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This Issue in the Journal

Maxillofacial fractures at Waikato Hospital, New Zealand: 1989 to 2000
J Buchanan, A Colquhoun, L Friedlander, S Evans, B Whitley, M Thomson

Risk indicators for facial bone injuries are described. The study included 2527 patients over a 12-year period at Waikato Hospital, Hamilton. Interpersonal violence and road traffic accidents were the most frequent causes of facial fractures. Eighty percent of patients were male. Alcohol consumption was associated with just over one-third of all cases. There is therefore an urgent need for appropriate health promotion to reduce interpersonal violence in New Zealand.

Non-resident orthopaedic admissions to Dunedin Hospital, New Zealand: 1997 to 2004
D Gwynne Jones

Despite a 43% increase in the number of tourists visiting New Zealand over the last 7 years, there has not been an increase in numbers of non-residents requiring admission to the orthopaedic wards at Dunedin Hospital. On average, 32 tourists per year are admitted, with the majority coming from Asia, Australia, and the UK. The commonest causes of admission were snowsports (40%), falls (29%), and motor vehicle accidents (17%). While non-residents only comprise 1% of the department’s workload, this is equivalent to 13 hip replacements.

Are snowboarders more likely to damage their spines than skiers? Lessons learned from a study of spinal injuries from the Otago skifields in New Zealand
S Donald, D Chalmers, J-C Theis

Snowboarders run a greater risk of spinal injury.

Donald, Chalmers, and Theis analysed snowsports-related spinal injuries from the Otago skifields that were treated at Dunedin Hospital during the period 1991 to 2002. Injuries in skiers were sporadic, but those in snowboarders were more frequent and associated with jumps. These findings are consistent with previous studies, and expansion of this pilot to incorporate all New Zealand skifields is recommended in order to collect robust evidence enabling the development of injury-prevention strategies.
Benzbromarone therapy in management of refractory gout
S Kumar, J Ng, P Gow

Gout is the commonest cause of arthritis in men in New Zealand. In severe cases, tophaceous gout can lead to joint destruction and renal impairment. Treatment of gout can be challenging and difficult especially in patients who have kidney diseases. This paper looks at the safety and efficacy of benzbromarone in the treatment of gout in patients with renal impairment and who continued to suffer from gout despite optimal treatment. We found that benzbromarone was safe and effective in reducing gout attacks and uric acid levels.

Liver transplantation for hepatocellular carcinoma in New Zealand: a prospective intent-to-treat analysis
Y Marui, J McCall, E Gane, A Holden, D Duncan, M-L Yeong, K Chow, S Munn

Primary liver cancer usually occurs in people with underlying liver cirrhosis. Liver transplantation has the potential to cure both the cancer and the underlying cirrhosis but is limited by the availability of donor organs. There is also a risk of cancer recurrence after transplantation, especially for larger tumours. Tumour progression on the waiting list, and tumour recurrence post-transplant, lead to poorer outcomes for patients transplanted with primary liver cancer compared with patients undergoing liver transplantation for other reasons. These results could be improved by increased donor organ availability.
Angry young men, interpersonal violence, alcohol, and broken faces

Leslie Snape

Data from the Land Transport Safety Authority (LTSA) show that 30% of all fatal road crashes in New Zealand during 2003 involved alcohol, and the majority of deaths were in males aged 15 to 39 years.¹ There is some evidence to suggest that programmes targeting ‘drink-driving’ may have been partly successful in heightening concerns in recent years, and campaigns through the media and roadside advertisements aim to raise public awareness of the dangers of speeding in motor vehicles. However, there remains an important escalating problem in our society of alcohol consumption and interpersonal violence, particularly amongst males in the 18 to 25 year age group.

Interpersonal violence in so-called ‘civilised societies’ tends to be directed at the upper body and in particular the head and face, with often resultant fractures of the facial skeleton. Common maxillofacial injuries are fractures of orbit, zygomatic bone, and mandible, which in the majority of cases require operative treatment. Whereas aetiological factors for these injuries in civilians 50 years ago was generally reported to be road traffic accidents, assaults, sport, industrial, and falls, the influence of excess alcohol consumption and interpersonal violence in the causation of these injuries in the latter part of the 20th century has become widely recognised.

Despite educational programmes directed at teenagers and young adults that illustrate the social and personal ill-effects of alcohol over-consumption, New Zealand along with many other industrialised nations continues to be faced with the high cost of injuries caused by apparent lack of self control.

The life-saving potential of measures such as the introduction of seat belt and crash helmet legislation, and inclusion of air bags in vehicles, illustrates how a rational approach to prevention can reduce costs to the community. Facial injury is a particularly visible consequence of alcohol misuse. Alcohol intervention programmes targeted specifically at those with alcohol-related injuries have been shown to be beneficial,² but are time-consuming and need additional personnel and resources to be effective. However identification of at risk groups using data from studies such as that by Buchanan et al³ should be welcomed, particularly by organisations such as Alcohol Liquor Advisory Council (ALAC) as well as our politicians, so that these programmes can be correctly focussed making efforts to modify behaviour in these risk groups more successful.

Oral and Maxillofacial Surgery Units providing a service for acute hospitals in New Zealand have noted recent changes in the presentation of facial fractures and the complexity of such injuries. The specialty has a well-established training programme producing surgeons skilled in the management of facial trauma, although there has been no increase in public hospital consultant posts in the specialty in New Zealand over the last 15 years. The increasing incidence of these fractures demands adequate
clinical resources (in particular, available operating theatre time) to accommodate the treatment of patients in a timely manner.

Many Units continue to be frustrated by significant delays without regular access to necessary trauma lists. Indeed, District Health Boards (DHBs) providing these specialty services for its community should be urged to determine appropriate funding and staffing levels for these Units.

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**References:**


Optimal management of chronic gout: attempting to render the (t)issues crystal-clear

Min Loke Wong

Gout is an ancient disease, and was well known to Hippocrates. Using his invention, in 1679 van Leeuwenhoek observed microscopic gouty crystals. These crystals result from urate deposition in tissues, consequent on hyperuricaemia. They induce episodic arthritis, which initially are infrequent, usually affecting the foot, and respond well to anti-inflammatory medications such as colchicine and nonsteroidal anti-inflammatory drugs. However, these measures do not stop urate deposition from progressing. More frequent and widespread attacks may ensue, with increasing resistance to anti-inflammatory therapy. Permanent joint damage may result from gouty erosions, and tophi formation may be complicated by ulcerations and sepsis.

Thus, optimal management entails timely introduction of hypouricaemic therapy, to provide a gradient for resorption of the crystals. In New Zealand, allopurinol is the drug most widely used for lowering serum urate. In this issue of the Journal, Kumar and colleagues report their success in using another hypouricaemic drug, benzbromarone, as add-on therapy for patients with tophi and renal impairment, refractory to allopurinol.¹

As the authors point out, gout is increasingly a therapeutic challenge in this country. However, readers of the Journal are more likely to encounter failed therapy with allopurinol due to suboptimal use, rather than the complex cases reported. Simply adding in, or substituting benzbromarone, is likely to also result in failure, if the factors underlying suboptimal therapy are not addressed.

Hypouricaemic therapy is recommended when more than 1 or 2 attacks occur each year. A lower frequency may not motivate patients to adhere to treatment, to hopefully prevent polyarticular, erosive or tophaceous gout- which if already evident mandate such therapy. Allopurinol loses effectiveness if taken noncontinuously,² by patients not understanding this, or mistaking it for anti-inflammatory treatment only to be taken during acute gout.

The initiation of hypouricaemic therapy may provoke more frequent episodes of acute gout, especially when the disease is already advanced, discouraging patients from persisting with therapy. Using a low starting dose with subsequent monthly increases may be helpful, and prophylactic anti-inflammatory therapy is also recommended: in a recent prospective randomised double-blind controlled trial, the use of colchicine 0.6 mg twice daily reduced the number of flares during the first six months of allopurinol therapy, from an average of 2.9 per patient on placebo, to 0.5 per patient on colchicine.³

Starting hypouricaemic therapy during acute gout is inadvisable; however, should flares occur during hypouricaemic therapy, it is reasonable to continue such therapy alongside anti-inflammatory measures. No trials directly compare nonsteroidal anti-inflammatory drugs with colchicine, but the latter is thought to be less effective, with
more frequent gastrointestinal toxicities—and when using colchicine for acute gout, to minimise toxicity it is not advisable to exceed a total daily dose of 4 tablets. However, when comorbidities such as renal impairment, cardiac failure, and atrial fibrillation (requiring warfarin therapy) are present, and the use of nonsteroidal anti-inflammatory drugs may complicate matters, then colchicine or steroid therapy may have a place. Long term use of low-dose colchicine may rarely cause a toxic myopathy, especially in patients who are elderly and/or have renal impairment.

Having ensured patient adherence to allopurinol, lowering serum urate to just within normal limits may not be sufficient. Prospective studies have shown that levels over 0.36 mmol/L were unlikely to deplete knee joint fluids of urate crystals during allopurinol therapy, and that the lower the levels the faster tophi decreased in size. A retrospective study found that the lower the serum urate, the lower the incidence of attacks a year or more after starting hypouricaemic drugs. The dose should thus be titrated to the serum urate, especially if there has been a poor clinical response. A potential trap is that during attacks—when patients are most likely to present for medical attention and have blood tests—the serum urate is often transiently depressed, especially in patients on allopurinol.

Renal impairment may increase the risk of allergic reactions to allopurinol, and conventionally maximum recommended doses are calculated according to renal function. However, a recent retrospective review suggested that such risks may be overstated, and a higher dose may be tried cautiously in selected patients. Diuretics and low-dose aspirin may induce hyperuricaemia, and their use in gouty patients require some circumspection.

The advent of effective drugs has largely overshadowed dietary interventions, both in clinical practice and in research. The first prospective study of dietary risk factors has recently been published, confirming an increased risk of developing gout with higher intake of meats and seafood (but not total protein or purine-rich vegetables), and dairy products seemed protective. In the same study cohort of men, alcohol intake as beer or spirits, but not wine, was also associated with an increased risk.

Patient education booklets advising on diet and other aspects of gout, in several languages, are available from PHARMAC. For patients refractory to allopurinol despite the above measures, benzbromarone provides an effective add-on option, at least for those with urinary urate excretion not exceeding the normal range (the vast majority of gouty subjects). Benzbromarone is also potentially very useful for patients allergic to allopurinol.

Benzbromarone is neither registered nor funded in New Zealand, but a registered medical practitioner can prescribe it under Section 29 of the Medicines Act 1989, and the approximate monthly cost of NZ$75 may be met by Work and Income New Zealand (WINZ). Indeed, with effective therapy available for gout, advanced and severe forms of this ancient disease ideally belong to the past.

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References:


Endometriosis: a gynaecological and colorectal disease

Richard Perry

Endometriosis is one of the most prevalent causes of malaise in modern women. It is a major public health issue because of the large number of women affected, and because of the considerable morbidity it causes. Community awareness is low. Endometriosis accounts for 10–25% of visits to gynaecological clinics, but referral takes too long with delays of up to 7 years from onset of symptoms to diagnosis. Forty-five percent are seen more than 5 times by a medical practitioner before the diagnosis is made. More than 100 Christchurch school girls contacted The New Zealand Endometriosis Foundation office for advice in 2004 as a result of the Foundation’s recent school programme. Ninety percent of them were on the oral contraceptive pill for dysmenorrhoea. Most of them will have endometriosis.

The prevalence of endometriosis is underestimated because of the need for laparoscopy to confirm the diagnosis. At least 10% of all women are affected by the disease. A further 6% of women have asymptomatic endometriosis. The incidence is 20–30% in women with subfertility, and between 50 and 80% in women with intractable dysmenorrhoea or chronic pelvic pain. Thirty to forty percent of those women with endometriosis have, or will develop, advanced (American Fertility Society stage III / IV) disease.

