 for sarcoidosis and 1/3 for mesothelioma.

Minor complications in 2; haematemasis (1), dysphagia (1) [from mucosal haematoma].

Conclusion: EUS-FNA of mediastinal masses/lymph nodes gives a high diagnostic yield with few false negative results and very low complication rates.

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Studies of human gastrointestinal bacterial azoreductase, the enzyme activates azo pro-drugs in the treatment of inflammatory bowel disease (IBD). ***C Wang*[a], C Hagemeier, [a] N Rahman, [a] L Hu, [a] M Coughtrie [c], G Macfarlane[d], E Lowe[b], E Sim [a], I Westwood[a]. [a] Department of Pharmacology, University of Oxford, Mansfield Road, Oxford, OX1 3QT, UK, [b]Laboratory of Molecular Biophysics, Department of Biochemistry, University of Oxford, South Parks Road, Oxford, OX1 3QU, UK, [c]Divisions of Pathology, Neuroscience & Microbiology, [d]University of Dundee, Ninewells Hospital & Medical School, Dundee, DD1 9SY, Scotland, UK**

The anti-inflammatory agent 5-ASA is given for IBD as a pro-drug formulation and 5-ASA is released *in situ* following activation by azoreductases in intestinal microflora. Given the scant information about azoreductase specificities for azo pro-drugs, the aim of this study is to characterise azoreductase structurally in relation to pro-drug activation.

Azoreductases have been identified in several human intestinal bacteria including *Clostridium perfringens*, S*almonella typhimurium* and *P. aeruginosa*[1]. The gene PA0785 has been cloned and overexpressed in *E. coli*. The purified recombinant enzyme exhibits azoreductase activity and activates pro-drugs Balsalazide and Sulfasalazine. Each recombinant protein molecule has an estimated molecular weight of 23,050 Da and one non-covalently bound co-factor flavin mononucleotide (FMN). This enzyme (paAzoR1) is a flavodoxin-like protein with an apparent molecular weight of 110 kDa by gel filtration chromatography, indicating that paAzoR1 is likely to associate to form tetramers. The three-dimensional structure of paAzoR1 with a substrate Methyl Red was solved to 2.18 Å resolution by X-ray crystallography. The protein is a dimer of dimers in crystal lattice, with two spatially separated active sites per dimer, and the active site of paAzoR1 was shown to be well-conserved hydrophobic pocket formed between two monomers. FMN serves as redox centre in electron transfer from NAD(P)H to the azo pro-drugs. The structure and spectral properties of paAzoR1 demonstrate the hydrophobic interaction between FMN, the active site in the protein and the substrate, and help to identify key residues in the enzyme for potential improvement of activity with existing and novel azo pro-drugs[2].

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Complications of permanent pacemaker implantation: Seven-year experience. **N Wijesinghe*, RF Allen, C Sebastian, CM Wade, S Heald, HF McAlister. Department of Cardiology, Waikato Hospital, Hamilton**

Background: Permanent pacemakers (PPM) are frequently implanted but accurate data on implant-related complications are limited. Our aim was to ascertain the incidence of intraoperative and early postoperative complications (up to two months after implant) during PPM implantation at our hospital.

Method: Retrospective chart review was done in all consecutive patients who had new PPM implantation at Waikato Hospital between 01.01.2000 to 31.12.2006. All procedures were performed under strict aseptic conditions and under local anaesthesia. All patients were given cephazolin 1g intravenously prior to the procedure.

Results: A total of 1060 patients had PPM implantation during this period. They included 61% men (mean age 74.1 years) and 39% women (mean age: 75.4 years). Single chamber, dual chamber and biventricular units were implanted in 47%, 52% and 1% patients

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respectively. Active fixation leads were used for 58% atrial leads and 19% ventricular leads. Right atrial lead was implanted at atrial appendage (74%), atrial free wall (7%) and unspecified sites (19%). Right ventricular lead was implanted at apex (69%), right ventricular outflow tract (9%) and unspecified sites (22%). The procedure-related mortality was 0.09%. Other major complications included 0.18% cardiac arrest, 0.54% arrhythmia, 0.09% cardiac tamponade, 0.47% infection, 0.36% wound haematoma, 0.36% pneumothorax, 2.37% lead displacement (1.8% ventricular lead and 0.57% atrial lead) and 0.18% subclavian vein thrombosis. Overall major complication rate was 4.64% (46:1000).

Conclusion: PPM implantation carries a small but definite risk of early complications. The commonest complication was lead displacement (51% of total complications). Infection rate was less than 1%. Our complication rates were comparable with published data.

Outcome of pregnancy complicated by infective endocarditis: A review of published literature over last three decades. N. Wijesinghe, C Sebastian, HF McAlister, GP Devlin. Department of Cardiology, Waikato Hospital, Hamilton

Background: Infective endocarditis (IE) during pregnancy is rare and results in high maternal and foetal mortality. Our aim was to study maternal and foetal outcome in cases of IE during pregnancy.

Method: A literature survey was done in Cochrane database using “pregnant” “pregnancy” and “endocarditis” as key words. All the case reports published between 1976 and 2006 in English language were reviewed to find patient demography, causative organisms, methods of treatment and clinical outcome.

Results: A total of 50 case reports (62 pregnant women with IE) were reviewed. Mean age was 29.5 years. IE was diagnosed in their first, second and third trimesters in 5.7%, 40%, and 54.3% respectively. Prior history of valve disease was known in 22%. Commonest causative organisms were Streptococcus (34.5%) and Staphylococcus (27.6%) species. Mitral, aortic and tricuspid valves were involved in 51%, 38% and 6.7% cases respectively. Mode of delivery was vaginal in 44% and caesarean section in 56% cases. Premature delivery rate was 48%. Valve replacement surgery was done in 85% patients (29% before delivery). Maternal mortality was 19.4%. Foetal mortality was 24.3% (8.1% abortions, 8.1% stillbirths and 8.1% postnatal deaths). The rate of foetal loss during valve surgery was 44.4%. Maternal complication rate was 32.3% [Tromboembolism in 27.4% (11.3% strokes) and immune glomerular nephritis 4.9%].

Conclusion: Pregnancy complicated by IE is associated with significant morbidity and mortality for both mother and foetus. Extreme care is necessary for pregnant women who were diagnosed with IE and should be managed in a tertiary centre with multidisciplinary specialist care.

The medium term outcome and predictive factors of success on elective cardioversion in real life. Chi Wong. W Smith. Department of Cardiology, Auckland City Hospital, Auckland

Aims: To determine the medium term outcome on elective cardioversion in real life and predictive factors of success.

Methods and Results: A systemic retrospective review of all elective cardioversions for the 36 months period from 2003 to 2006. A short-term cardioversion success was defined as sinus rhythm on discharge and medium-term success was sinus rhythm on the last record available.

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There were 113 procedures in 101 patients. 69% was indicated for atrial fibrillation. The short term success among AF and flutter patients was 71% and 94% respectively. The mean number of DC shock per procedure is 1.65. Five patients had bradyarrhythmia complications immediately after the procedure. Age, BMI, pre-cardioversion amiodarone or beta-blocker use, left atrial size and valvular diseases were not associated with the medium term outcome. The average waiting time from referral for atrial fibrillation (AF) was 131 days and was significantly higher in patients failing to maintain sinus (p=0.0007). Only 35% of AF patients maintained sinus rhythm over a mean follow-up period of 13.5 months.

Conclusions: Elective cardioversion was a safe procedure with transient bradyarrythmia the most common complication. Although it is an effective method of converting atrial flutter/fibrillation to sinus in the short-term, patients in atrial fibrillation have poor medium term success remaining in sinus rhythm. Shorter waiting periods for cardioversion were a powerful predictor of medium term success. Further efforts are justified to reduce the waiting period.

14 case report of Takotsubo cardiomyopathy and a review of literatures. Zhi Hua (Michael) Zhang. Christchurch Hospital, Christchurch

Takotsubo cardiomyopathy (stress induced cardiomyopathy) is a rare medical condition from literatures. There were only a few sporadic cases of takotsubo cardiomyopathy reported. 14 cases of Takotsubo cardiomyopathy are reviewed from last 1 year's cardiology admission database of Christchurch hospital (Aug 2006-Aug2007), which represents 3/1000 or 1.1 cases per month of the cardiology admissions. Characteristics of the Takatsubo cardiomyopathy are analysed including trigger factors, demographic background, presentations, diagnosis criteria, treatment and follow ups. It is concluded:

1. Takotsubo cardiomyopathy is not an uncommon condition.

2. All cases are female with mean 59 years old in this series.

3. Various stresses, chronic or acute can cause the cardiomyopathy.

4. It is unlikely to differentiate the cardiomyopathy from acute coronary syndrome clinically.

5. Reversible LV dysfunction is well observed.

A literature review and illustrative case report are also provided.

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Etanercept in Children – The New Zealand Paediatric Registry three years on.

Yan J[1], Rudge SR[1,2], Kerr AA[2].

1. **Paediatric Rheumatology, Starship Children's Health, Auckland, New Zealand**
2. **Paediatric Rheumatology, Hutt Hospital, Lower Hutt, New Zealand**

Aims: The New Zealand Etanercept Registry was established in 2004 to monitor the efficacy and safety of etanercept use in children with severe polyarticular juvenile idiopathic arthritis (JIA).

Methods: All children who receive etanercept were registered on the New Zealand registry. Assessments were performed at baseline, three, nine, 15 months and yearly thereafter. Response to treatment was evaluated using the core variables of the ACR Pediatric (ACR Pedi) definition of improvement. In addition, the severity of pain, duration of early morning stiffness and medication changes were also recorded. Safety was monitored by laboratory investigations and adverse event reporting.