Endometriosis is thought to be caused by ectopic implantation of endometrium during embryological development. It can be found in women born without a uterus and has been observed at laparotomy in neonates. Implantation of retrograde menstrual products is also a likely mechanism, facilitated by their high concentrations of Vascular Endothelium Growth Factor A (VEGF-A), angiogenic chemokines, and Nerve Growth Factor (NGF). There is a genetic predisposition, and environmental factors may also be important. Deposits of endometriosis can be found on any peritoneal surface, on the pleura, or in the abdominal wall, especially in a surgical wound. It can present like a hernia in the groin, and cause appendicitis, small bowel obstruction, or chronic constipation. Diversity of location leads to a variety of symptoms which has led to endometriosis being called ‘the great mimic’.

The article by Chaer et al (Endometriosis-induced acute small and large bowel obstruction: rare clinical entities. URL: http://www.nzma.org.nz/journal/118-1217/1521) in this issue of the Journal is a timely reminder that colorectal endometriosis is not uncommon, and may present with life-threatening acute complications.

The gastrointestinal tract is the next most common site of endometriosis after the reproductive organs and pelvic peritoneum. Two-thirds of this involves rectum or distal sigmoid colon, with terminal ileum, caecum, and appendix accounting for most of the rest. Thirty-five percent of patients with bowel endometriosis are asymptomatic. The population prevalence of symptomatic bowel endometriosis is 2%. Symptoms are not necessarily cyclical with menstruation. Pain symptoms correlate to depth of invasion and adnexal adhesions.
Patients are often dismissed with a diagnosis of irritable bowel syndrome. About 20% of women diagnosed with irritable bowel syndrome have endometriosis. Many of these women will be referred to a gastroenterologist or general surgeon for evaluation of bowel symptoms. The diagnosis can only be made by laparoscopy with excision biopsy. Laparoscopy in patients with chronic abdominal pain has a high diagnostic yield and long-term therapeutic benefit to about 70% of patients. General surgeons receive little or no training in recognition of endometriosis at operation, and the diagnosis is often missed at laparotomy. High resolution video-laparoscopy is the most sensitive diagnostic modality, allowing a better view of pelvic structures with magnification.

Endometriosis must be considered in the differential diagnosis of chronic recurring abdominal pain and/or recurring bowel dysfunction. The cases presented by Chaer et al represent late-stage disease. Presentations were as an emergency and interventions were consequentially maximally invasive. Both patients had undergone laparoscopy within the preceding few years. It is likely that both of these patients had endometriosis which could have been diagnosed earlier. Diagnosis of endometriosis requires a high index of suspicion on the part of the clinician to proceed to video-laparoscopy. A meticulous search and experience in identifying endometriotic lesions can greatly increase the diagnostic yield.

The role of radical excision to treat endometriosis is now well established. Hormonal manipulation can improve symptoms in the short term, but does not improve fertility. There is good evidence that the best outcome with regard to fertility and control of symptoms is obtained from meticulous laparoscopic surgical resection of all visible endometriosis. These procedures can be long and difficult, because endometriosis is often associated with a lot of fibrosis. It has little regard for tissue planes, and it may cause adherence between colon, ureters, uterus or adnexal structures. It can be embedded in mesentery, and can occur within the appendix. Furthermore, it can extend into the inguinal canal around the round ligament of the uterus.

When endometriosis involves the bowel, it may be possible to dissect the endometriosis off the serosa. If the endometriosis invades the muscle wall of the bowel, a section of bowel wall, with or without mucosa, must be excised. For extensive disease, it may be necessary to resect a segment of bowel. Preoperative assessment of the extent of colorectal endometriosis is very helpful in planning the procedure. We have found pelvic MRI and flexible sigmoidoscopy to be the most useful modalities.

Incomplete resection invariably results in the need for further surgery. Within 5 years of laparoscopic resection, 20–36% undergo a further operation at which recurrent endometriosis is found in about two-thirds. Recurrence is less when colorectal endometriosis is treated by colorectal resection, and when it is performed laparoscopically in the luteal phase. Expertise in laparoscopic colorectal resection is essential, and the best outcomes are produced by multidisciplinary units of laparoscopically adept gynaecologists and colorectal surgeons.

Women afflicted by endometriosis should be treated in specialist multidisciplinary units consisting of laparoscopically adept gynaecologists, colorectal surgeons, and urologists. Furthermore, the quality of life of a large number of women in our society could be improved by more frequent consideration of the diagnosis of endometriosis,
and early referral of patients into multidisciplinary specialist units for investigation and treatment.

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**References:**

Maxillofacial fractures at Waikato Hospital, New Zealand: 1989 to 2000

Jessica Buchanan, Angus Colquhoun, Lara Friedlander, Steve Evans, Brian Whitley, Murray Thomson

Abstract

Aim. To describe the patterns of facial fractures presenting to a tertiary referral centre in New Zealand, and to identify risk indicators for maxillofacial trauma.

Method. Clinical records of 2527 patients referred to a tertiary base hospital for the treatment of maxillofacial fractures from 1989 to 2000 were retrospectively analysed. Age, sex, ethnicity, cause of injury, anatomic location of facial fractures, alcohol involvement, and treatment received were recorded.

Results. The number of facial fractures treated by the Maxillofacial Unit at Waikato Hospital annually almost doubled over the 12-year study period (1989 to 2000). Eighty percent of those presenting with maxillofacial injuries were male, and 40% were aged between 15 and 24 years. Interpersonal violence and road traffic accidents were the most frequent causes of facial fractures. Alcohol consumption was associated with just over one-third of all cases, and was strongly associated with interpersonal violence.

Conclusion. Presentation of patients with facial fractures at the Maxillofacial and Oral Surgery Unit at Waikato Hospital almost doubled over the 12 years. Risk indicators for presentation with a maxillofacial fracture included male gender, alcohol consumption, and interpersonal violence. There is an urgent need for appropriate health promotion to reduce interpersonal violence.

Interpersonal violence (IPV) and road traffic accidents commonly result in injury to the maxillofacial region.¹ A recent rise in IPV-associated maxillofacial injuries has consequently seen an increase in workload and further demand on emergency services and hospitals throughout New Zealand.¹ ²

In 1979, a study based on data for maxillofacial patients attending Burwood Hospital in Christchurch, New Zealand found that IPV had become the most common cause of facial fractures, superseding road traffic accidents.¹ A later study of facial bone fractures in the Otago region demonstrated a similar trend.² In the Waikato region, the current impression is that assault remains the greatest cause for presentation of maxillofacial injuries, and that the incidence of IPV has continued to increase. International research has also demonstrated such changes in other countries and cities.³ ⁵ ⁶

A New Zealand survey analysis of routinely collected accident data found that the most common cause of facial fractures among both men and women was IPV.⁶ This finding is consistent with reports from Nigeria, South Africa, and the USA.⁵ ⁷ ⁸ However, road traffic accidents remain the leading cause of facial trauma in areas such as France and Greece.⁹ ¹⁰ A review of severe craniofacial trauma
requiring critical care intervention (in Auckland from 1989–1997) noted that the incidence of severe injuries had decreased, and it was suggested that this was due to a profound decrease in the rate of road traffic accidents associated with alcohol intoxication.11

Despite these recent analyses of maxillofacial trauma in New Zealand, there remains a need for recent information on those injuries, and on the nature of any changes that may have been occurring over time. The purpose of this study was to describe temporal patterns of maxillofacial trauma presenting to a New Zealand tertiary referral centre, and to identify risk indicators for maxillofacial fractures.

Methods

The Maxillofacial Department at Waikato Hospital provides a tertiary service to approximately 800,000 residents of the central North Island, including the regions of Waikato, Taupo, Gisborne, Bay of Plenty, Coromandel, and Thames.

The clinical records of all patients with maxillofacial fractures attending the Maxillofacial and Oral Surgery Department, Waikato Hospital from January 1989 to December 2000 were retrospectively analysed. Information had been recorded prospectively using a Paradox database. Only those patients with facial fractures were included in this study; isolated soft tissue injuries were omitted. Details were recorded of the sex, age, and ethnicity of the patient; the aetiology, type, and number of fractures; the date of injury; any alcohol involvement; and the treatment provided. Statistical analysis was performed using SPSS (Statistical Package for the Social Sciences; SPSS Inc, Chicago, Illinois, USA).

Following the computation of descriptive statistics, bivariate associations were tested for statistical significance using the Chi-squared test. Logistic regression analysis was used to control for confounding and to derive adjusted odds ratios.

Results

Over the 12-year period, 2527 patients presented with maxillofacial fractures. The average number of cases presenting rose each year, so that the number of people presenting in 2000 was almost double that of 1989 (Table 1). Overall, four-fifths of patients were male. The highest incidence was in the 15–24 year age group for both sexes. Almost two-thirds (64.7%) of people presenting to the Maxillofacial Department self-identified with European ethnicity, and 32.1% identified themselves as being of Maori descent.

Aetiology—Interpersonal violence (IPV) was the most common cause of maxillofacial fractures overall. The prevalence of IPV was 39.0% for males; 25.2% for females. Road traffic accidents (RTA) were the leading cause of injury for females.

The aetiology of fractures differed across the age groups. Falls were the most common cause for both the youngest (0–14 years) and oldest (60+ years) age groups, while IPV was the greatest cause for younger adults (15–24 years and 25–39 years). IPV and RTA were equally common causes for patients in the 40–59 year age group (Table 2). The highest incidence of IPV (43.9% and 43.4% respectively) was seen in the 15–24 and 25–39 year age groups for males; for females, it was the 25–39 year age group (43.3%).
Table 1. Number of maxillofacial injuries over time, by sociodemographic characteristics and recorded aetiology (brackets contain percentages)

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<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>348 (82.9)</td>
<td>533 (79.9)</td>
<td>569 (80.1)</td>
<td>569 (78.1)</td>
<td>2019 (79.9)</td>
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<tr>
<td>Female</td>
<td>72 (17.1)</td>
<td>134 (20.1)</td>
<td>141 (19.9)</td>
<td>160 (21.9)</td>
<td>507 (20.1)</td>
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<td><strong>Age group</strong></td>
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<tr>
<td>0–14</td>
<td>29 (6.9)</td>
<td>45 (6.7)</td>
<td>58 (8.2)</td>
<td>82 (11.3)</td>
<td>214 (8.5)</td>
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<td>15–24</td>
<td>175 (41.7)</td>
<td>286 (42.8)</td>
<td>283 (39.9)</td>
<td>266 (36.5)</td>
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<td>25–39</td>
<td>145 (34.5)</td>
<td>229 (34.3)</td>
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<td>40–59</td>
<td>58 (13.8)</td>
<td>75 (11.2)</td>
<td>101 (14.2)</td>
<td>105 (14.4)</td>
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<td>60+</td>
<td>13 (3.1)</td>
<td>33 (4.9)</td>
<td>38 (5.4)</td>
<td>44 (6.0)</td>
<td>128 (5.1)</td>
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<tr>
<td><strong>Ethnicity</strong></td>
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<tr>
<td>Maori</td>
<td>120 (28.6)</td>
<td>220 (32.9)</td>
<td>232 (32.7)</td>
<td>240 (32.9)</td>
<td>812 (32.1)</td>
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<tr>
<td>Other</td>
<td>300 (71.4)</td>
<td>448 (67.1)</td>
<td>478 (67.3)</td>
<td>489 (67.1)</td>
<td>1715 (67.9)</td>
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<td><strong>Aetiology</strong></td>
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<tr>
<td>IPV</td>
<td>129 (30.7)</td>
<td>235 (35.2)</td>
<td>291 (41.0)</td>
<td>260 (35.7)</td>
<td>915 (36.2)</td>
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<td>RTA</td>
<td>138 (32.9)</td>
<td>163 (24.4)</td>
<td>164 (23.1)</td>
<td>152 (20.9)</td>
<td>617 (24.4)</td>
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<td>Falls</td>
<td>35 (8.3)</td>
<td>64 (9.6)</td>
<td>65 (9.2)</td>
<td>117 (16.0)</td>
<td>281 (11.1)</td>
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<td>Sport</td>
<td>74 (17.6)</td>
<td>125 (18.7)</td>
<td>141 (19.9)</td>
<td>122 (16.7)</td>
<td>462 (18.3)</td>
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<td>Other</td>
<td>44 (10.5)</td>
<td>81 (12.1)</td>
<td>49 (6.9)</td>
<td>78 (10.7)</td>
<td>252 (10.0)</td>
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<tr>
<td>All combined</td>
<td>420 (16.6)</td>
<td>668 (26.4)</td>
<td>710 (28.1)</td>
<td>729 (28.9)</td>
<td>2527 (100.0)</td>
</tr>
</tbody>
</table>

Data missing for 1 individual; IPV=interpersonal violence; RTA=road traffic accident.
### Table 2. Fracture type by aetiology and treatment provided

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mandible</th>
<th>Le Fort 1</th>
<th>Orbit</th>
<th>Zygoma</th>
<th>Frontal</th>
<th>Alveolar</th>
<th>Skull</th>
<th>Row totals</th>
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<td>582 (43.8)</td>
<td>12 (8.8)</td>
<td>42 (32.3)</td>
<td>261 (30.9)</td>
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<td>17 (11.6)</td>
<td>1 (6.7)</td>
<td>919 (36.7)</td>
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<td>290 (21.8)</td>
<td>108 (79.4)</td>
<td>33 (25.4)</td>
<td>201 (23.8)</td>
<td>8 (50.0)</td>
<td>53 (36.1)</td>
<td>10 (66.7)</td>
<td>703 (24.5)</td>
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<td>14 (9.5)</td>
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<td>17 (12.5)</td>
<td>52 (40.0)</td>
<td>342 (40.5)</td>
<td>7 (43.7)</td>
<td>40 (27.2)</td>
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<td>102 (75)</td>
<td>55 (42.3)</td>
<td>254 (30.1)</td>
<td>6 (37.5)</td>
<td>23 (15.6)</td>
<td>5 (33.3)</td>
<td>1282 (49.0)</td>
</tr>
<tr>
<td>Other</td>
<td>109 (8.2)</td>
<td>17 (12.5)</td>
<td>23 (17.7)</td>
<td>248 (29.4)</td>
<td>3 (18.8)</td>
<td>84 (57.2)</td>
<td>3 (20.0)</td>
<td>487 (18.6)</td>
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<tr>
<td><strong>Total of fracture type</strong></td>
<td>1330 (52.6)</td>
<td>136 (5.4)</td>
<td>130 (5.1)</td>
<td>844 (33.4)</td>
<td>16 (0.7)</td>
<td>147 (6.0)</td>
<td>15 (0.6)</td>
<td>2618 (100.0)</td>
</tr>
</tbody>
</table>

96 individuals had injuries other than those listed; totals do not add up to 2527 because some individuals experienced more than one type of injury.
The incidence of fractures due to IPV increased steadily from 1989 to the late 1990s, but reached a plateau during the last 3-year period (Figure 1). The number of facial injuries due to falls steadily increased over the study period. Facial fractures due to RTA showed a steady decline, dropping from 32.9% in 1989–91 to 20.9% in 1998–2000 (p<0.001). The incidence of facial fractures due to sport injuries remained relatively constant over the study period.

Over one-third of all cases (862, 34.1%) were alcohol related. Almost three-quarters (71.7%) of all interpersonal violence within the 12-year period was related with alcohol. Approximately one-quarter (25.9%) of road traffic cases were related with alcohol.

Maori males had twice the odds of presenting as a result of interpersonal violence compared to those from other ethnic groups (odds ratio=2.1, 95% CI=1.8–2.5). Maori patients were also more likely than non-Maori to have consumed alcohol prior to the injury; 46.2% of Maori patients but only 28.4% of non-Maori presented following alcohol intoxication (p<0.001).

**Types of fractures**—Over the 12-year period, 2618 fractures were recorded among the 2527 individuals. Mandibular fractures were the most common, with 1330 individuals presenting; 766 (57.6%) of those individuals had a break at one site. The second most common fracture was of the zygomatic complex, with 844 cases. Less common were dentoalveolar fractures (147), maxillary fractures including the Le Fort injuries (136), and orbital fractures (130) including orbital blowouts. Most patients
(89.4%) presented with only one type of fracture (e.g. mandible); 6.2% had two types of fracture (e.g. mandible and zygoma); and 3.8% presented with three.

Figure 2. Number of cases by fracture type

Over the 12-year review period (Figure 2), there was a significant decline in the annual incidence of maxillary injuries (p<0.05), but a significant rise in annual incidence of mandibular (p<0.001), zygomatic (p<0.01), and orbital fractures (p<0.001).

Treatment of fractures—One-third (32.4%) of all facial fractures were treated conservatively. Over time, there was a statistically significant increase in the number of cases treated conservatively (from 26.2% during 1989–91 to 40.2% during 1998–2000 [p<0.001]). Over the 12-year study period, 86% of all maxilla fractures (including Le Fort injuries) were surgically treated, while only 23% of skull injuries were surgically treated.

Discussion

This study was a retrospective audit of patients attending a tertiary service provider for maxillofacial trauma. While the Waikato Hospital Maxillofacial and Oral Surgery Department services approximately one-fifth of New Zealand’s population, the findings cannot be generalised to the whole country. However, some important trends have been identified, and these warrant further discussion.

In this study, males (particularly those of the 15–39 year old age group) were the individuals most commonly presenting with maxillofacial injuries. Interpersonal violence, usually following alcohol consumption, was the most common cause of
injury. On average, Maori males had twice the odds of presenting as a result of interpersonal violence than those from other ethnic groups. This is of concern, particularly with the current emphasis on reducing health inequalities within our population.\textsuperscript{12} Maori were recorded as having over double the age-adjusted incidence of facial fractures compared to Europeans in 1992.\textsuperscript{13} It is alarming to note that nothing has changed. The incidence of facial fractures among Pacific Island individuals was between that for Maori and Europeans. In this study, there were insufficient numbers of Pacific people to enable separate analysis. Public health campaigns should be designed to target high-risk groups for maxillofacial trauma. In particular, Maori health workers may wish to provide information and support for their own communities.

Presentation at the Waikato Maxillofacial and Oral Surgery Department as a result of interpersonal violence has increased, while the number of individuals presenting following road traffic accidents has declined. Fractures that are typically related to high velocity injuries (usually RTA) such as the Le Fort fractures have declined. Conversely, the number of patients presenting with isolated mandibular and zygomatic fractures—which tend to be associated with interpersonal violence—have increased.

The reduction in high-velocity injuries may be due to the success of national public health campaigns relating to road safety (especially drinking and driving), and also improvements in the roads in the Waikato region. Reasons for the increasing incidence of injuries relating to interpersonal violence are not known. However, these findings are of health services importance with respect to issues such as staffing levels, theatre availability, and hospital funding.

The increasing proportion of fractures managed conservatively suggests that a larger proportion of fractures are undisplaced. This may reflect the increasing contribution of low-level interpersonal violence to maxillofacial injuries. It may also reflect a change in treatment philosophy over the past decade.

There has been a significant increase in the number of presentations due to falls. The study shows that this primarily affects the 0–14 and 60+ year age groups. Falls were a particularly important cause of maxillofacial injury for females aged over 60 years; as was reported in another recent New Zealand study.\textsuperscript{14} It is likely that, as the size of New Zealand’s older population increases over the next few decades, there will be a further increase in the incidence of maxillofacial trauma resulting from falls. Treatment provision for this group of patients is often more challenging and time consuming due to comorbidity. Currently, the majority of maxillofacial trauma involves a relatively healthy, young population.

Interpersonal violence as a cause of facial fracture was most prominent in males aged 15–39 years. For women, there has been a significant rise in the 25–39 year old age group. The data suggest that interpersonal violence (for males) peaks between adolescence and middle age. In an era where road traffic campaigns are regularly brought into our homes on television, a new question arises: should we be focusing on interpersonal violence and its association with excess alcohol as an important public health message?
Conclusion

Presentation of patients with maxillofacial fractures has almost doubled within the 12-year study period at the Maxillofacial and Oral Surgery Unit at Waikato Hospital. Risk indicators for presentation with a maxillofacial fracture in this study included male gender, alcohol consumption, and interpersonal violence. The data suggest that appropriate health promotion is needed to reduce interpersonal violence.

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Acknowledgments: We thank Mrs Coreen Sim of the Maxillofacial and Oral Surgery Department at Waikato Hospital for her role in collecting data regarding the services provided by that department.

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References:


Non-resident orthopaedic admissions to Dunedin Hospital, New Zealand: 1997 to 2004

David Gwynne Jones

Abstract

Aims. The purpose of this study is to audit the numbers of non-residents requiring orthopaedic admission to our hospital and determine the effect of increasing tourist numbers and changes in Accident ACC regulations on healthcare resources.

Methods. Details of non-resident orthopaedic admissions for fiscal years 1997/8 to 2003/4 were analysed with respect to country of residence, mechanism of injury, case weights consumed, and actual costs.

Results. There has been no change in numbers of admissions or cost, averaging 32 cases (50 case weights [CWs]) per year. Most patients came from Asia (59 cases; 26%), then Australia (52 cases; 23%) and UK (40 cases; 18%). Snowsports accounted for 40% of admissions, Motor vehicle accidents (MVA) for 17%, and falls for 29%. Non-resident, non-MVA admissions have averaged 21 CWs per year since the changes in ACC regulations in 1999.

Discussion. Despite increasing tourist numbers, there has been no increase in numbers or CW of non-residents requiring orthopaedic admission. Although representing only a small proportion of the orthopaedic budget, they generate many hidden costs. The 50 CWs annually equates to approximately 13 major joint replacements per year. The increase in CWs consumed due to the ACC changes have had no corresponding increase in contracted orthopaedic volumes.

There has been a much heralded increase in tourist numbers to New Zealand in the past decade. In Otago, there has been an expansion in skifields and other adventure tourist activities. There are invariably accidents leading to overseas patients requiring admission for acute orthopaedic surgery. Tourists have a high profile on the ward, and create a large amount of work for nursing, medical, and administrative staff. They also generate costs which are not reflected in hospital-coding and reporting systems.

Patients from Australia and UK are eligible for healthcare in New Zealand under reciprocal arrangements. Prior to 1 July 1999, non-resident patients with accidental injuries were only covered by the Accident Compensation Corporation (ACC) if involved in a motor vehicle accident (MVA). Since July 1999, however, all non-residents with accidental injuries are covered by ACC at no cost to themselves while in New Zealand.

Under transitional arrangements which ended in July 2002, hospitals could bill the Ministry of Health for non-resident, non-MVA cases. The hospital is bulk funded by ACC for the acute care of all patients sustaining accidental injury. The contracted volume of elective and acute orthopaedic surgery is calculated by case weights (CWs).
Any increase in acute case weights negatively impacts on the elective surgery volumes. The value of a case weight has varied over the study period from NZ$2478 to $2565 (2004) and is currently valued at $2855.

The purpose of this study is to audit the numbers of non-residents requiring admission to the orthopaedic wards, their country of origin, and mechanism of injury; and also to determine whether the increasing tourist numbers and the change in ACC regulations are having an impact on healthcare resources.

Materials and methods

All patients admitted under orthopaedic surgery for fiscal years ending June 1998 to June 2004 with an overseas home address were identified from the Dunedin Hospital patient administration system. Records were cross-checked with ward and in-patient records. Students and people in employment were excluded. The demographics of the patients were recorded including age, sex, cause of injury, diagnosis, and country of residence. The case weights consumed and hence ‘revenue’ to the department was recorded. The actual cost to the hospital was estimated by the monitoring systems used by the Otago District Health Board (ODHB). Patient and billing details were cross-referenced with ODHB invoices to the Ministry of Health for non-resident, non-MVA patients.