Results: Over 50 patients are currently registered. In 2005, at 3 months 83% of children met ACR Pedi 30, 76% ACR Pedi 50 and 56% ACR Pedi 70. Of the 15 patients assessed at 9 months, 100%, 80% and 73% achieved ACR Pedi 30, 50, 70 criteria respectively. Serious adverse events were predominantly due to infections. We present an update of the data collected for the last 3 years.

The NZRA Biologics Register: baseline charachteristics and outcome from the first year of enrolment.

Andrew Harrison. Wellington Regional Rheumatology Unit, Hutt Hospital, Lower Hutt.

Aim: The NZRA biologics register was initiated to coincide with the launch of public funding of Humira for the treatment of adult RA on 1 January 2006.

Methods: In the first 12 months of initial registrations, data was received on 244 patients, representing 84.4% of Pharmac approvals. Eighty percent of the patients were female, the mean age was 56 years and mean duration of disease was 13 years. Europeans were over-represented and Maori significantly under-represented (3.8%) in the cohort. A pre-treatment CXR was performed on 87%, Mantoux on 75% of patients. At initiation of Humira therapy, 70% were taking prednisone at a mean daily dose of 10mg.

At the time of first reapplication, compliance with the registry was 82%, and means of disease activity measures compared with baseline changed as follows; ESR fell from 42 to 23, CRP 37 to 11, tender swollen joint count 20 to 2.7, physician global VAS 75 to 20 mm, patient global VAS 74 to 25 mm, pain VAS 71 to 23 mm, HAQ 1.78 to 0.96, prednisone use 70% to 34%. These responses were sustained at the 12 and 18 month marks.

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Therapy was discontinued in 26 patients on the registry. There were two deaths due to systemic infection, and 13 discontinuations due to non-fatal adverse events. Therapy was stopped due to lack of efficacy in 9 patients.

Results: These data confirm the efficacy of Humira in a New Zealand cohort of RA patients with relatively severe and longstanding RA, but raise concerns about equality of access and risk of severe infection.

Audit on eligibility for anti-TNFα on psoriatic arthritis: a case series of 67 patients. Jabin D, Corkill M, Voight L. Department of Rheumatology, North Shore and Waitakere Hospitals, Auckland, New Zealand

Background: Psoriasis affects 2-3% of the population, with 7-39% having psoriatic arthritis (PsA). Knowing the number with active disease despite current treatments has economic implications if more effective agents are to be funded.

Aims:

1. To review the characteristics of PsA in our clinic.
2. To identify patients with active disease.
3. To determine the eligibility for anti-TNFα using Australian PBS, BSR/NICE and GRAPPA guidelines.

Methods: We identified 67 PsA patients followed up at Waitemata DHB rheumatology clinics in 2006 by reviewing the problem lists of the clinic letters, and then retrospectively reviewing their clinical notes/letters, investigation results.

Results:

Demographics		Current State	
M:F	30:37	Currently on DMARD	49
Mean Age (SD)	55 (14) years	Methotrexate	40
Clinical sub-groups		Sulphasalazine	9
Asymmetrical polyarthritis	37 (56%)	Leflunomide	4
Spondyloarthropathy	21 (31%)	Hydroxychloroquine	3
Symmetrical arthritis	7 (10%)	Azathioprine	1
Distal arthritis	2 (3%)	Cyclosporine	1
		Combination	9
Disease Duration (SD)	5 (4) years	Active disease	35 (52%)

All 35 patients with active disease are eligible for anti-TNFα using BSR/NICE /GRAPPA and 8 using PBS guidelines.

Conclusions:

1. Our clinic patients represent a small subset (<10%) of all of those with PsA in the community.

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2. Depending on the criteria, 12-52% of our patients would be eligible for anti-TNFα treatment.
3. Numbers eligible for anti-TNFα treatment in our District will be even higher due to:

   Current patients completing treatment regimens to meet future eligibility criteria

   Patients treated in the private sector

   Those currently not under regular follow up due to the lack of effective treatment.

Colchicine prescribing and safety monitoring in patients with gout. Ly J[1] Rheumatology Registrar, Gow P[1] Rheumatologist and Dalbeth N[1, 2] Rheumatologists.

1. **Counties Manukau District Health Board, Auckland, New Zealand.**
2. **Department of Medicine, University of Auckland, Auckland**

Aims: To assess current colchicine prescribing and safety monitoring in patients with gout.

Methods: Colchicine dosing was analysed by chart review of 50 consecutive patients presenting to Middlemore Hospital, South Auckland with acute gout. The dose of colchicine was compared with the NZRA consensus statement on colchicine use for acute gout. Safety monitoring was analysed by chart review of a separate group of 50 patients attending rheumatology clinics on long-term prophylactic colchicine and with renal impairment (creatinine ≥0.17mmol/L or creatinine clearance ≤0.83ml/sec). Monitoring of creatine kinase (CK) and full blood count (FBC) was compared with published quality of care indicators regarding safety monitoring of colchicine. Risk factors for colchicine toxicity were recorded; age >75 years, statin use, renal transplant, haemodialysis, and renal impairment.

Results: Forty-eight (96%) patients treated for acute gout received colchicine at doses ≤2.5mg/24 hours, in accordance with the NZRA statement. In this group, 60% had at least one risk factor for colchicine toxicity. For the long-term prophylactic colchicine treatment group, 76% had CK and FBC monitoring in accordance with the quality of care indicator. Additional risk factors for colchicine toxicity were present in 58% of patients on long-term colchicine. Laboratory monitoring identified colchicine-related adverse drug reaction in one patient.

Conclusions: Current prescribing of colchicine for acute gout is in accordance with the NZRA consensus statement. For long-term colchicine use, there is reasonable adherence to the quality of care indicator for safety monitoring. These patients are at high risk for toxicity, and safety monitoring has an acceptable yield.

Fatigue is common to both rheumatoid and osteoarthritis, but is influenced by different disease variables. Stebbings S, McNamara D, Highton J. Department of Medicine, Dunedin School of Medicine

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Aim: To discover the prevalence and severity of fatigue in two cohorts of patients with OA and RA. To determine which disease variables may influence fatigue and whether inflammatory disease may be a specific contributor to fatigue in RA.

Methods: A cross sectional study was performed. 206 patients were recruited -103 with RA and OA respectively. Fatigue was assessed using the Multidimensional Assessment of Fatigue scale (MAF). Visual Analogue (VAS) pain scale, HAD (Hospital Anxiety and Depression) scale and HAQ (Health Assessment Questionnaire) were performed. Sleep Disturbance was assessed by VAS scale, disease activity in RA by DAS-28 score and CRP. In OA the Western Ontario McMasters Arthritis Index (WOMAC) score was used.

Results: 98.1% of subjects reported fatigue in each group. Mean MAF scores were 28.4 OA and 25.1 RA (p=0.07). Multivariate linear regression analysis, showed the strongest correlations with fatigue in the RA group were: anxiety and depression, followed by DAS-28 score and disability measured by HAQ. There was a poor correlation with CRP, or Pain. In the OA group: disability – measured by WOMAC-C, was the strongest correlate, followed by HAQ, Pain, Sleep disturbance, anxiety and depression. There was no correlation with CRP.

Conclusion: Fatigue was an almost universal experience. Patients with RA and OA experience similar high levels of fatigue. Mood disturbance is a common predictor of fatigue in both groups, as is disability. Disease activity may influence fatigue in RA, but surprisingly not pain. In OA pain and sleep disturbance are significant. The influence of disease variables on fatigue differs between these two conditions.

Impact of arthritis on diabetes patients' health beliefs and levels of physical activity. Hutton I[1], Gow P[2], Cutfield R[1]. Waitemata Diabetes Service[1], Counties Manukau Rheumatology Service[2], Auckland, NZ

Aims: Chronic pain has been shown to negatively impact on self-care activities and diabetes management in primary care setting. (1) The study aimed to determine the impact of arthritis on physical functioning and patient health beliefs in a specialist diabetes clinic.

Methods: One hundred patients at two specialist diabetes centres completed a questionnaire about the presence, severity and location of pain and whether they had ever been diagnosed with arthritis by a doctor. The importance of physical activity and the patients' perceived barriers to physical activity were quantified using scales from 1 *(does not influence me at all)* through to 7 *(heavily influences my ability to be physically active).*

Results: In total, 33% reported a diagnosis of arthritis. These participants were older (mean 60.9 years vs. 47.7 years) and less likely to have Type One diabetes (15% arthritis group vs. 40% non-arthritis group) There were no significant differences in gender, ethnicity, duration of diabetes, BMI or HbA1C.

Participants with arthritis were less physically active and placed less importance on exercise as part of overall diabetes management. They were also more likely to report "joint pain" or "scared of joint damage" as the biggest reason they were not more active.

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Conclusions: This study found that arthritis was a common problem in the diabetes specialist clinic population and was associated with higher rates of inactivity and different physical activity beliefs. Better arthritis and pain management education may help improve physical activity rates and ultimately improve patients' overall diabetes management.

Reference:

1. Krein SL, Heisler M, Pietter JD, Makki F, Kerr EA "*The Effect of Chronic Pain on Diabetes Patients' Self-Management*" Diabetes Care 28: 65-70, 2005.

Reducing postoperative cardiac events after total hip and knee joint replacement surgery (TH/KJR). Guy Taylor

The major risks associated with major joint replacement surgery are thrombo-embolism, infection and cardiac events in the post-operative phase. An audit was undertaken to determine the number of these adverse cardiac events, evaluate possible risk factors and see whether the rate could be reduced.

Methods: All patients having hip or knee joint replacement (TH/KJR) in Wanganui Hospital over a 12 month period were extracted from the patient administration system. A subset of these patients coded as having a cardiovascular event during the same admission was identified and their notes examined. A cardiac event for this study was defined as any compatible clinical event associated with a rise in Troponin I above the normal range. For each index patient two age and operation matched controls were selected. Premorbid risk factors, intra-operative factors and post-operative events were then compared for these two groups.