Results

Patients—There has been little change in numbers of overseas patients during the previous 7 years; averaging 32 cases per year (Figure 1). Most patients came from Asia (59 cases, 26%), then Australia (52 cases, 23%) and UK (40 cases 18%) respectively (Figure 2).

Mechanism of injury—The commonest cause of injury was skiing or snowboarding, with 89 admissions (13 per year, range 8–16) comprising 40% of all non-resident admissions over the study period. Motor vehicle accidents made up 39 admissions (17%), while falls comprised 64 cases (29%). Commercial or organised tourist activities (such as parachuting, fly-by-wire, go-karting) counted for 21 cases (9.3%).

Cost—The case weights consumed have ranged from 42.8–55.5 per year with a mean of 50 CWs per year (Figure 1). The monetary value of 50 CWs is approximately $128,000 per year from the department budget. The estimated actual cost is $155,526. The contracted volumes for the Orthopaedic Department have remained relatively constant for the years 2001–2004. The current budget is 4332 CWs/year, so overseas admissions represent 1.1% of the total workload of the department. Skiing and snowboarding accidents, motor vehicle accidents, and falls contributed fairly equally to the numbers of CWs consumed. (Table 1)

ACC changes—For the years 1997/8 and 1999/9 (prior to the ACC changes), there were on average 17 non-resident patients (17.5 CWs) requiring admission for non-MVA accidents. The actual cost was $49,613 while revenue for these years averaged $62,276. Since the ACC changes, there have been an average 13.6 cases per year in this category who have accounted for a mean 21.1 CWs per year ($53,655), with an estimated actual cost of $64,369 per year.
Figure 1. Numbers of overseas patients and case weights consumed in fiscal years 1998 to 2004

Figure 2. Countries and continents of residence of patients requiring orthopaedic admission in fiscal years 1998 to 2004
For fiscal years ending 2000, 2001, and 2002, an average of 13 CWs ($32,364) per year were refunded by the Ministry of Health to the Hospital under transitional arrangements. Since this arrangement has ceased, there has been no corresponding increase in orthopaedic volumes contracted by ODHB.

Table 1. Dunedin Hospital admissions and case weights by mechanism of injury for fiscal years ending 1998-2004

<table>
<thead>
<tr>
<th>Variable</th>
<th>Snowsports</th>
<th>MVAs</th>
<th>Falls</th>
<th>Tourist activities</th>
<th>Other</th>
</tr>
</thead>
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<tr>
<td>Admissions</td>
<td>89</td>
<td>39</td>
<td>64</td>
<td>25</td>
<td>7</td>
</tr>
<tr>
<td>Total CWs</td>
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<td>85.6</td>
<td>104.2</td>
<td>44.3</td>
<td>13.6</td>
</tr>
<tr>
<td>CWs/year</td>
<td>14.9</td>
<td>12.2</td>
<td>15.3</td>
<td>5.7</td>
<td>1.9</td>
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<tr>
<td>Actual cost/year</td>
<td>$45703</td>
<td>$40140</td>
<td>$45303</td>
<td>$20009</td>
<td>$4058</td>
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</table>

CWs=case weights; MVA=motor vehicle accidents, Tourist activities=commercial activities such as parachuting, fly-by-wire, and go-karting.

Discussion

There has been a 43% increase in visitor arrivals to New Zealand: from 1.48 million in 1998 to 2.11 million in 2003. Tourist numbers in the Otago region would be expected to have similarly increased. Indeed, a common perception, both in the hospital and in the lay press, is that there are increasing numbers of tourists requiring orthopaedic admission due to snowsport injuries and motor vehicle accidents. However, this study shows that the number of non-residents requiring orthopaedic admission has not increased significantly over the previous 7 years (1997 to 2004). Patients from Asia make up the largest proportion of orthopaedic admissions (26%), followed by Australia (23%) and the UK (18%).
Whilst Australians make up 33% of visitor numbers to New Zealand (Asians are 24% and UK residents 11%, respectively), the figures for visitor nights are: Asia 20%, Australia 19.7%, UK 18.0%, USA and Canada 10.6%, and Europe 8.7% thus reflecting varying lengths of stay among those groups (2003 figures).2

Snowsports, as expected, were the commonest reason for the accident. According to ACC figures, skifield visits doubled from 1998 to 2001 with 1.25 million visits in New Zealand in 2001. Snowsport injuries cost ACC $3.7 million in 2003.3 New Zealand skifields estimate an injury rate of less than 5/1000 participants compared to international figures of 8 per 1000.3 The cost of inpatient snowsport injuries was relatively low, averaging 1.17 CWs or $3600 actual costs per patient.

In contrast, there were fewer MVAs involving tourists but each admission averaged 2.2 CW and cost an average of $7216 thus reflecting the greater severity of injuries associated with higher velocity mechanisms.

Tourists have a high profile on the ward because of the need for translators, the lack of family support, international telephone calls, and the involvement of insurance companies and airlines in discharge planning. This creates a large amount of work for nursing, medical, and administrative staff and hidden costs which are not reflected in hospital coding and reporting systems.

The cost and case weights consumed is only a small proportion of the orthopaedic budget averaging around 1%. However, these 50 CWs represent approximately 13 major joint replacements per year. The change in ACC regulations have meant that an average of 21 CW/year are now coming from the orthopaedic budget with no corresponding increase in contracted volume.

Despite an increase in the number of tourists there has not been an increase in numbers or case weight load of non-residents requiring orthopaedic admission over the previous 7 years. The changes in ACC regulations have had a small impact on the provision of orthopaedic services in the Otago region.

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References:


Are snowboarders more likely to damage their spines than skiers? Lessons learned from a study of spinal injuries from the Otago skifields in New Zealand

Simon Donald, David Chalmers, Jean-Claude Theis

Abstract

Aims. The aim of this study was to determine the incidence, nature, and circumstances of spinal injuries caused by skiing and snowboarding at the Otago skifields and treated at Dunedin Hospital during the period 1991 to 2002.

Methods. Patients were identified from the audit records of the Department of Orthopaedic Surgery at Dunedin Hospital.

Results. Twenty-five cases were included in the study, 18 snowboarders, and 7 skiers. Twenty-two cases had spinal fractures, with skiers having a higher proportion of burst fractures and multiple fractures. The most frequently fractured vertebrae were T12 and L1, and wedge fractures were the most common fracture type. Jump-related activities were the most common cause of injury in snowboarders, in contrast to skiers whose injuries were more commonly fall-related.

Conclusions. Skier-related spinal injuries were rare and sporadic over the study period, whereas snowboarder-related spinal injuries were more frequent and more recent in occurrence.

Alpine skiing is a sport that has increased in popularity since its inception in the 1920s, with an estimated 200 million skiers worldwide. Snowboarding is a more recent innovation, dating from the 1970s, but it has grown to become a highly popular winter sports activity, particularly amongst the younger generation, and it is estimated that 33% of winter snowsports participants in New Zealand are now snowboarders. This increased popularity has led to concerns about safety, given the significant risk of injury associated with all types of snowsports activities.

A review of literature on alpine ski injuries identified incidence rates for skiers of from 2 to 3 injuries per 1000 skier days. By comparison, rates of 4 to 16 injuries per 1000 snowboarder days have been reported. Several studies have specifically addressed neurological and spinal injuries suffered by snowsports participants:

Prall et al reported an incidence rate of 0.001 spinal injuries per 1000 skier days in a study of downhill skiing in Colorado, USA between 1982 and 1993. A study conducted in the Whistler-Blackcomb ski resort in Canada during 1994 to 1996 identified an incidence rate of 0.01 spinal injuries per 1000 skier days and 0.04 spinal injuries per 1000 snowboarder days. Thus, although spinal injuries comprise only a small proportion of all snowsports injuries, it is of concern that there appears to be a four-fold greater incidence of spinal injuries among snowboarders than among skiers, and that rates of neurological injury appear to be increasing.
To determine if such a pattern of injury was occurring in New Zealand, a review was undertaken of cases admitted to the Department of Orthopaedic Surgery at Dunedin Hospital from Central Otago’s major Southern Lakes ski fields (Cardrona, Coronet Peak, the Remarkables, and Treble Cone). The aim of this study was to determine the incidence, nature, and circumstances of thoracic and lumbar spine injuries occurring in snowsports at the Central Otago ski fields, and specifically to compare skiers’ injuries with snowboarders’ injuries.

Methods

All in-patients with ski or snowboard-related thoracic and lumbar spine injuries treated by the Department of Orthopaedic Surgery at Dunedin Hospital during the period 1991 to 2002 were eligible for inclusion in the study. The normal ski season is from mid-June to early-October—but to allow for early season openings or late season closings, the search period was extended to include the period 20 May to 10 November in each year.

An initial search was made (of the electronic audit records of the Department of Orthopaedic Surgery) for cases of thoracic or lumbar injury; fracture or soft-tissue injury; and conservative, manipulative or surgical management. After obtaining ethical approval from the Otago Ethics Committee, this search was then refined by matching the above records with Dunedin Hospital discharge data provided by the New Zealand Health Information Service (NZHIS). This allowed for cases unlikely to have occurred in snowsports (e.g. motor vehicle crashes) to be excluded. Case notes were then reviewed in order to exclude any remaining cases not occurring in snowsports. Data were then transcribed for each case documenting the skifield concerned, the activity at the time of injury, the nature and circumstances of injury, and the clinical features.

Results

We identified a total of 25 patients (18 snowboarders and 7 skiers) who had suffered a snowsports-related spinal injury during the period under study. Only 1 skiing case was identified in the 4-year period 1991–1994 and there were no snowboarding cases until 1996. In the next 4-year period 1995–1998, however, 13 cases with thoraco-lumbar spinal fractures were identified involving 4 skiers and 9 snowboarders. In the final 4-year period, 1999-2002, 11 cases were identified involving 2 skiers and 9 snowboarders.

The demographic characteristics of the 25 cases are presented in Table 1. The mean age of the skiers was 31 years (range 26–39 years), and 4 of the 7 skiers were female. By comparison, the snowboarders were predominantly male (n=11) with a mean age of 23 years (range 15–34 years). The majority of the cases originated from either Treble Cone or Cardrona ski fields (as serious injuries occurring at Coronet Peak or the Remarkables ski fields are generally transported to Kew Hospital, Invercargill, not Dunedin Hospital) with similar numbers of skiers and snowboarders being injured at each of these fields. Three of the 25 patients were injured while heliskiing or heliboarding. The commonest months for injury were July (n=9) and August (n=12).

Of the 25 patients admitted to Dunedin Hospital (following initial assessment at Dunstan Hospital in Central Otago, all patients with suspected spinal fractures are referred to Dunedin Hospital.), 22 had proven fractures and 3 had suspected fractures with associated soft-tissue injury.
Table 1. Demographics of patients treated for snowsports-related spinal injuries at Dunedin Hospital between 1991 and 2002

<table>
<thead>
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<th>Variable</th>
<th>Skiers (n=7)</th>
<th>Snowboarders (n=18)</th>
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<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>31.3 years</td>
<td>23.4 years</td>
</tr>
<tr>
<td>Range</td>
<td>26–39 years</td>
<td>15–34 years</td>
</tr>
<tr>
<td>Gender</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
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<td>11</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>7</td>
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<td>Skifield</td>
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<tr>
<td>Treble Cone</td>
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<tr>
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<td>7</td>
</tr>
<tr>
<td>Heli-skiing</td>
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<td>Australia</td>
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Table 2. Type and circumstances of spinal injuries sustained by snowsports participants treated at Dunedin Hospital between 1991 and 2002

<table>
<thead>
<tr>
<th>Fracture type (No. of fractures)</th>
<th>Skiers</th>
<th>Snowboarders</th>
</tr>
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<tr>
<td></td>
<td>Jump</td>
<td>Fall</td>
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<tr>
<td>Wedge (1)</td>
<td>–</td>
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</tr>
<tr>
<td>(2)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>(3)</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Burst (1)</td>
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<td>1</td>
</tr>
<tr>
<td>Wedge (1) &amp; Burst (1)</td>
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<tr>
<td>Total</td>
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<td>4</td>
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<table>
<thead>
<tr>
<th>Fracture type (No. of fractures)</th>
<th>Snowboarders</th>
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</thead>
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<td></td>
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<td>Suspected, not confirmed</td>
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</tr>
<tr>
<td>Wedge (1)</td>
<td>7</td>
</tr>
<tr>
<td>(2)</td>
<td>–</td>
</tr>
<tr>
<td>(3)</td>
<td>2</td>
</tr>
<tr>
<td>Burst (1)</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
</tr>
</tbody>
</table>

Of the 22 patients who sustained fractures, 6 had a fracture of more than one vertebra: 3 (of 7) skiers and 3 (of 15) snowboarders (Table 2). The most frequently fractured vertebrae were those of the thoraco-lumbar junction, namely T12 and L1, which between them accounted for just over half of all the fractures (Figure 1).
In both skiers and snowboarders, wedge fractures were the most common fracture type, accounting for just over 80% of all fractures. By comparison, only 3 skiers and 2 snowboarders sustained burst-type fractures (Table 2). In one of the skiers, this was accompanied by a wedge fracture in another vertebra. There were differences between skiers and snowboarders in the circumstances of injury. Jump-related causes were most common in snowboarding, with 11 snowboarders being injured in this manner.

In contrast, only 2 skiers were injured when jumping, whereas 4 were injured in simple falls. One skier and 1 snowboarder were injured in collisions, the skier colliding with a rock and the snowboarder with another skifield user. Both were among the more seriously injured cases, with the skier having unstable wedge fractures to the tenth and twelfth thoracic vertebrae, and the snowboarder having a burst fracture of L1 extending into the lamina of the vertebra.

Of the 25 cases, only 5 sustained other injuries in addition to their spinal injury. These included soft tissue injuries elsewhere on the body, concussion, L5-S1 sensory disturbance, and a comminuted fracture of the talus. No upper extremity fractures were identified. It is notable that all 5 of the patients with burst fractures (3 skiers, 2 snowboarders) suffered a reduction in spinal canal diameter, ranging from 20% to 60%. Only one of these patients had a persistent neurological deficit.
Discussion

The findings of this study show a number of consistencies with previous research. The typical snowboarder with a spinal injury is a young male\textsuperscript{9–13} whilst injured skiers tend to be older and of either sex.\textsuperscript{7,14} In our study, although the numbers were small, there were slightly more females than males in the skier group, which is consistent with one previous North American study.\textsuperscript{5} It was not unexpected to find that July and August were the months with the highest number of spinal injuries. The Southern Lakes skifields generally have their best snow conditions in these two months so they are usually their busiest in terms of numbers of skifield users.

Wedge fractures were the most common type of spinal injury in both skiers and snowboarders, a finding that is consistent with other studies.\textsuperscript{6,8,11,15} The findings also show that the most common site of injury is the thoraco-lumbar junction, which is also consistent with previous studies.\textsuperscript{6,7,13} We found that most snowboarders were injured in jumps—in contrast to skiers whose injuries mostly resulted from a fall. Again, these findings are in agreement with those of previous studies.\textsuperscript{6,7,11,13}

The most common cause of wedge fractures is hyperflexion, which results in crushing of the anterior section of the body of the vertebra: a Denis-type single column fracture.\textsuperscript{16} When jumping, snowboarders often attempt tricks or stunts and as a result place their spine in a vulnerable flexed position. On impact with the snow, the axial load is transmitted through the lumbar spine until it meets the relatively stable thoracic spine where the greatest force will be applied, resulting in a wedge-type fracture of one or more vertebrae in or around the thoraco-lumbar junction.

The practice of jumping and doing tricks in the air whilst snowboarding will inevitably result in a proportion of these being uncontrolled with poor landings; thus there will be an increased risk of spinal trauma amongst snowboarders who do jumps. As highlighted by Koehle et al.,\textsuperscript{3} this disparity is likely to diminish with the recent and increasing trend of incorporating jumps and tricks into skiing.

It is noteworthy that no associated upper extremity fractures were identified in either skiers or snowboarders in this study. Since skiers use poles, they tend to sustain lower extremity rather than upper extremity injuries. However, Davidson and Laliotis\textsuperscript{5} identified wrist injuries as the most frequent injuries in snowboarders and suggested that this was as a result of the main force of impact with the snow being the outstretched arms.

The lack of upper extremity injuries in our study may also indicate that individuals who sustain spinal injuries have been unable to break their fall with their hands. It is recognised that snowsports-related spinal injuries are more frequent in experienced snowboarders.\textsuperscript{13} The tendency for these individuals to undertake more daring jumps, often with the hands holding the board, may result in an inability to break the fall with an outstretched extremity, with consequent transfer of the full force of the impact to the spine.

This study identified only one patient with persistent neurological deficit. Other workers have reported a higher incidence of neurological impairment, ranging from 9\% to 60\%.\textsuperscript{6,7,13,17} These differences may be explained in part by the selection of cases in the different studies; those of Prall et al.,\textsuperscript{6} Tarazi et al.,\textsuperscript{7} and Koo et al\textsuperscript{13} being conducted in either a Neurosurgical or a Spinal Injuries Unit, and that of Seino et al\textsuperscript{17}...
specifically looking at patients admitted with a degree of neurological injury. The apparent low rate of neurological deficit in our study can be attributed to the referral system for spinal injuries on New Zealand’s South Island. Suspected spinal injuries occurring at the ski fields are first referred to Dunstan Hospital in Central Otago and if a neurological injury is suspected the patient is transferred directly to the Burwood Spinal Injuries Unit in Christchurch. Patients with a spinal fracture but no apparent neurological deficit are referred to Dunedin Hospital, thus accounting for the low rate of neurological deficit amongst our cases.

During the 12-year period of this study, snowboarding was the most common cause of snowsports-related spinal injuries, despite no cases being recorded until 1996. This finding is consistent with other recent studies.\textsuperscript{4,7,10,11} Spinal injuries amongst skiers in our study appear to be sporadic, with insufficient numbers to observe any increase or decrease over the period of the study. Snowboarding injuries, on the other hand, emerged as a problem after 1996 and rapidly exceeded those to skiers.

These findings are similar to those of other researchers. Yamakawa et al,\textsuperscript{11} for example, reported little annual variation in the number of ski-related spinal injuries over a 12-year period from 1988/89 to 1999/2000, but the number of snowboarding-related spinal injuries rose dramatically after the 1994/95 season and accounted for approximately 85\% of all snowsports-related spinal injuries by 1999/2000.

A spinal injury is a potentially devastating event for an otherwise young, fit, and healthy individual. Lowering the incidence of spinal injuries among snowboarders will not be easily achieved, however, given that jumping is clearly an integral part of the sport. Factors other than the inherent hazardous nature of the sport are also important. In a study from Canada, only 30\% of snowboarders had received formal instruction\textsuperscript{13} and it has been reported that as many as 80\% of snowboarders who sustain injuries are riding incorrectly.\textsuperscript{11}

Education and training of snowboarders, focussing particularly on injury prevention techniques,\textsuperscript{3} have a role to play in the reduction of snowboard-related spinal injuries. The skifields, themselves, also have a role in injury prevention by having the responsibility to maintain safe, well-marked runs, construct safe ramps and half-pipes, and discourage activities such as the creation of self-constructed ramps and jumps. It is pleasing to see several New Zealand ski fields, including all of those included in this study, already actively embrace this policy.

The incidence of spinal injuries in snowsports participants has previously been reported as 0.01 per 1000 skier days and 0.04 per 1000 snowboarder days.\textsuperscript{7} Therefore, in view of this low incidence rate, it was not unexpected that we identified only 25 cases (over a 12-year period from the Otago Southern Lakes area skifields) treated in Dunedin Hospital. We acknowledge that the conclusions (that can be drawn) and the recommendations (that can be made regarding prevention) are limited by the scope of the present study. We propose, therefore, that this pilot study be expanded to incorporate data from all New Zealand skifields, along with a detailed analytic study of postulated risk factors. We will then be in a better position to develop injury prevention strategies based on robust epidemiological evidence.

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Jean-Claude Theis, Associate Professor and Head of the Department of Orthopaedic Surgery, Dunedin Hospital, Dunedin

Acknowledgements: Access to data was kindly provided by the New Zealand Health Information Service. We acknowledge the contribution of Dan Russell (Data Manager at the Injury Prevention Research Unit) and Michael Lamont (Research Committee Member of the New Zealand Mountain Safety Council) as well as the invaluable assistance of Aroha Meikle (Administrative Secretary to the Department of Orthopaedic Surgery, Dunedin Hospital). Dr Peter Johnston (Electives Sub-Dean at the University of Aberdeen School of Medicine, Scotland) provided support and encouragement to one of the authors (SD) during preparation for his final-year medical elective project, which was the basis for this study.

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References:


Benzbromarone therapy in management of refractory gout

Sunil Kumar, Jennifer Ng, Peter Gow

Abstract

Aim. To assess the efficacy and safety of benzbromarone in patients with renal impairment and severe tophaceous gout (despite receiving optimal conventional therapy).

Methods. Six patients with refractory gout (despite optimal therapy) were treated with benzbromarone. Uric acid levels and number of gout attacks were recorded monthly. Adverse events to medications were also recorded.

Results. After 1 year of treatment with benzbromarone, average uric acid level reduced from 0.61 mmol/L to 0.46 mmol/L. Repeated measures tests on the changes in uric acid were clinically significant (p=0.01). The frequency of acute attacks of gout was reduced from 16 (8–20) to 7.3 (1–16); p=0.01. None of the patients reported adverse events with the medications. There were no acute flares resulting from initiation of medications.

Conclusion. Benzbromarone is effective in lowering uric acid levels and in reducing the number of acute attacks of gout in patients who have failed optimal treatment. Making this drug more readily available will increase our therapeutic choices for urate reduction and help decrease the morbidity associated with gout.

Gout is a common metabolic condition that is on the increase worldwide. It affects at least 1% of men in Western countries, with a male to female ratio ranging from 7:1 to 9:1.1 Gout is the commonest form of arthritis in men over the age of 40 in New Zealand. Epidemiological survey conducted in 1996 showed gout to be more common in Maori (6.4%) than Europeans (2.9%).2 The prevalence of gout in Maori men has risen from 4.5–10.4% previously to 13.9%; and in European men, from 0.7–2.0% previously to 5.8%.2–4

Proposed principal contributory factors leading to the increased prevalence of gout include increased longevity, increased prevalence of hypertension, obesity, diabetes mellitus, renal failure, and cardiac failure. There is also an increased use of diuretic and low-dose aspirin use. Changing dietary trends and alcoholism may also have contributed to the increased prevalence.5

Management of gout remains unsatisfactory in a significant proportion of patients in New Zealand.6 It is difficult to identify the reasons for this but this could be in part due to the complex interactions of diseases seen in these patients in combination with lack of therapeutic choices.

The goal of antihyperuricemic treatment is the reduction uric acid below 0.42mmol/L. In cases of tophaceous gout, levels less than 0.25mmol/L may be required for resolution of tophi. Optimal therapy entails combination of a purine-restricted diet and pharmacological agents in conjunction with patient education with regards to management of acute and prophylactic therapies.
Allopurinol, the most widely used hypouricemic agent, does not normalise uric acid levels in all patients with gout, particularly in those with renal impairment, even when used in doses beyond the accepted upper limits. In these patients, a uricosuric agent benzbromarone has been used overseas with success, although this agent is not readily available in New Zealand. Other uricosuric agents, such as probenecid and sulphinpyrazone, are ineffective in treating patients with renal impairment.