Results: Eleven out of 132 TH/KJR patients had a cardiac event (8.3%). A history of IHD and presence of diabetes were the major pre-operative risk factors, MI patients were given less volume expanders, were transfused less frequently and had lower urine output in the 24 hrs following surgery.

Intervention: The audit information was presented to the Orthopaedic surgeons, Anaesthetists, Physicians and Pre-op clinic doctor and discussions about possible prevention was discussed at these meetings particularly with regard to the use of B blockers and earlier transfusion for at risk patients but no formal guidelines were drawn up. A letter concerning the benefits of B-blockers in the peri-operative phase was drawn up for the Pre-op clinic Doctor to give to patients he identified as high risk to take to their GP.

Completing the loop: Allowing a six month 'implementation phase' the subsequent 12 months TH/KJR activity was analysed. Three out of 163 (1.8%) patients in this cohort experienced a postoperative cardiac event which was significantly different to the first 12 month study ($p<0.01$).

Genetics of rheumatoid arthritis. Matthew A. Brown. Diamantina Institute of Cancer, Immunology and Metabolic Medicine, Princess Alexandra Hospital, Woolloongabba, Qld, Australia.

Major progress is being made in elucidating the genetic risk factors for rheumatoid arthritis (RA). The association with HLA-DRB1 has been the foundation of most

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immunological investigation of the cause of RA since it was reported by Stazsny in 1974. Recently, definite association has been reported with two more genes, *PTPN22* and *PADI4*, although the association of the latter is questionable in Caucasians. These genes combined still only contribute a minority of the genetic risk for RA. Suggestive evidence of the involvement of several other genes has been reported. Until now, approaches to identifying RA-genes have included linkage studies in families; candidate gene studies informed by immunological hints (educated guessing). Advances in genotyping technology, our understanding of human genetic variation, and statistical approaches, have meant that hypothesis free genomewide association studies are feasible. The recent Wellcome Trust Case-Control Consortium study has identified 10 loci with association with P-values of 10^{-5} to 10^{-7} in addition to *HLA-DRB1* and *PTPN22*, but it is likely that more such genes exist. As none of our treatments are yet curative or can prevent RA, there remains a great need for large scale systematic searches for the genes involved.

Genetic studies of ankylosing spondylitis. Matthew A. Brown. Diamantina Institute for Cancer, Immunology, and Metabolic Medicine, Princess Alexandra Hospital, Woolloongabba, Qld, Australia.

Ankylosing spondylitis (AS) is an enigma in rheumatology. How is it that the aetiopathogenesis of a disease, whose main gene was identified, more than 30 years ago, has not been solved? Why is this common condition so resistant to standard, non-biological, rheumatologic treatments? Why is it that despite high quality epidemiological surveys indicating that the condition is common, and in public health terms, expensive, that rheumatology clinics and wards are not full of patients with the disease? The resistance of the disease to yield answers as to its aetiopathogenesis such as the mechanism explaining its association with HLA-B27, and its resistance to standard therapeutic options, has discouraged researchers and the pharmaceutical industry from investing the requisite energy and finances into pursuing the research required to develop effective treatments. Patients themselves, many of whom experienced substantial disillusionment with traditional medicine even in establishing a correct diagnosis for their symptoms, gave up seeking conventional treatment, which had little to offer them. This led to a vicious circle – AS was under researched because it was not perceived to be a major public health problem, and patients often withdrew from traditional medical attention because all that was offered was physiotherapy and anti-inflammatories.

Paradoxically, the recognition that B27 is not the main answer as to the genetic causation of the disease but requires an unhealthy dose of modifier genes to cause the condition, has led to research breakthroughs in our understanding of AS-aetiopathogenesis, and likely in the near future, to novel treatments. Such breakthroughs, enabled largely by the enthusiastic support of AS-patient organizations for genetics research, are bringing about the biggest change in our understanding of the disease since the 1970s.

The host immune response to autochthonous colonic bacteria in ankylosing spondylitis. Stebbings S, Highton J, Tannock G, Baird M, McNamara D. Departments of Medicine and Microbiology University of Otago, Dunedin

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Aim: To investigate patterns of bacterial colonization in the colon in patients with Ankylosing spondylitis (AS) compared with controls, To test reactivity of peripheral blood lymphocytes from patients with AS, and matched controls, with the cells of *Bacteroides* cultured from their own autocthonous faecal microbiota. To measure a range of cytokines in tissue culture supernatants to characterize the inflammatory response.

Methods: 20 patients were recruited with AS and 20 matched Controls. Two further controls who were HLA-B27 positive were also recruited. Feacal samples were collected from all participants and a single blood and stool sample collected from each. The *Bacteroides fragilis* group of bacteria, were selectively cultured in strict anaerobic conditions.

Peripheral blood mononuclear cells were isolated from all subjects on density gradients and tested for reactivity with bacteria in tissue culture using standard lymphocyte transformation assays. A multi-analyte suspension array system was used to measure a range of cytokines in the tissue culture supernatant.

Sulphate reducing bacteria were detected using PCR and identified using 16S rRNA analysis.

Results: No clear differences in lymphocyte proliferation were noted between patients and controls. Different patterns of bacterial colonization were not apparent between groups. The results of cytokine assays will be presented.

Conclusion: Despite evidence from animal studies that colonic bacteria play a crucial role in the initiation of Spondyloarthritis in animals, our study showed no clear difference in colonization or immune reactivity to candidate autochthonous bacteria in humans.

A rare case of swollen PIP joints. Ching DWT. Timaru Hospital

During the past three years, I have come across three patients with a rare cause of swollen PIP joints. I was pleased I was able to make the diagnosis in two patients but I must admit when I saw the first case a few years ago, I missed the diagnosis completely! Fortunately, the patient did not come to see me about the swelling in his PIP joints but about another rheumatological problem. I had simply noted it in my examination notes and could not explain it. The importance of making this diagnosis would save a lot of unnecessary investigations and possibly unnecessary treatment, as well as reduce the anxiety levels of both doctor and patient.

Toxoplasmosis, sarcoidosis and primary Sjogren's syndrome in a young man. R Gupta, Sunil Kumar, P Sivakumaran, Middlemore Hospital

A case with a rare coexistence of Primary Sjogren's syndrome and sarcoidosis is being presented. This existence has been well documented in the literature.

Rasburicase for management of chronic tophaceous gout – a case for report. Kumar S, Marshall M. Middlemore Hospital

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A 40 year old Samoan gentleman with Gitleman's Syndrome and chronic tophaceous gout resistant to all standard forms treatment is treated with fortnightly infusions of rasburicase, resulting in rapid decline in serum uric acid levels and shrinking of tophi. A brief literature review on rasburicase is presented.

A case of refractory adult-onset Still's disease. Reynolds RM. Middlemore Hospital

A 22 yr old man presented in September 2003 with high fevers and night sweats, evanescent skin rashes, polyarthralgia, generalised fatigue and weight loss. Clinical findings included fever, shotty lymphadenopathy, evanescent rash and oligoarthritis. Tests showed persistent neutrophilia, very elevated inflammatory markers and raised serum ferritin. Adult-onset Still's Disease (ASOD) was diagnosed after extensive investigations excluded other diagnostic possibilities. He responded to steroid therapy over a period of six months and returned to good health. A second attack one year later presented in similar fashion, and again responded to high dose (intravenous then oral) steroid therapy. Thereafter the patient remained well for 18 months.

In August 2006 he presented again, with high fever, arthritis, proximal weakness, transient rashes, and serositis. Response to steroid therapy was limited, after two months he was commenced on methotrexate. He remained unwell, with fevers, increasing weakness, and weight loss, leading to readmission to hospital in late January. During two months in hospital he received further pulse therapy with methylprednisolone, two infusions of infflliximab, and a 5 day course of intravenous gammaglobulin. Despite these measures he remained very unwell, with progressive proximal weakness (possibly partly steroid-induced), weight loss, fever, and increasing breathlessness (without pleural effusions). Inflammatory markers remained elevated (CRP > 250 and serum ferritin > 4500 ug/l).

A trial of the IL-1 receptor antagonist anakinra was commenced. The patient's response is reported.

An elusive patient with an elusive diagnosis. Chapman P.

A 71 yr old woman with background history of paranoid psychosis is referred to Nephrology following lower limb vasculitic rash, active urinary sediment, high titre (930U) PR3-ANCA. A diagnosis of probable Wegeners granulomatosis is made. A renal biopsy and immunosuppressive treatment is recommended however the patient refuses and self-discharges. She presents 5 months later to her local hospital with a large thigh haematoma, Hb 53 and is transfused. A rheumatology opinion is requested.

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Proceedings of the Waikato Clinical School Research Seminar, Wednesday 12 September 2007

Brief interventions in primary health care: referral and intake assessment processes, Julia Davis. University of Waikato

The Brief Interventions Project was a large study evaluating brief mental health interventions (4-6 sessions) as provided by the Waikato Primary Health Organisation in 2006-2007. GPs referred nearly 1500 people in the Waikato region to Brief Interventions therapists in the space of a year. Analyses of GP referral rates found broad differences in referral rates between GPs, from no referrals to more than 40 patients referred. These differences could not be accounted for by practice locality (e.g. rural compared with urban GPs). Alternative explanations might include different strategies for managing patients' mental health concerns, different utilization of mental health professionals by GPs, or varying levels of GP's 'psychological mindedness' in the conceptualization and treatment of psychological distress. Intake assessment results suggest that those people referred by GPs were appropriate for referral to the Brief Interventions service. Finally, some demographic groups were under-represented in the group who were referred (such as males, and people identifying as Maori), although referral rates are reflective of the demographic profile of GP patients. Based on these results, issues for the continued provision of brief interventions and its evaluation were discussed.