The aim of this study was to assess the efficacy and safety of benzbromarone in patients who had severe tophaceous gout and renal impairment despite receiving allopurinol and appropriate dietary measures.

**Methods**

**Patients**—All patients with difficult-to-control gout, despite optimisation of their medications and diet, were considered for the medication. They were excluded if they had abnormalities of their liver function tests (LFTs) or were not able to comply with medications and blood monitoring. All had tophaceous deposits, renal impairment, and poor response to allopurinol therapy. Informed consent was obtained and demographic data recorded. Baseline full blood count, renal function test, liver function test, uric acid level, mid-stream urine test, and 24-hour uric acid excretion were measured.

Creatinine clearance was calculated using Cocroft-Gault formula, and average uric acid levels (measured 3 monthly over 1 year) were obtained. All tophi were photographed and recorded. PHARMAC’s Exceptional Circumstances Committee approved funding for benzbromarone, and the drug was available through the Middlemore Hospital Pharmacy. Compliance monitoring included monthly phone calls and hospital visits every 3 months.

Benzbromarone was commenced at 50 mg daily for the first month, and the dose was escalated to 100 mg daily. All patients continued taking their usual medications including allopurinol and colchicine. Patients were monitored with fortnightly full blood count (FBC) and renal function tests, LFT initially for the first month and monthly thereafter. Uric acid levels were checked monthly for 3 months and then once every 3 months.

All patients were seen in a dedicated gout clinic every three months; all acute gout attacks and hospitalisations were recorded. Any adverse events were also recorded. Data was analysed at the end of 1 year’s of treatment with benzbromarone.

**Statistical analysis**—Number of gout attacks before and after treatment were analysed using paired t-test. Serial uric acid levels were analysed using Multivariate ANOVA, with uric acid at each visit being the dependent variable. All analyses were performed using the SAS statistical software package version 10 (SAS institute Inc, Cary, NC), and a p value less than 0.05 was considered statistically significant.

**Results**

Among patients attending Middlemore Hospital Rheumatology Clinic from June 2003–June 2004, 400 were found to have gout—this represents 10% of all the rheumatology outpatient attendances. Their ethnicities are shown in Table 1.

Demographic data of the 6 patients receiving benzbromarone is shown in Table 2; comprising 3 Samoans, 2 Cook Island Maori, and 1 Asian Indian. Their average age was 48.5 years (range 38–64 years).

Five out of the 6 patients had their 24-hour urinary urate excretion rate measured, and the results were within normal ranges (2–5 mmol/day). All the patients were on optimal doses of allopurinol, and the average uric acid levels (1 year prior to benzbromarone treatment) were 0.61mmol/L (range 0.51–0.74mmol/L). Creatinine clearance was reduced in all patients, with an average creatinine clearance of 0.71 ml/second.
Table 1. Gout cases by ethnic group: rheumatology clinic attendances for gout
July 2003–June 2004

<table>
<thead>
<tr>
<th>Ethnic group</th>
<th>Gout cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific Islands</td>
<td>207</td>
<td>47%</td>
</tr>
<tr>
<td>New Zealand Maori</td>
<td>95</td>
<td>22%</td>
</tr>
<tr>
<td>European / Pakeha</td>
<td>89</td>
<td>20%</td>
</tr>
<tr>
<td>Other</td>
<td>44</td>
<td>10%</td>
</tr>
<tr>
<td>Asian Indian</td>
<td>5</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>440</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 2. Demographics of patients on benzbromarone

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Gender</th>
<th>Duration of gout (yrs)</th>
<th>Other medical condition</th>
<th>Cr/Cl (ml/sec)</th>
<th>Creatinine (mmol/L)</th>
<th>Urate excretion (mmol/d)</th>
<th>Allopurinol dose (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>M</td>
<td>18</td>
<td>IHD, HTN, RENAL IMP, LIPIDS</td>
<td>0.77</td>
<td>0.17</td>
<td>4.0</td>
<td>300</td>
</tr>
<tr>
<td>2</td>
<td>48</td>
<td>M</td>
<td>15</td>
<td>LIPIDS RENAL IMP DM</td>
<td>1.1</td>
<td>0.12</td>
<td>4.9</td>
<td>300</td>
</tr>
<tr>
<td>3</td>
<td>43</td>
<td>M</td>
<td>11</td>
<td>RENAL IMP/ CALCULUS</td>
<td>0.82</td>
<td>0.16</td>
<td>-</td>
<td>300</td>
</tr>
<tr>
<td>4</td>
<td>64</td>
<td>M</td>
<td>20</td>
<td>RENAL IMP.</td>
<td>0.73</td>
<td>0.13</td>
<td>3.6</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>48</td>
<td>F</td>
<td>8</td>
<td>RECURRENT UTI/ RENAL IMP</td>
<td>O.42</td>
<td>0.32</td>
<td>2.5</td>
<td>100</td>
</tr>
<tr>
<td>6</td>
<td>38</td>
<td>M</td>
<td>8</td>
<td>RENAL IMP, OBESITY</td>
<td>0.64</td>
<td>0.20</td>
<td>3.0</td>
<td>300</td>
</tr>
</tbody>
</table>

Cr/Cl=creatinine clearance; IHD=ischaemic heart disease; UTI=urinary tract infection; RENAL IMP=renal impairment; HTN=hypertension; DM=diabetes mellitus.

All patients tolerated benzbromarone well; no patients experienced major side effects. Liver function tests remained normal in all patients and serum creatinine remained stable. Serum uric acid levels declined in all patients except one who had problems adhering to therapy. He subsequently moved out of area and was lost to follow-up. Average uric acid level 1-year post-benzbromarone treatment was 0.46mmol/L (range 0.25–0.73mmol/L). (Figure 1)

The frequency of acute attacks of gout was reduced in all patients. The average number of acute attacks were reduced from 16 (8–20) to 7.3 (1–16); p=0.01 (Figure 2). The sizes of their gouty tophi were not serially measured but one patient reported disappearance of tophi from his feet and reduction in size of tophi in hands. Three other patients reported reduction in size of their tophi.

One patient died from severe blood loss as a result of an arterial bleeding from ulcerated tophi. She had not sought medical advice and died at home. Her autopsy showed she had liver cirrhosis, which had not been diagnosed previously. She died...
from complication of gout, and benzbromarone was not thought to have contributed towards her death.

Figure 1. Change in uric acid levels over time (after treatment with benzbromarone) in the 6 gout patients under investigation

Figure 2. Number of gout attacks 1 year pre-and 1 year post-treatment
Discussion

Gout is a very common rheumatological problem in South Auckland, which has a large Maori and Pacific population. A large percentage of these patients have associated medical conditions such as diabetes mellitus, hypertension, congestive heart failure, and obesity. Renal impairment has been reported in up to 38% of gout population. Tophaceous gout has been reported to occur in 30% of patients (at 5 years’ follow-up) who have not received urate-lowering agents.

Effective management of gout requires normalisation of uric acid levels. This is achieved with dietary modification and drug therapy. Commonly used drugs for urate-lowering include xanthine oxidase inhibitors (allopurinol) and uricosuric agents (probenecid, sulfinpyrazone, and benzbromarone).

Allopurinol is the most widely used drug in New Zealand for lowering uric acid levels. It works well for majority of patients, but there is a small minority who despite dose escalation have a poor response to therapy. In our practice, we have found that patients with renal failure and large tophaceous deposits are included in this group of very difficult patients who do not achieve normouricemia.

Four out of our six patients in this study were initiated on 300 mg of allopurinol prior to development of renal impairment. Despite the potential risks of doses of allopurinol above the generally accepted as optimal for the degree of renal impairment we had not adjusted their doses in view of the severity of their gout and the limited treatment options.

Benzbromarone is a benzo-furan-derivative which lowers serum urate and increases urinary urate excretion. Plasma urate is reduced by blocking renal tubular reabsorption of urate and also possibly through increased intestinal elimination of uric acid. It is generally well-tolerated with few side effects, the most serious of which is fulminant hepatitis and liver failure. The incidence of liver failure is unknown—but is rare, with only isolated case reports in the literature. Several countries have not registered this drug because of this side effect.

Benzbromarone is more effective than probenecid and sulfinpyrazone in lowering uric acid and can be used in patients with moderate renal insufficiency. Perez-Ruiz et al showed that patients taking benzbromarone alone or in combination with allopurinol achieved faster velocity of reduction of tophi than patients taking allopurinol alone.

This study, despite its small numbers, compares well with other studies which have shown that benzbromarone is effective in lowering uric acid levels and in reducing the number of acute attacks of gout in patients in whom optimal therapy has been inadequate. Moreover, it has been effective in the size reduction and resolution of tophi.

Benzbromarone is available in New Zealand, but is unregistered and unfunded. Funding for our patients was approved by the Exceptional Circumstances Committee and funded by Counties Manukau District Health Board. Unfortunately, because of strict criteria related to prior hospitalisation and significant inpatient costs, only a very limited number of our patients qualify for funding for benzbromarone. Consequently, a significant number of our patients remain sub-optimally treated.
Making this drug more readily available would increase our therapeutic choices for urate reduction and help decrease morbidity associated with gout. Requiring a patient to be hospitalised with crippling deformities and severe complications, such as infected tophaceous ulceration (in which the morbidity is significant)\(^6\) is not a cost-effective use of an established agent and increases the health inequalities in Maori and Pacific peoples even further.

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**Acknowledgement:** We thank Hazra Sahid, Rheumatology Nurse Specialist, for her help and input in this study.

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**References:**

Liver transplantation for hepatocellular carcinoma in New Zealand: a prospective intent-to-treat analysis

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Abstract

Liver transplantation (LT) is potentially curative for early hepatocellular carcinoma (HCC) but time spent on the waiting list exposes patients to the risk of tumour progression prior to transplantation.

Aims. We prospectively evaluated the outcome for New Zealand patients listed for LT with a pre-transplant diagnosis of HCC.

Methods. Patients with 1 to 3 tumours, up to 5cm in diameter, and no vascular invasion or extra-hepatic disease on imaging, were considered eligible for LT. The results were analysed by intention to treat from the time of listing.

Results. Fifty-nine patients were listed with a pre-transplant diagnosis of HCC between February 1998 and June 2004. Ten (17%) were de-listed before LT because of tumour progression, and 9 of 45 (20%) who underwent LT have experienced tumour recurrence up to 59 months post-transplant. For patients listed with a diagnosis of HCC, 5-year actuarial survival was 56.1% from the time of listing. For those listed and transplanted with a diagnosis of HCC, 5-year actuarial survival from the time of transplant was 63.5%. This is significantly worse than the 89.8% 5-year survival for patients transplanted without HCC over the same period (p=0.018) and this difference was entirely due to tumour recurrence.

Conclusion. 37% of patients listed according to our criteria were either de-listed due to tumour progression or experienced recurrence after LT. Based on this experience strategies aimed at preventing waiting list drop out have been adopted, however expansion of tumour-related selection criteria cannot be recommended without a concomitant increase in donor organ availability.

Hepatocellular carcinoma (HCC) is a major cause of mortality in patients with underlying chronic liver disease. In New Zealand the most important risk factors for HCC are Hepatitis B and, increasingly, Hepatitis C infection. Liver transplantation (LT) usually offers the best, and often only, prospect of cure for patients with cirrhosis and HCC. However there are insufficient donor organs to treat every individual who could benefit. Organs must therefore be allocated on the basis of outcome as well as need. Tumour criteria used to select patients for LT are a key determinant of long-term outcome and, in an era of organ shortage, remain a focus of debate and controversy.

The selection criteria established by Mazzaferro and colleagues in 1996 (Milan criteria) have been adopted in most transplant programmes around the world. These criteria are based on the findings of a prospective cohort study in which LT was offered for unresectable single HCC less than 5cm, or up to three lesions less than...
3cm as determined by pre-operative imaging. Tumours recurred in less than 10% of patients and 4-year survival was equivalent to other accepted indications for LT. Other groups have reported similar experience.