Mental health outcomes for primary care patients enrolled in the Waikato PHO Brief Interventions Project. John Fitzgerald, Karma Galyer, Juanita Ryan, Lauren Gaffaney. The Psychology Centre, Hamilton

Accessing mental health care is challenging, particularly when difficulties are not severe enough for secondary care services. The Waikato PHO Brief Interventions Project aimed to increase access to care by funding up to six sessions of counselling for GP patients with mild to moderate psychological distress. This type of brief intervention in primary care has had positive outcomes internationally, but had not been investigated in New Zealand. Evaluation participants completed the Brief Symptom Inventory-18 (BSI-18 n=107, *matched pairs* = 85) and The General Health Questionniare-12 (GHQ-12 n=100, *matched pairs* = 81) at their first and last session. Patients' scores were significantly improved at outcome, with 68% of the group showing reliable change on the BSI-18 and 64% on the GHQ-12. Therapists' (n = 254) and patients' (n=152) feedback concurred that the interventions improved psychological wellbeing. Qualitative examples of the benefits obtained included symptom reduction, skill development, and insight into the problem experienced. These results provide support for the value of a brief intervention service for mental health care in a New Zealand setting. Ongoing evaluation is required to check that benefits continue to be maintained, and to identify relevant areas for service development.

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Factors affecting clinical decision-making in bronchiolitis. D Graham, K-C Hsiao, M Ferry-Parker, N Manikkam, Child Health, Waikato Hospital, Hamilton

Aim: To evaluate clinicians decision-making process in acute bronchiolitis, including relative impact of clinical status and pulse oximetry.

Methods: Multi-centre randomised controlled study on clinicians' management preferences using hypothetical vignettes of an infant with acute bronchiolitis. Four possible vignettes were generated using two different clinical presentations combined with two different pulse oximetry readings, and randomly distributed, one per clinician. Clinicians indicated investigation and management preferences. Eligible clinicians included paediatric medicine nurses and doctors and emergency medicine nurses and doctors working in New Zealand public hospitals.

Results: From 299 vignettes, 63.6% of clinicians decided to either perform no investigation or only perform nasal virology. Investigations chosen included chest x-rays (33.4%), full blood counts (12.4%), electrolytes (12.0%) and blood cultures (8.4%). Therapy chosen included inhaled bronchodilators (15.4%), systemic corticosteroids (7.0%), and antibiotics (7.0%), and supplemental oxygen (53.9%).

Well infants were less likely than unwell infants to have un-necessary investigations (OR 2.47, CI 1.51-4.04), more likely to have ineffective therapies (OR 0.61, CI 0.38-0.98) and as likely to have necessary therapies (OR 1.41, CI 0.84-2.38). Infants with lower pulse oximetry values were more likely to have un-necessary investigations (OR 2.69, CI 01.65-4.40), more likely to have ineffective therapies (OR 7.98, CI 4.62-13.79) and as likely to have necessary therapies (OR 0.62, CI 0.36-1.04) as children with higher pulse oximetry values. Well children with lower pulse oximetry were more likely to have un-necessary investigations (OR 5.50, CI 2.29-13.21), more likely to have ineffective therapies (OR 24.38, CI 9.98-59.55) and less likely to have necessary therapies (OR 0.03, CI 0.00-0.09) than well children with higher pulse oximetry values. Unwell children with higher pulse oximetry were as likely to have un-necessary investigations (OR 1.83, CI .97-3.48), less likely to have ineffective therapies (OR 3.36, CI 1.64-6.91) and less likely to have necessary therapies (OR 9.32, CI 3.38-25.73) than unwell children with lower pulse oximetry values.

Conclusions: Infants with acute bronchiolitis are over investigated and often inappropriately treated. The decision making process is strongly and inappropriately influenced by pulse oximetry readings. Clinical practice should focus on the patient and clinical findings, rather than on pulse oximetry. It may be appropriate to review the risks, as well as the benefits, of pulse oximetry in routine paediatric practice.

The use of the general health questionnaire 12 in detecting mental health difficulties in primary care. TJ Halliday. Hamilton Psychological Service

The focus of this presentation is on the use of the GHQ-12 within two primary care practices in order to explore case selection, and referral decisions made by general practitioners. Results from the current study found that a number of clients presenting with mental health difficulties were identified by the GHQ-12, but not referred on by general practitioners. Of those that were recognized, few were referred on to specialist mental health providers. The discussion and recommendations focus on outlining a role for psychologists in enhancing screening and referral accuracy, enhancing

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appropriate access to specialist services where necessary, and identifying those individuals whose needs may be better met within the primary care environment.

A Phase I pharmacokinetic study of PR-104, a hypoxia-targeting agent, in patients with solid tumors. **MB Jameson[1], D Rischin[2], M Pegram[3], J Gutheil[4], A Patterson[5], W Denny[5], W Wilson[5]; [1]Waikato Hospital, Hamilton, New Zealand; [2]Peter MacCallum Cancer Centre, Melbourne, Australia; [3]University of California, Los Angeles, CA, USA; [4]Proacta, Inc., San Diego, CA, USA; [5]Auckland Cancer Society Research Centre, Auckland, New Zealand**

Background: PR-104 is a novel pre-prodrug (precursor of a prodrug) designed to form a cytotoxic nitrogen mustard (alkylating agent) in hypoxic regions of tumors. Following IV administration, PR-104 is converted by systemic phosphatases to the alcohol intermediate PR-104A, which, under hypoxic conditions, is reduced to form the active DNA-crosslinking mustard species PR-104H. This phase I trial defines a Maximally Tolerated Dose (MTD) and pharmacokinetics (PK) for this schedule.

Methods: Patients (pts) with relapsed/recurrent solid tumors received PR-104 as a 1-hour IV infusion every 3 weeks with PK sampling on days 1-2 of cycle 1. Cohorts of ≥3 pts were treated starting at 135 mg/m^2.

Results: 23 pts have been enrolled: median age 51 years (range 29-72); 13 (57%) male. Most pts had received prior radiation or chemotherapy and had metastatic disease. Six dose levels (135, 216, 354, 550, 770, and 1100 mg/m^2) have been evaluated. Dose-limiting toxicity (DLT) was observed in one patient at 1100 mg/m^2 (grade 3 fatigue) and this dose level was expanded to 6 pts. In the first 4 cohorts, 54 adverse events (AEs) were considered drug-related by the investigator including nausea (26% of all AEs), fatigue (19%), vomiting (11%) and anorexia (6%); remaining AEs each constituted < 3% of the total. Of 16 grade 3 AEs, 3 were considered drug-related by the investigator (anemia, dehydration and vomiting). Prophylactic anti-emetics largely prevented nausea and vomiting at higher doses, at which dose-related decreases in neutrophils and platelets were seen.

Conclusions: PR-104 has shown manageable toxicities similar to other cytotoxic agents, with no serious mucositis, diarrhea or alopecia. DLT is likely to be myelosuppression based on preclinical and current clinical data, with the MTD close to 1100 mg/m^2. The preclinical PK target for the alcohol intermediate has been exceeded at higher doses and, while no objective responses have been documented, reductions in tumor volume have been seen at these doses.

Cmax and AUC for PR-104 and PR-104A:

Dose (mg/m^2)	Number of patients	PR-104A Cmax (ng/mL)	PR-104A AUC (ug.min/mL)	PR-104 Cmax (ng/mL)	PR-104 AUC (ug.min/mL)
135	6	1892 (160)	115 (22)	2060 (1413)	81 (44)
216	3	3563	204 (55)	2824	109 (79)

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		(1047)		(1591)	
354	2	3745 (1086)	245 (558)	4440 (1314)	178 (7)
550	3	14161 (8639)	859 (595)	5217 (6181)	513 (157)
770	2	8964 (1878)	518 (85)	8180 (366)	327 (70)
1100	3	17894 (1945)	1475 (377)	17973 (8616)	695 (325)

Value (SD)

Retention of patients in the "Get Checked" free annual diabetes review program in Waikato, New Zealand. **G Joshy [1], RA Lawrenson[1], D Simmons[2]. [1]Waikato Clinical School, University of Auckland, Hamilton, Waikato, New Zealand; [2]Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom**

Aim: To characterise the retention of patients in the "Get Checked" free annual diabetes review program in New Zealand.

Methods: Retrospective review of Waikato Primary Health registered patients who had at least one "Get Checked" review between 1st July 2000 and 30th Jun 2006. The time reviews were analysed using Kaplan-Meier survival curves. Predictors for the likelihood of a second review were identified using Cox's regression analysis.

Results: 10,919 patients were reviewed at least once during this five year period. There were 69% Europeans, 18% Maori, 3% Pacific Islanders, and 4% Asian. 87% had Type 2 diabetes and 8% had Type 1 diabetes. Only 57% of the estimated 10,604 diabetes patients utilised the free check in 2005/06. One and a half years after initial review, 35% were yet to return for a second review (Figure 1). But those who were retained attended subsequent reviews more regularly. Those who attended a second review returned much earlier for the third review, 75% within 1.5 years after second review. Maori and Asians took a significantly longer time to return for a second review (median 1.4 years) compared with Europeans (1.1 years, $p<0.0001$). Younger patients aged <40 years returned for a second review much later (1.8 years) compared with 65+ year olds (1.1 years, $p<0.0001$). No significant gender difference was found. Younger patients aged <40 years (vs age 65+), those of Maori or Asian origin (vs Europeans) and those with Type 1 diabetes (vs Type 2) were less likely to return for a second review.

Conclusions: In spite of this program being of benefit and free to patients, a significant proportion of patients did not return for a second review within 1.5 years after initial review. The loss of those with Type-1 diabetes and younger patients may reflect their greater contact with specialist rather than GP services. Excess drop out among ethnic minorities need further investigation and intervention.

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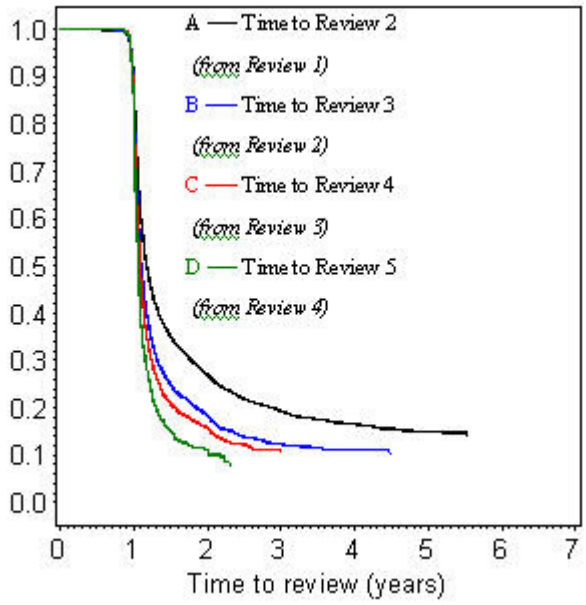
Figure 1. Kaplan-Meier Survival Curves for the Time to Reviews (from the Previous Review, Conditional that Patients Attended the Previous Review).



Analysis variable	Reviewed	Censored			Median time to review (Inter quartile range)	Review rates at 1.5 years
		Total	Death	Migration		
Time to Review 2 *(from Review 1*)*	7140 / 10919	3779 (35%)	262 (2%)	736 (7%)	1.17 (1.0 , 2.1)	65.0%
Time to Review 3 *(from Review 2*)*	4183 / 7140	2957 (41%)	182 (2%)	281 (4%)	1.10 (1.0 , 1.5)	74.8%
Time to Review 4 *(from Review 3*)*	2352 / 4183	1831 (44%)	139 (3%)	110 (3%)	1.09 (1.0 , 1.3)	79.1%
Time to Review 5 *(from Review 4*)*	1070 / 2352	1282 (46%)	46 (2%)	29 (1%)	1.06 (1.0 , 1.2)	84.8%

** Conditional that patient attended this review.*

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Table 1. Survival Analysis of Time to Second Review (from Initial Review)

		Time to second review			
	N	Patients who attended a second review	% Censored	Median time to second review (Inter quartile range)	p-value
Overall	10919	7140	35%	1.17 (1.03 , 2.14)	
Ethnicity					
European	7582	5093	32%	1.13 (1.03 , 1.97)	
Maori	1958	1091	44%	1.39 (1.07 , 3.71)	<.0001
Pacific	1091	201	35%	1.24 (1.06 , 2.25)	
Asian	394	234	41%	1.35 (1.09, 2.43)	
Age at first review					
<40	724	359	50%	1.82 (1.14 , 4.88)	
40-65	5020	3220	36%	1.24 (1.05 , 2.27)	<.0001
65+	5175	3561	31%	1.11 (1.02 , 1.83)	
Gender					
Female	4651	1484	32%	1.17 (1.03 , 2.15)	0.7103
Male	4761	1578	33%	1.18 (1.03 , 2.16)	
Diabetes Type					
Type 1	890	565	37%	1.32 (1.06 , 3.27)	
Type 2	9547	6329	34%	1.16 (1.03 , 2.07)	<0.0001
Other	482	246	49%	1.22 (1.04 , 2.86)	

p-values from Wilcoxon's test for homogeneity of survival cures over strata

Preschool development and cognitive ability at 8 years in very low birth weight infants. NA Keene, D Bourchier, S McGregor. Child Development Centre, Waikato Hospital, Hamilton

Very Low Birth Weight (VLBW) infants are at increased risk for development problems due to being born so early and so small. Infants born weighing less than 1250g, and discharged from Waikato Hospital New Born Unit, are routinely followed up at the Child Development Centre, at 1 & 2 years (age corrected for prematurity) and at age 4. The aims of this study were to: (1) assess the cognitive outcome of these children at 8 years of age, and (2) determine the potential value of the preschool developmental assessments in predicting school-age outcomes.

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Thirty five infants born in 1998, weighing less than 1250g, were identified for the study. Twenty three children participated, 52% were male. The mean age was 100.65 months (8yr 4mths) and the mean birth weight was 878.04gms (range 580g – 1112g). The Wechsler Intelligence Scale for children, Fourth Edition (WISC IV) was used to assess cognitive ability.

Full Scale Cognitive scores (WISC IV, mean 100, SD 15) were 1 Standard Deviation below the mean (mean FSIQ 84.30, SD 18.17, median 90, range 50-109). A Repeated Measures ANOVA found that scores at 4 years were not significantly different than scores at 8 years.

Overall, our hypotheses were supported, with VLBW infants achieving substantially lower cognitive scores compared to normative data on the WISC IV. Results suggest that the 4 year assessment is more predictive of 8 year cognitive outcome than earlier assessments. Further results and clinical significance will be discussed.

Diagnosing mental illness in general practice. Steven Lillis, Graham Mellsop. Waikato Clinical School, University of Auckland

A qualitative study was undertaken in the Waikato to understand the use of diagnostic schema by general practitioners when making a diagnosis of mental illness. The results suggested that formal classifications were seldom used and that disease management imperitives were strong drivers of diagnostic process. A subsequent nationwide survey of general practitioners found that the most common reasons for not using diagnostic schema was lack of familiarity and experience with them, perceived ridgidity and high complexity. The most important roles of the diagnostic process are assistance with pharmacological choices and communication with other health workers. It is imperitive for classification systems to successfully integrate with practice management systems.

Mindfulness-Based Stress Reduction (MBSR) training: challenges and achievements for people with chronic health problems. P Thomas[1], J Shennan[2], W Tuck[2], J Bell [3], H Conaglen[4].[1]The Psychology Centre, [2]Health Waikato, [3]Private Practice, [4]Research Consultant

The evidence indicates that mindfulness-based stress reduction training, or MBSR, is effective in alleviating suffering and improving coping related to many chronic illnesses. We believe this is the first New Zealand/Aotearoa pilot study of MBSR training for people with chronic health problems; for example, chronic pain, diabetes, a history of strokes, hypertension, and cancer. Between October 2005 and December 2006, forty-two participants (randomly allocated to treatment and waitlist conditions) attended and completed one of four eight-week MBSR training groups. The impact of MBSR training on their physical and psychological health was monitored, and followed up six months later. Research challenges included recruitment and conservation of a sample big enough to be statistically significant, and consequent problems for the study design. The significant achievements reported by two group members with considerable health difficulties will be discussed, and possibilities for future research will be noted.

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Traumatic crepitus

Blanca Obón-Azuara, Isabel Gutiérrez-Cía, Pilar Luque-Gómez, Carmen Velilla-Soriano

Clinical

A 24-year-old female presented with chest trauma after a car accident. A thoracic computed tomography (CT) was performed (Figures 1A and 1B).

Right paratracheal emphysema (Figure 1A, arrow) and a first rib fracture (not seen on images provided) were identified.

Figure 1A

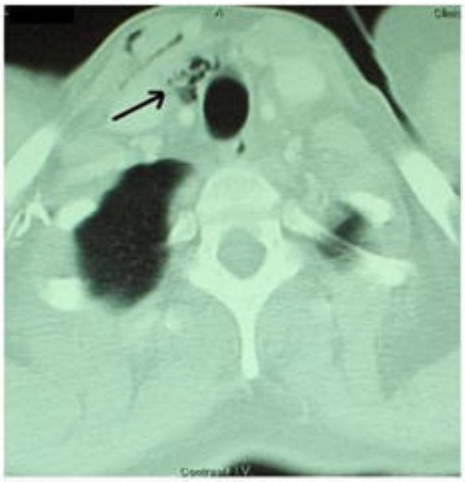
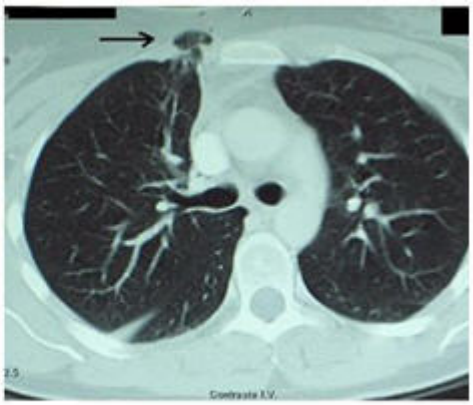


Figure 1B



Question

What is the other rare finding arrowed in Figure 1B?

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Answer

This CT shows a lung hernia. Lung hernia is a very uncommon finding. It can be located in a cervical or diaphragmatic area, and be caused by thoracic trauma, thoracic surgery, congenital abnormality, or an inflammatory or neoplastic process.

Traumatic extrathoracic lung herniation is a recognised complication of chest trauma, generally associated with rib fracture or intercostal muscle rupture. Conservative treatment is common and surgical treatment remains controversial, but is relevant if there are complications such as incarceration.