All transplant centres face increasing waiting times due to the excess in demand over supply of donor organs. In New Zealand the median waiting time is now 5 months and some patients wait a year or more. During the waiting period there is a risk of cancer progression and consequent de-listing if the tumour exceeds transplant criteria prior to a graft becoming available. The outcome for these patients is inevitably poor, but should be included in any intent-to-treat analysis.

From its beginning in January 1998, the New Zealand Liver Transplant Unit (NZLTU) adopted criteria that represent a minimal expansion of the original Milan criteria (up to three tumours <5cm with no vascular invasion on pre-operative imaging). Complete follow-up is available on all patients listed and/or transplanted with HCC and all data have been prospectively collected. This paper reports an intent-to-treat analysis of the outcomes to date.

Methods

Selection criteria—Cirrhotic patients with HCC less than 5cm, and up to 3 in number, were considered for LT. Non-cirrhotic patients with solitary unresectable fibrolamellar HCC confined to the liver were also considered eligible. In most cases Child’s A cirrhotic patients with a solitary resectable HCC and no portal hypertension underwent liver resection rather than LT. All patients were evaluated using tri-phasic CT scan of the liver. Radiological evidence of vascular invasion by tumour was a contra-indication, whatever the lesion size or number. MRI was used in cases of diagnostic uncertainty and/or a history of contrast allergy. A pre-transplant tissue diagnosis was only sought if the alpha-fetoprotein (AFP) was non-diagnostic and imaging characteristics atypical for HCC in patients who did not otherwise meet listing criteria. In cases where biopsy was done, fine needle aspiration was performed initially and if the direct smear and cell block were unhelpful a 19 gauge core biopsy was performed. In compensated patients non-tumour liver biopsy was undertaken to confirm underlying cirrhosis. Screening for extra-hepatic disease included CT abdomen and chest and isotope bone scan in all patients. All other eligibility criteria for transplantation had to be met.

After listing, patients had monthly AFP and three monthly tri-phasic CT until transplantation. Therefore, all patients who underwent LT fulfilled the radiological selection criteria within, at most, 3 months of the date of transplant. Patients with large (>4cm) or rapidly growing tumours were given priority on the waiting list. Those patients who developed radiological evidence of tumour progression that exceeded our criteria were de-listed. Six patients underwent pre-transplant treatment for HCC (2 prior liver resection, 1 percutaneous ethanol injection (PEI), 3 trans-arterial embolisation). Systemic chemotherapy was not used pre- or post-transplant.

Patients—Between January 1998 and June 2004 59 patients were listed with a pre-transplant diagnosis of HCC. One patient had fibrolamellar HCC in an otherwise normal liver, the remainder had chronic liver disease. Nine other patients undergoing LT for decompensated cirrhosis had an incidental HCC identified in the explant (3 had an elevated AFP of 46, 61 and 266 respectively but no tumour on imaging), these are not included in the intent to treat analysis. The demographic details of the patients are listed in Table 1. Pre-operative stage was determined using the Cancer of the Liver Italian Program (CLIP) system, which combines underlying liver function and tumour-related characteristics, and post-operative staging was determined using the American Joint Committee on Cancer (AJCC) system. Transplants were performed preserving the recipient IVC (“piggyback” method) unless there was tumour in proximity to the IVC, in which case caval interposition was used to minimise the risk of breaching the tumour. Post-operative immunosuppression was with tacrolimus and corticosteroids. Anti-lymphocyte induction therapy was not used. Hepatitis B patients received lamivudine pre-transplant plus combination low-dose HBIG plus lamivudine post-transplant. All patients have been followed up long term by the NZLTU. Tumour recurrences have been documented in every case by a combination of AFP, radiological and/or histological confirmation. In two cases of death unrelated to
HCC, histological and laboratory evidence of the cause of death was obtained. Explanted livers were perfusion fixed in formalin prior to sectioning into 1cm slices.

**Statistical analysis**—Descriptive statistics have been used to characterise the groups. Survival, including 95% confidence limits, was estimated by the Kaplan-Meier method and compared using the log rank test. Contingency data have been compared using the Fisher-exact test.

**Results**

Fifty-nine patients were listed with a diagnosis of HCC (Table 1). Outcome after listing is summarised in Figure 1. Thirteen patients were de-listed due to tumour progression in 10 (17%), death from spontaneous bacterial peritonitis in 1, and failure of interval imaging to confirm HCC in 2. Forty-five patients with a pre-operative diagnosis of HCC underwent LT, and a further 9 patients had an incidental diagnosis of HCC. There was no peri-operative mortality.

**Table 1. Patient characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Known HCC</th>
<th>Incidental HCC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
<td>59</td>
<td>9</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (range)</td>
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<tr>
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<td>14 (2.9–266)</td>
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<td><strong>CLIP Score</strong></td>
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<tr>
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<td><strong>AJCC Stage</strong></td>
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<tr>
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<tr>
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</table>

*Includes four patients with HCV and ALD, and one with HCV and HBV; †From listing to OLT or de-listing.

HCC=hepatocellular carcinoma; HBV=hepatitis B virus; HCV=hepatitis C virus; ETOH=ethanol; PBC=primary biliary cirrhosis; AFP=alpha-fetoprotein; CLIP=Cancer of the Liver Italian Programme; AJCC=American Joint Committee on Cancer.
Table 2. Radiological and pathological characteristics

<table>
<thead>
<tr>
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<th>Pre-op Radiological</th>
<th>Post-op Pathological†</th>
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<tr>
<td>Number Median (range)</td>
<td>1 (1–3)</td>
<td>1 (1–10)</td>
</tr>
<tr>
<td>Size (cm) Median (range)</td>
<td>2.6 (1.0–7.0*)</td>
<td>3.0 (0–8.0)</td>
</tr>
<tr>
<td>Milan criteria</td>
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<td></td>
</tr>
<tr>
<td>Y</td>
<td>48 (81.4%)</td>
<td>36 (66.7%)</td>
</tr>
<tr>
<td>N</td>
<td>11 (18.6%)</td>
<td>18 (33.3%)</td>
</tr>
</tbody>
</table>

*Fibrolamellar HCC. All other cases size ≤5.0cm; †Includes 9 incidental tumours.

The pre-operative radiological and post-operative pathological characteristics of the tumours is summarised in Table 2. As reported by previous investigators,\(^\text{10}\) radiological assessment under-staged the disease compared to explant pathological assessment in approximately half of the cases. In 11 cases, lesion size was underestimated (by more than 5mm), in 10 lesion number was under-estimated, and in 4 both size and number were under-estimated.

Of those transplanted with a pre-operative diagnosis of HCC, 9 (20%) have experienced tumour recurrence at a median of 11 months post-transplant (range 0-59 months). Three recurrences are considered to represent implantation metastases; two chest wall (one had tumour biopsy prior to referral, the other received pre-transplant PEI), and one Ampulla of Vater (initially presented with a central tumour causing biliary obstruction treated by endoscopic sphincterotomy and stenting prior to LT). Other sites of recurrence included peritoneum, lymph nodes, liver, lung, mediastinum, bone and brain. Two patients died without evidence of recurrent HCC; one of post-transplant lymphoproliferative disease (PTLD) and one of graft failure from recurrent HBV infection. There have been no recurrences in the 9 patients with incidental tumours.

Eleven patients (19%) listed with a diagnosis of HCC fell outside the Milan criteria (that is had 2 or 3 tumours detected on pre-operative imaging, with the largest between 3 and 5cm). Of these 11 patients, 4 were de-listed due to tumour progression on the waiting list and 2 have had tumour recurrence post-transplant. Only 5 remain alive and tumour free. There was a trend towards worse post-transplant survival in patients who exceed Milan criteria at listing, although this failed to reach statistical significance because of the small sample size (p=0.08, Fisher-exact test).

Patient survival on an intent-to-treat basis is shown in Figure 2, and survival post-transplant is shown in Figure 3. For all patients listed with a diagnosis of HCC, 5-year actuarial survival was 56.1% from the time of listing. For the patients listed and transplanted with a diagnosis of HCC, 5-year actuarial survival from the time of transplant was 63.5%. This is significantly worse than 5-year survival for patients transplanted without HCC over the same period (89.8%; p=0.018, Figure 4). Interestingly, post transplant survival was worse for patients with a higher pre-operative CLIP stage (Figure 5) but was not statistically related to AJCC stage (data not shown).
Figure 1. Outcome after listing with HCC

Patients listed with diagnosis of HCC
59

Transplanted
45

Delisted
13

Delisted due to cancer progression
10

Delisted for other reasons
3

No recurrence of HCC
36

Recurrence of HCC
9
Figure 2. Overall survival from time of listing (intent-to-treat analysis in 59 patients listed with a diagnosis of HCC)

Error bars represent 95% confidence intervals.
Figure 3. Overall survival after liver transplantation (including and excluding incidental tumours)

Error bars represent 95% confidence intervals.
Figure 4. Post-transplant survival in patients with and without HCC

Error bars represent 95% confidence intervals.

--- Without HCC --- With HCC
1 year 95.4% 1 year 91.9%
2 year 91.4% 2 year 83.8%
3 year 91.4% 3 year 78.2%
4 year 89.8% 4 year 67.1%
5 year 89.8% 5 year 67.1%

Patients At Risk
Without HCC 141 112 85 63 40 18 5
With HCC 54 43 26 15 13 7 1

p=0.0181
Figure 5. Overall survival by CLIP score (excludes incidental tumours)

# at risk
<table>
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<tr>
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<td>3</td>
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*: p=0.0470, **: p=0.0106, ***: p<0.0001
Discussion

The outcome following liver transplantation has improved dramatically over the past decade due to advances in organ preservation, surgical technique, anaesthesia and immunosuppression. Overall 5-year patient and graft survival are almost 90 and 80% respectively. The outcome following liver transplantation for hepatocellular carcinoma is reduced by the risk of tumour recurrence, determined by both the biology and extent of tumour at the time of transplant. In addition, progression of tumour whilst waiting may result in patients being removed from the waiting list when the extent of tumour exceeds accepted transplant criteria. These patients almost invariably die but are not included in most reported outcomes of transplantation for hepatocellular carcinoma. Unfortunately, the gap in this country between donor organ demand and supply means that de-listing because of tumour progression occurs frequently. An important strength of the current study is the inclusion of these patients in an “intention-to-treat” analysis of all listed patients.

We used strict criteria for listing for liver transplantation for hepatocellular carcinoma. These were slightly more liberal than the widely adopted Milan criteria in that patients with 2 or 3 tumours were included even when the largest tumour exceeded 3cm (but not 5cm). Of the 11 patients who exceeded Milan criteria on preoperative imaging, 4 progressed on the waiting list and were de-listed, 7 were transplanted of whom 2 have had tumour recurrence. Other differences in our study, compared to most other published series, were the aetiology of cirrhosis (49% HBV) and ethnicity of the patients (46% Maori or Pacific Island).

Our overall tumour recurrence rate, 20% in patients with a pre-transplant diagnosis of HCC, is higher than previously reported series using similar selection criteria. The recurrence rate may increase further with longer follow up. We used radiological techniques that are considered the gold standard and undertook regular surveillance on the waiting list. The variance between radiological and pathological staging in the current series was not markedly different to other reports. All cases of tumour recurrence led to patient loss. Whether or not 20% is considered an acceptable recurrence risk depends on the availability of donor organs and issues of resource allocation. Whilst post-transplant survival was not as good as for patients transplanted without HCC, none of these patients would be expected to survive long term without transplantation.