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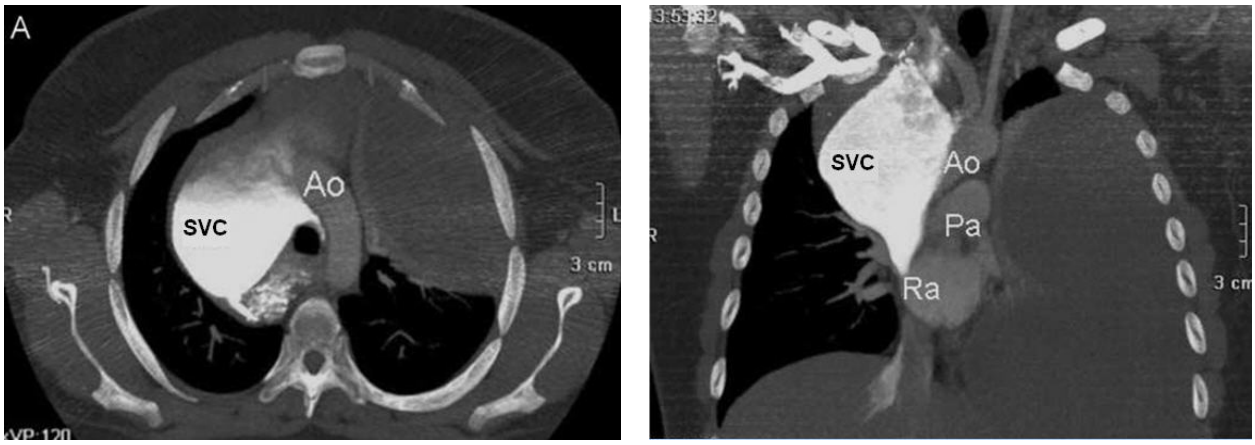
Mediastinal enlargement

Bulent Karaman, Ersin Ozturk, Guner Sonmez, Hakan Mutlu, C Cinar Basekim, Esref Kizilkaya

Clinical

A 33-year-old asymptomatic man a chest radiograph, which showed widening of the upper mediastinum. Chest computed tomography (CT) was performed (Figures 1A and 1B).

Figures 1A and 1B. Axial (A), coronal (B) multislice CT images



Ao: aorta; Pa: pulmonary artery; Ra: right atrium; SVC: superior vena cava.

Question

What is the abnormality?

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Answer

The multislice CT of the chest shows a markedly dilated SVC (Figures 1A and 1B). The other parts of the vessel below the dilatation are normal in calibre without any evidence of obstruction.

Aneurysm of the SVC is an extremely rare entity. Most cases are usually asymptomatic and detected incidentally on routine imaging studies such as chest radiography, echocardiography, CT, or magnetic resonance imaging (MRI), as in the case herein presented.

The aetiology of the superior vena cava aneurysm remains unknown. Absence of the longitudinal muscular coat within the tunica adventitia has been described in some patients with SVC aneurysm.

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Calcium supplementation for osteoporotic fractures

Calcium ± vitamin D supplements for the prevention of fractures is a popular topic; indeed it featured in our offerings twice last year (31/3/06 & 23/6/06). Up till now it has been controversial but this systematic review may be the last word. The authors identified 29 randomised trials (n=63,897) and report their findings, which are positive.

Bone density is increased and fracture rates are reduced, both significantly, in subjects 50 years or older who take such supplements. However compliance is essential and the best results are obtained with minimum daily doses of 1200 mg of calcium and 800 IU of vitamin D.

Lancet 2007;370:657–66

Inappropriate prostate-specific antigen (PSA) screening

This interesting paper from the US starts with the proposition that there are reasons for not screening some groups of men for prostate cancer. They state that none of the major clinical practice guidelines recommend that PSA screening be routinely performed in asymptomatic men younger than 40 years, older than 75 years, or with less than a 10-year life expectancy. They then collate information over a 7-year period from the Veterans Hospitals database involving 181,139 men.

Overall they found that there was a 20% inappropriate rate. Significantly higher levels of inappropriate screening requests were made by urology specialists, male doctors, and infrequent test orderers.

Arch Intern Med 2007;167(13):1367–72

Bad news about the British National Formulary (BNF)

Medical students in the UK have until recently each received a free copy of this book. It has been a valuable training aid to thousands, including your scribe.

In their “wisdom” the UK Health Department has decided to withdraw the student’s free copies. This move has been described as illogical, shortsighted, and against the current drive to reduce the number of prescribing errors.

The UK Department of Health has tried to ease out of the responsibility for the decision—“funding for the provision of the BNF has not been cut or deleted; it has been relocated to the strategic authorities.”

Translation—pass the buck to the Medical Schools.

BMJ 2007;335:534

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The utility of the Wells score in identifying pulmonary embolism

Pulmonary embolism (PE) is frequently suspected but is confirmed in only about a third of the suspect cases. Several scoring systems have been devised to predict the likelihood of the diagnosis in order to prevent overinvestigation. The Wells score from Canada is the best known.

This paper prospectively reassesses the Wells score in 595 patients who had the diagnosis confirmed or refuted by lung scanning. Their results were very similar to those of Wells and his group and confirm the score as a robust clinical tool.

Med J Aust 2007;187:333–6

Effectiveness of the influenza vaccine in the community-dwelling elderly

Most clinicians recommend flu immunisation for those at risk, which, of course, includes the elderly.

This paper looks at data from 18 US health maintenance organisations which has been gathered over 10 years. It reviews 713,872 subjects: 415,249 immunised and 298,623 non-immunised.

During 10 seasons, influenza vaccination was associated with significant reductions in the risk of hospitalisation for pneumonia or influenza—down by 27% in the immunised. The risk of death was reduced by 48% in the immunised.

The message is clear.

N Engl J Med 2007;357:1373–81

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Tobacco-free countries: Could Pacific Island countries lead the way?

A recent editorial[1] and review published in the *Journal* addressed the issue of smoking in the Pacific region.[2] The review noted that there are already high levels of smoking in most Pacific Island Countries and Territories (PICTs), and argued that improved monitoring and tobacco control legislation and policy are required to address the problem. The editorial noted the value of the Framework Convention on Tobacco Control (FCTC) and the desirability of supporting "innovative solutions that arise from the Pacific states themselves".

We note that all independent Pacific countries are parties to the FCTC.[3] Furthermore, Pacific countries have been leaders in both the negotiations for a strong FCTC and in its implementation—and there is increasing evidence of a preparedness to adopt strong solutions,[4,5] including the adoption of smokefree villages. We suspect there is a real opportunity for PICTs to be in the vanguard of implementing cutting-edge tobacco control policies and be among the first to achieve truly smokefree and then tobacco free societies.

It is likely that indigenously derived and implemented solutions are the most effective and sustainable way to achieve smokefree societies. These solutions are likely to include local versions of more universally applicable strategies, but may also involve more radical strategies that have not yet been applied in larger countries where the environment is less supportive.

If PICTs want assistance in achieving their goals, non-governmental organisations and donor nations may be more likely to provide the needed support for solutions that go beyond what is currently happening in their own countries if the assistance leads to learnings that can be applied elsewhere. Maximising this possibility will involve including the strongest possible evaluation framework around the interventions that are implemented.[6]

There are a number of nation-wide strategies that PICTs could adopt that would be likely to significantly reduce tobacco use and its associated harms. These might include:

- Regular and large tobacco tax increases on smoked tobacco with the aim of both encouraging quitting and encouraging use of alternatives, such as nicotine replacement therapy (NRT) (though some PICTs may still benefit from donor assistance for more expensive quitting technologies in the short term). Tax rises are feasible since most PICTs are sufficiently isolated to make control over smuggling entirely possible provided there is regular monitoring. Taxation reform could establish dedicated funding streams for tobacco control to ensure sustainability of efforts and FCTC compliance over time. We understand that several PICTs are already investigating such funding options.
- Taking effective control of the marketing and distribution of tobacco products from the tobacco companies and their agents.[7,8] This would allow the removal of residual marketing strategies, a staged reduction in the availability of

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tobacco products, the introduction of generic packaging and restrictions on the types of tobacco products allowed on the market. It would also facilitate using points-of-sale as recruiting places for cessation services.

- Implementation of smokefree indoor public places where it has not been done, and strict limits on smoking in crowded outdoor environments and in public places like beaches and parks (where role modelling about the normality of tobacco use can occur to children).
- Intensive use of the mass media, schools and other communication channels to ensure the public understand the rational for the policies and are encouraged to take individual and community-wide action to reduce and prevent smoking.
- Extensive provision of smoking cessation support which could include face-to-face services at community meetings, village events, and sports clubs as well as personalised services via quitlines.

Evidence that radical solutions are being discussed in PICTs include recent talk of systematic moves to phase out tobacco products entirely, with smaller Pacific states expressing an interest in research or active interventions in this area.[5]

The Premier of Niue has suggested the novel approach of financial payments of up to NZ$1700 to each of Niue's estimated 200 smokers to quit smoking as a means of reducing the greater cost to the Government of treating smoking-related illnesses.[9]

If the introduction and impact of such approaches was well monitored and well evaluated, then lessons could be learnt for other island nations in the Pacific and other countries in the world. The size of most PICTs (some have only a few hundred smokers) means that such comprehensive solutions could be implemented and evaluated relatively cheaply. Further, their isolation (e.g. there is only a boat connection to Tokelau) makes it possible to adopt quite different strategies in different places without it affecting other nearby countries, something likely to be impossible where countries share open land borders.

The learnings from the implementation of such a suite of policies and programmes would be enhanced if there were comparable countries where this did not happen. Action could be delayed in some countries, who nevertheless agreed to the evaluation strategy, especially if there was an alternative programme that could be offered. Obesity is a major problem in many PICTs. Again some are taking decisive action with successful action against hazardous imports such as fatty meat (as noted by Matheson et al[1]). Adoption of integrated strategies to tackle obesity could be the alternative intervention programme, so all participating island countries got some benefit. Further, if there was a promise to implement the strategies shown to be successful for the other behaviour, the intervention package would be even more attractive.

The benefits to participating PICTs would be considerable. They would have progress made on tackling two major health issues. The influx of funds would be an important contribution to their economies, and the personnel needed for implementation and evaluation would provide skilled work and new skills. Finally, it would give an international prominence to these participating countries, and allow them to make a real international contribution by showing leadership in testing ideas for resolving two major problems where the world currently needs better solutions.

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We are keen to hear Pacific leaders' (in tobacco control) views on these ideas. If they are interested, we would be happy to work with them to turn these ideas into a reality.

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Competing interests: Some of the authors (NW, RE, MA) have undertaken tobacco control work for government agencies, regional health and development agencies, and/or non-profit, non-governmental organisations.

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A follow-up to the management of acute biliary disease at a major New Zealand metropolitan hospital

In 2006, Lin et al showed that the management of acute gallstone-related disease at a major New Zealand metropolitan hospital failed to meet current international standards; few patients (15%) underwent index cholecystectomy, and a large proportion of those treated conservatively re-presented with ongoing problems.[1]

Since this publication, the Department of Surgery at Christchurch Public Hospital (CPH) has aimed to provide an acute cholecystectomy service for patients presenting with acute gallstone-related pathology. To assess the effect of this intervention, a 10-week prospective audit was performed of patients presenting with acute gallstone-related disease, between June–August 2007, to CPH.

Diagnosis, exclusion criteria, and admission details were collected as described previously by Lin et al.[1] Forty-five patients who met the inclusion criteria were identified for further analysis. The median age was 49 years (range 20–89 years) and 62% were female.

Thirty-two (71%) patients presented with acute cholelithiasis/biliary pain, 10 (22%) with mild gallstone pancreatitis, and 3 (6.7%) with cholangitis. Three (6.7%) patients were considered unfit for surgery, 2 (4%) patients opted for private surgical management, 2 patients (4%) opted for further discussion/investigations, but were placed on the surgical waiting list for cholecystectomy, and 1 patient (2%) self discharged.

Of the remaining 37 patients, 29 (78.4%) underwent index cholecystectomy. Of the 10 (27%) patients where management was delayed, 9 were placed on a waiting list for elective cholecystectomy during the index admission (this included the 2 patients who opted for further discussion or required further investigation).

To date, only half of these patients have subsequently undergone elective cholecystectomy; the median waiting time for their surgery being 3 days (range 2–20 days). Seven patients (of 10) underwent index cholecystectomy after recovering from mild acute gallstone pancreatitis. Of those who were not operated on, one subsequently re-presented and underwent cholecystectomy on readmission.

Cholecystectomy is the treatment of choice in symptomatic gallstone disease.[2] Studies support early cholecystectomy in these patients, as a delay in surgical management has no significant advantage over early cholecystectomy in minimising perioperative morbidity and mortality.[3–5] Furthermore, it is more cost-effective to perform surgery early.[6] Comparing the results here to those previously published by Lin et al,[1] substantially more patients (78% compared to 15%) are undergoing index cholecystectomy. Furthermore, this increases to 89% if patients who underwent cholecystectomy electively within 2 weeks of their index admission, are included in the analysis.

It is encouraging to see that the management of acute gallstone-related disease at this major New Zealand metropolitan hospital has changed to an emphasis on early

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cholecystectomy, although the results still fail to match standards achieved elsewhere.[7]

Importantly, this change in practice has been brought about without any increase in funding, showing that a department-directed change in practice to early cholecystectomy can reduce unnecessary morbidity in a cost-effective manner.

Acknowledgements: We thank Zhao Koo and Jeff Chao for their contribution to this study.

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Randomised controlled trial to meta-analysis ratio: a reply from a group producing systematic reviews

Bolland et al provide interesting data examining publication practices of meta-analyses (MET) and randomised controlled trials (RCTs) in the journal literature.[1] They identified "marked variation in the RCT:MET ratio within the leading medical journals, but a consistent decrease in the RCT:MET ratio in these journals over the past 10 years due to the increasing number of meta-analyses published."

This statement was based on articles indexed as meta-analyses and RCTs in MEDLINE. The five journals they focused on were the NEJM, Lancet, JAMA, Annals of Internal Medicine, and the BMJ. They suggested it would be useful if medical journals would publish the RCT:MET ratio for both submissions received and papers published.

Their editorial considers papers published but not submissions received. They also commented "it is disturbing that meta-analyses that provide little or no additional knowledge might be displacing original RCTs from the premier journals." However, their cited references supporting their argument do not include any from the five journals of interest. We note that duplicate primary research publications also occur and are a common source of exclusion of studies from systematic reviews and meta-analyses.

The use of thrombolytic therapy in acute myocardial infarction also illustrates that RCTs published in the leading journals may provide little additional knowledge. Antman et al showed that recommendations for routine use of thrombolytic therapy first appeared in 1987, 14 years after a statistically significant reduction in mortality was apparent on a subsequent cumulative meta-analysis of all relevant RCTs[2].

At the first time a significant reduction in mortality was apparent in the cumulative meta-analysis of IV streptokinase therapy (1973, p=0.01), 2432 patients had been randomised in eight small trials. The results of a further 25 studies (34,542 additional patients) published before routine recommendation of thrombolytic therapy, reduced the significance level to p=0.001 in 1979 and p=0.0001 in 1986.[3]

Bolland et al suggested that reliance on the accuracy of MEDLINE indexing was a potential limitation of their analysis. When conducting systematic reviews we have noted that RCT indexing in MEDLINE identifies some studies that are not RCTs. We therefore explored this further. We randomly selected 100 titles from those indexed as publication type "Randomized Controlled Trial" (randomized controlled trial[pt]) in MEDLINE for 1996 and 2005 (in keeping with the years studied by Bolland et al) and did the same for meta-analyses.

We found there was a statistically significant increase in the proportion correctly identified as meta-analyses between 1996 and 2005 (69.1% to 83.2%, p=0.04). No such change was observed for RCTs (82.5% in 1996 and 79.6% in 2005).

For this purpose we did not retrieve 16 of the 400 selected articles that were not immediately available from our resources. Applying these data to the total number of

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studies indexed as RCTs and meta-analyses suggested there had been a 415% increase in meta-analyses published in 2005 compared with 1996 but only a 45% increase in RCTs published in 2005 compared with 1996.

Our approach was also limited by reliance on MEDLINE indexing. We were unable to estimate how many RCTs or meta-analyses were missed as a result of lack of indexing as RCT or meta-analysis. However, another group estimated the sensitivity of a strategy for identifying RCTs using the publication type limiter at 82.78%.[4]

The true sensitivity is likely to be higher than this since the analysis was performed in a year where Cochrane retagging of MEDLINE had not yet taken place. Retagging consists of forwarding trial reports to the National Library of Medicine that have been identified by the Cochrane Collaboration as RCTs but are not already indexed as such in MEDLINE.

To illustrate the effect of retagging, the number of RCTs in humans indexed with the appropriate publication types in MEDLINE increased from 20,000 in 1993 to over 270,000 in 2005 including 100,000 that were published before 1993.[4] These additional 80,000 publications published pre 1993 were identified by the retagging process.

This change can also be expected to significantly improve the sensitivity of searching on randomized controlled trial[pt] in all subsequent years (including 1996 and 2005 included in Bolland et al and this letter). We are not aware of similar research for meta-analyses.

Irrespective of the above details, it is clear that the RCT:MET ratio for journal publications has declined over time. We wondered if Bolland et al considered whether the increasing emphasis on meta-analyses in the "premier journals" reflected the change in the RCT:MET ratio in the entire medical literature.

Did they consider that this change may reflect a change in research funding internationally? We suggest this possibility since, if it was true, the RCT:MET ratio may be similar for submissions received and papers published in the leading journals.

We agree that RCTs and meta-analyses have essential and complementary roles and we would like to emphasise the importance of publishing both types of research.

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Hand washing

The major result of the study by Garbutt et al—published in the 9 November 2007 issue of the *NZMJ*; http://www.nzma.org.nz/journal/120-1265/2810—was that only 1.5% of an observed population adhered to recommendations for hand washing and drying. Given how few adhere to the recommendations, it is curious that in the discussion there was no consideration given to amending the recommendations.

This study could not measure meaningful outcomes; how many people suffered from illness as a result of not washing their hands? I could find no study in the references documenting the risk of illness after urinating. Such a study may well not have been done, but I think it highly unlikely that any of the unwashed people suffered any untoward effects.

We need to be careful not to assume outcomes in relation to cleaning. We used to think that cleaning the skin before injecting was necessary to prevent infection, however since 1969[1] there have been studies that showed that it made no difference to infection rates and made the injection more painful. Current recommendations are that it is not needed.[2] Only recently have these findings been adopted. Just think of the time and money wasted on alcohol swabs over the years.

I would argue that the message we need to promote is that people need to know how to wash their hands thoroughly and need to know when such washing has a high potential benefit such as when visiting the neonatal unit, after handling raw chicken, and whilst suffering from a diarrhoeal illness.

It could be that those who do not wash after urinating are not convinced of the benefits of doing so, based on their personal experience. They might be right.

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1. Dann TC. Routine skin preparation before injection: an unnecessary procedure. Lancet. 1969;2(7611):96–8.
2. New Zealand Ministry of Health, Immunisation Handbook. Wellington: MOH; 2006. http://www.moh.govt.nz/immunisation.html

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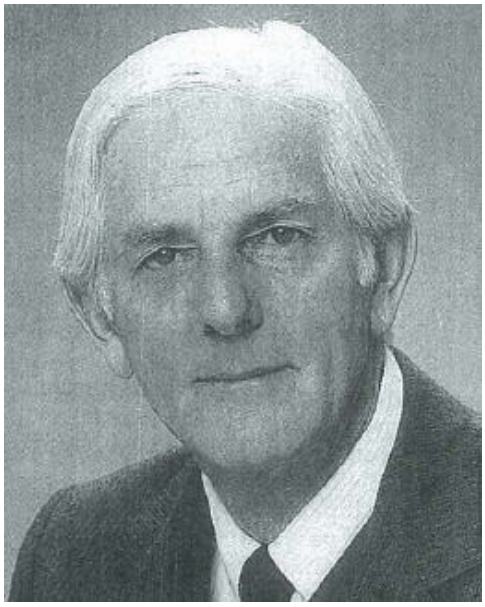
Colin James Alexander

(10 April 1920 – 16 October 2007)

Colin Alexander was born in Benington, Lincolnshire, England and died in Auckland.



He came to New Zealand as a child, and his father entered general practice in Northland and later Coromandel.

He was educated at Auckland Grammar School, Auckland University College, and Otago University, qualifying MB ChB in 1944. That year he was a house surgeon at Auckland Hospital.

Between 1945 and 1947 he saw active service with the NZEF in Italy at the 3 NZ General Hospital Bari, followed by service with the 9th New Zealand Brigade, British Commonwealth Occupation Force in Japan: 6th NZ Gen Hospital Kure Japan, Rank: Major NZ Medical Corp.

In 1948 he became a Radiological Registrar at St Mary's Hospital London, later obtaining the Diploma of Medical Radio-Diagnosis, Royal Colleges of Physicians and Surgeons, London. In 1949 he became a Radiologist at University College Hospital London.

In 1950 he returned to New Zealand to become a Visiting Radiologist at Auckland Hospital and to enter private practice. In 1964 he was awarded the degree of MD (with distinction), University of Otago.

In 1964 he was elected Rouse Travelling Fellow of the Royal Australasian College of Radiologists, as well as chairman of the New Zealand branch of the College, and the foundation president of the Auckland Radiological Society.

In 1969 he was appointed Clinical Teacher in Radiological Anatomy, Auckland University School of Medicine and in 1976 he was appointed Foundation Professor of Radiology, Auckland University School of Medicine and he retired from the Chair in 1986, and was appointed Emeritus Professor by the University of Auckland. .

During his tenure of the Chair, Colin served on a number of committees at the request of the Minister of Health and of the Health Department, and was appointed adviser in Radiology to the Minister.

In 1977 he had the signal honour of being elected visiting Professor, British Council: to visit United Kingdom radiological centres. Colin's major interest in radiology centred on the bones and joints and he was honoured to be elected a foundation

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member of the International Skeletal Society in 1973, and in 1988 to be made an honorary member.

During his professional career he contributed over 40 articles to various journals, on a wide range of medical subjects which captured both his attention and his imagination, many of which reflect his abiding interest in skeletal radiology Somehow he also found the time to write two detective stories published in 1964 and 1968.

Over the last few years Colin has worked on a major project, a book he described as highly controversial, dealing with the subject of arthritis and in particular his views on the aetiology of primary osteoarthritis. Sadly, it is now likely that this work will never see the light of day.

With Colin's passing we have lost not only a very experienced and erudite radiologist but also many of us a very good friend. Colin showed remarkable humanity and compassion which was perhaps best expressed by his patient caring for his wife Susan during her convalescence and rehabilitation following a major life-threatening cerebrovascular accident a good many years ago. A number of his old friends also benefited from the amount of time he was prepared to spend with them when they were seriously ill.

Colin once said to me that he liked to study (in some detail) a different topic every year, and this will possibly account for the very wide range of interests that he always held. Flying (when he was able to) was almost a passion with him; at one time he owned his own aircraft. He spent many hours in the air perfecting his skills and achieving the appropriate licences. He was an accomplished celestial navigator, which was essential to flying, but not so essential to sailing, in particular coastal cruising, which was another of his great loves. He did however confess to me that his first attempt with a sextant placed the deck of his house at Stanmore Bay some distance out to sea.

His wide interest and enquiring mind made him a natural for U3A (University of the Third Age) where his absence will not go unnoticed.

He will be greatly missed by all his friends, and our sympathy is extended to his wife Susan, and their sons Simon and Michael.

Dr Barney (HG) Feltham of Waikanae wrote this obituary and the photograph comes courtesy of Dr Malcolm Baigent.

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GRANTS AWARDED NOVEMBER 2007

At the November 2007 meeting of the Scientific Advisory Group of the National Heart Foundation, a total of 8 limited budget grants were awarded. The awards included 4 Small Project Grants, 1 Grant-in-Aid, and 3 Travel Grants.

Small Project Grants

Dr Hannah Badland

Centre for Physical Activity and Nutrition Research, AUT University

Moving through the built environment: where, how and why

$13,694 for 11 months.

Professor Doug Sellman

Department of Psychological Medicine , University of Otago, Christchurch, & Director, National Addiction Centre

Understanding clinician and consumer perspectives of obesity: expanding knowledge of the causation and treatment of obesity

$14,498 for 8 months.

Assoc Professor Felicity Goodyear-Smith

Department of General Practice and Primary Health Care, University of Auckland

Different ways of expressing cardiovascular treatment benefits

$15,000 for 6 months.

Assoc Professor Paul Hoffman

Liggins Institute, University of Auckland

An MRI compatible exercise ergometer

$15,000 for 1 year.

Grant-in-Aid

Ms Enid Dorey

Clinical Trials Research Unit, University of Auckland

Feasibility of an intervention to decrease television watching in television

$8,400 for 8 months.

Travel Grants

Ms Katrina Poppe

Cardiovascular Research Laboratory, Department of Medicine, University of Auckland

Workshop on Applied Bayesian Statistics – Massey University, Palmerston North, NZ

Dr Simon Thornley

Population Protection Group, Auckland Regional Public Health Service (ADHB)

Society for Research on Nicotine and Tobacco's 14th Annual Meeting, Oregon, USA

Dr Jithendra Somaratne

Cardiovascular Research Laboratory, Department of Medicine, University of Auckland

American Heart Association Scientific Sessions 2007, Florida, USA

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National Heart Foundation: 2008 Grant Applications

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National Heart Foundation: 2008 Senior Fellowship

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Penn Clinical Manual of Urology

P Hanno, AJ Wein, B Malkowicz. Published by Saunders Elsevier, 2007.
ISBN 9781416038481. Contains 1008 pages. Price AU$121.50

The Pennsylvania Urology Department is world-renowned; they have invited a quality general faculty to provide authorship of this practical text.

The wide aim of this reference text is provision for RMOs, a framework for a urological teaching programme and for urologic nurses and nurse specialists. We are increasingly relying on nurses to assist in the management of an increasing population with urological problems and a text aimed at this group is useful. I trialled it with our nursing staff who found it concisely written, useful as a reference text, and practical in value.

This “pocket book” does provide a comprehensive (US-biased) overview of urological care. Given its bulk and weight I find it hard to imagine a busy RMO keeping it in their pocket for very long. I was also a little concerned at the quality of both the binding and paper and fear it would not last the rigours of a pocket text.

The font is small and would potentially be difficult to read late at night. Important points are bolded, the tables and drawings are blue and easy to understand, however quality of the photography is poor.

The overall contents are extensive but I found the chapter order interesting. The first is on robotic and laparoscopic surgery—certainly topical surgical techniques currently undergoing a rapid revolution. The last chapter is on Geriatric Urology, a small chapter given over 50% of the urological patients being treated are over 65 years old. This does seem like somewhat of an afterthought.

This is a useful reference text but I think it will more likely find a space on a busy urological ward desk to easily provide information for RMO and nursing staff. It is unlikely to be stolen due to its size and limited role outside the Urological Ward.

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Otoacoustic Emissions: Clinical Applications (Third Edition)

MS Robinette, TJ Glattke. Published by Thieme Medical Publishers Inc., 2007 (and Distributed by Elsevier Australia). ISBN 9783131037138. Contains 436 pages. Price AU$135.00

As a detailed and often highly technical guide to otoacoustic emissions (OAEs), this book's strength lies in the chapters dedicated to clinical applications.

The book is divided into three parts, the first describing the science of OAEs in excellent detail, however it is perhaps best read with a prior basic knowledge. The chapters of the second part offer information on OAEs in normal hearing populations, with the two chapters on transient evoked and distortion product OAEs giving readable descriptions of recording parameters and result analysis.

The final and main part of the book is dedicated to clinical populations, and all of these chapters are interesting and informative. For example, the chapter on OAEs in neonatal hearing screening offers an excellent summary of the applications and limitations of OAEs in that area, which is very topical given the upcoming rollout of universal newborn hearing screening in New Zealand.

The chapters on OAEs in the evaluation of children and the influence of middle ear function and pathology on OAEs will be of particular use to otologists in their paediatric work.

Overall, the majority of this book is most suitable as a comprehensive reference for audiologists or clinicians who use OAEs regularly in their clinical work and already have some knowledge of the theory behind OAEs. However, there are several of the chapters on applications of OAEs which will be useful to most clinicians who would like a quick overview.

Sarah Eddie
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Clinical Sports Medicine (Third Edition)

Peter Brukner, Karim Khan. Published by McGraw-Hill Australia, 2006. ISBN 9780074715208. Contains 1084 pages. Price AU$150.00 / NZ$164.99 (incl. GST)

This hard-covered, large, well-written book is for both the sports medicine doctor and the non sports medicine doctor alike. GPs must see a fair share of sports injuries and this book seems particularly aimed at that group. Many of us don't see such injuries in our clinical practice but are contacted by family and friends about such injuries.

I know very little about sports injuries other that what I have learned from my own injuries and those of my children. I looked up all the injuries that my children and myself had suffered over the last few years and was delighted to find the advice that had been received at the time was consistent with this book, and unlike the advice originally given, I could understand what was been said.

While excellent for someone like me, the information would also be reasonable for GPs or sports medicine specialists. The book is well laid out; has excellent quality paper, cover, figures, and photos; and good tables.

I strongly recommend this book to other doctors who do not work in sports medicine but have the usual accident-prone family.

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