In our series unfavourable outcomes were, in almost equal parts, due to de-listing prior to LT and tumour recurrence following LT. There was no peri-operative mortality and only 2 deaths post-LT that were not HCC-related (HBV recurrence and PTLD). The 5-year survival after listing (intent-to-treat) and LT (treatment given) was 56.1% and 63.5% respectively. Similar 5-year outcomes have been reported after liver resection for hepatocellular carcinoma but only is highly selected patients with single resectable lesions, normal bilirubin and no portal hypertension. Liver resection should therefore be considered as first-line therapy in these patients rather than transplantation, given the current gap between organ donor demand and supply. However, long-term outcome (beyond 5 years) is likely to be inferior following resection because of the very high incidence of metachronous tumours in the cirrhotic remnant. Initial resection followed by intensive surveillance and salvage transplantation for metachronous tumours has been advocated for resectable cirrhotic...
hepatocellular carcinomas. However, more recent analyses have indicated that this may be a more expensive and less satisfactory long-term strategy.\textsuperscript{16} Obviously the debate about resection versus transplantation applies only to the minority of patients eligible for both.\textsuperscript{17}

In this series we undertook regular tumour surveillance following listing for transplantation. Disease progression outside our accepted criteria resulted in removal from the waiting list. We have attempted to prevent this distressing scenario by prioritising patients with rapidly growing or larger lesions, using adjuvant therapies whilst waiting (resection, radiofrequency ablation and chemoembolisation) and by offering live donor liver transplantation (LDLT). Despite such strategies, 17% of patients were de-listed due to tumour progression. Live donor liver transplantation has had little impact due to a high percentage of potential live donors being medically or otherwise unsuitable and only a single live donor transplant was undertaken in a recipient with HCC. One reason for this is the high incidence of hepatitis B-related liver disease in New Zealand affecting not only recipients, but potential donors as well.\textsuperscript{18} Despite advantages for tumour patients in practice LDLT may only be available to a minority of potential recipients.\textsuperscript{19,20}

The most commonly performed adjuvant therapy performed was trans-arterial chemoembolisation (TACE). Recent randomised trials of TACE have shown a survival benefit in the palliative setting\textsuperscript{21} and we used TACE successfully in one patient in whom listing was delayed for 18 months because of severe porto-pulmonary hypertension (that eventually responded to remodelling with iloprost and sidinafil). We now use TACE routinely in all patients on the waiting list with tumours >3cm, in order to delay tumour progression.

Microvascular invasion and histological differentiation are both reasonable predictors of recurrence after LT, independent of tumour size and number.\textsuperscript{4,22} However the use of these histological criteria would require routine core biopsy of the tumour. In the current series adverse tumour histology (poorly differentiated and/or microvascular invasion) would have excluded 12 patients from transplant to avoid 4 recurrences (data not shown), and 47 patients without adverse tumour histology would have been needlessly subjected to the risk of dissemination from core biopsy. Needle track dissemination occurred in two of our patients, one from a biopsy and the other from PEI.

Recently, reasonable outcomes have been reported following transplantation for hepatocellular carcinoma in patients with maximum tumour diameter of 6.5cm or up to 3 tumours <4.5cm, with combined diameter of <8cm has been proposed.\textsuperscript{23} However, these results need to be confirmed in other prospective studies. Data from the International Tumour Registry found that overall 5-year survival for patients transplanted with maximum tumour >5cm (on explant pathology) was only 38%.\textsuperscript{22} Two studies have been reported in which the expanded criteria allowed tumours of any size or number as long as they were confined to the liver with no evidence of vascular invasion.\textsuperscript{19,24} In the prospective study by Roayaie et al, 80 patients were enrolled. All received an aggressive neo-adjuvant treatment with systemic chemotherapy and TACE whilst on the waiting list. Thirty seven (46%) had tumour progression prior to transplantation and were de-listed. Forty three underwent LT of whom 48% survived 5 years (26% of the original cohort). In the report by Kaihara et al, 25 patients underwent LDLT with a median survival was less than 3 years.\textsuperscript{19} These
results fall well short of expected survival for tumours within Milan criteria and for most other currently accepted indications for LT.

The current series should provide a note of caution. Selection criteria should be evaluated prospectively using intent-to-treat analysis. In the current series 17% of listed patients were not able to be transplanted in time, and 20% of those who were transplanted experienced tumour recurrence post-transplant. Had the series been retrospectively analysed, based on explant pathology, like many in the published literature, the results would have appeared better than they really are. A post-transplant 5-year survival rate of 63.5% is acceptable but significantly worse than the 89.8% 5-year survival achieved in non-tumour patients. Further expansion of criteria can only save more lives if, in the process, grafts are not diverted from patients with a better prognosis. Our analysis indicates that in New Zealand, expanding current tumour criteria will not benefit the wider patient population unless there is also an incremental increase in donor organ availability.

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References:


Endometriosis-induced acute small and large bowel obstruction: rare clinical entities

Rabih Chaer, Albert Sam II, Miguel Teresi, Jose Cintron

The extragonadal manifestations of intestinal endometriosis necessitating immediate abdominal surgical exploration are, to date, sparsely represented within the literature. We present two cases of acute complete small and large bowel obstruction secondary to endometriosis, requiring emergent laparotomy; and review the pertinent literature.

Case reports

Case 1

The patient is a nulliparous 30-year-old white woman with a past medical history of endometriosis who underwent two previous laparoscopies for chronic pelvic pain. The presenting complaints were recurrent lower abdominal pain with increasing distension, nausea, and vomiting. The last menstrual period was 3 months prior.

Her abdomen was distended and diffusely tender, with hyperactive bowel sounds. Rectal exam was normal. Pelvic exam was unremarkable. Abdominal X-rays revealed massively dilated fluid-filled loops of small bowel and colon compatible with a distal colonic obstruction. After adequate resuscitation, a flexible sigmoidoscopy was performed and showed the obstruction to be extrinsic at the rectosigmoid junction. No mucosal abnormalities were identified.

In light of the clinical presentation and the acute onset, the patient was explored through a midline abdominal incision and clear peritoneal fluid was noted with oedematous and dilated small and large bowel. Dense filmy adhesions were lysed, and the rectosigmoid junction was visualised. At the obstruction site, there was partial invasion into the rectosigmoid serosa by a large endometrial implant. This segment was resected and a primary anastomosis was performed. The ovaries were unremarkable. Pathology revealed endometriosis of the large bowel serosa within and proximal to the site of obstruction.

The patient's postoperative course was unremarkable and she was discharged home 6 days later.

Case 2

The patient is a nulliparous 34-year-old black woman with no known prior history of endometriosis. She was seen in the emergency room with first-time onset of acute diffuse abdominal pain, worse in the right lower quadrant, associated with nausea and bilious emesis. Her past medical history was unremarkable, and her past surgical history was significant for a laparoscopic tubal ligation 2 years prior to presentation. No intra-abdominal or pelvic pathology was identified at the time. The last menstrual period was 1 month earlier.
Her abdomen was diffusely tender, worst in the right lower quadrant, with no peritoneal signs. The rectal and pelvic exams were unremarkable. Abdominal X-rays showed complete small bowel obstruction. After fluid resuscitation and nasogastric tube suction, she underwent a diagnostic laparoscopy that showed scarred terminal ileum and caecum with dilated proximal small bowel. On laparotomy, endometrial serosal implants were visualised (Figure 1).

**Figure 1. Close-up operative picture of endometrial serosal implants of the terminal ileum**

An ileocaecal segmental resection was performed with an ileocolic anastomosis. Specimen pathology showed endometrial implants in the appendiceal tip, as well as in the serosa, muscularis propria, and submucosa of the terminal ileum with no mucosal involvement.

The patient's postoperative course was unremarkable and she was discharged home 6 days later. She was not given hormonal therapy as no other foci of endometriosis were identified.

**Discussion**

Endometriosis presents infrequently to general surgeons. It usually occurs in women 30–40 years of age and may remain active in the postmenopausal period.¹ The prevalence of pelvic endometriosis approaches 6–10% in the general female
population; in women with pain, infertility, or both, the frequency is as high as 35–50%.\(^2,3\)

Intestinal involvement occurs most commonly in the rectosigmoid, appendix, and the ileum.\(^4\) Endometrial implants are the most common manifestation and may affect 3% to 37% of women with endometriosis.\(^5,6\) Presenting symptoms of intestinal endometriosis may mimic several other more common disorders, including appendicitis, diverticulitis, irritable bowel syndrome, adhesions, acute cholecystitis, or Crohn’s disease.\(^7,8\) Up to 25% of patients may be asymptomatic, but most will present with non-specific bloating, alteration in bowel habits, and decreased stool caliber.\(^9\) Although haemorrhage is unusual, endometrial invasion of mucosa can rarely lead to rectal bleeding that may or may not be catamenial in onset.\(^9,10\)

Endometrial tissue in the colon may cause a circumscribed, ring constriction resulting in bowel stenosis and obstruction. It may also present as an acute abdomen with peritonitis secondary to perforation. This complication is more common during pregnancy, especially in the first two trimesters when the endometrial implants enlarge under hormonal influences.

The majority of small bowel involvement occurs in distal ileum. Small bowel obstruction secondary to terminal ileal involvement can be acute but is more often chronic, secondary to kinking, stenosis, volvulus, or intussusception.\(^11\)

Since endometrial implants usually spare the mucosa, they are not accessible to endoscopic surveillance, and clinical suspicion is important in making the diagnosis. Endoscopy will help exclude inflammatory bowel disease and malignancy, and a bluish submucosal discoloration may rarely provide a visible clue to the underlying diagnosis.\(^10\) There are no pathognomonic radiologic findings, yet barium enema roentograms can exclude other diagnoses.\(^9\) Laparoscopy may be diagnostic, and preoperative recognition in mild cases could avoid unnecessary laparotomies and guide appropriate medical therapy.

The definitive treatment of women with endometriosis is total abdominal hysterectomy and bilateral salpingectomy and oophorectomy. For those women desiring to maintain fertility, the classic treatment includes hormonal manipulation with danazol, medroxyprogesterone, or gonadotropin-releasing hormone agonists (GnRH-a) with varying success rates. Medical therapies, however, are not useful for infertility treatment. A more aggressive approach with early surgical intervention may result in higher rates of fertility and better pain relief.

Indeed, in the large-scale Canadian collaborative randomised trial (Endocan), 341 infertile women with endometriosis were randomly assigned diagnostic laparoscopy or surgical treatment.\(^3\) Participants were followed up for 36 weeks postoperatively and for 20 weeks of gestation. The pregnancy rate was significantly higher in the women assigned surgery (30.7% vs 17.7%). Therefore, owing to the potential benefits and despite the associated risks, surgery is commonly used to treat infertility related to endometriosis.

The treatment of an endometriosis-induced bowel obstruction includes resection of the involved segment with primary anastomosis. Adjuvant hormonal therapy may prevent recurrence. The outcome following surgical intervention is excellent as reported in most series. The recurrence of bowel obstruction after long-term follow-up
is unusual and, in the absence of other extra uterine involvement, no further treatment is needed.\textsuperscript{7,8} Intraoperative consultation with a gynaecologist should be considered, especially for patients with endometriosis who are still in their reproductive years.

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**References:**


Biliary peritonitis due to fistulous tract rupture following a T-tube removal

George Sakorafas, Vania Stafyla, Gregory Tsiotos

Abstract

We present a patient with biliary peritonitis following a T-tube removal. The patient underwent laparotomy; a rupture of the fistulous tract around the T-tube was found. A Nelaton catheter was inserted through this opening and advanced toward the biliary tree and secured in place by a suture ligature. Postoperative course was uneventful.

In the pre-endoscopic retrograde cholangiopancreatography (ERCP)/laparoscopic cholecystectomy (LC) era, open common-bile-duct exploration (CBDE) was a relatively common operation, performed mainly for the management of choledocholithiasis. At that time, approximately one in five operations for gallstone disease involved open CBDE.1 Nowadays, open CBDE is rarely performed. The new generation of surgeons may become unfamiliar with some technical details of the management of T-tubes and related complications. We report a case of biliary peritonitis due to a T-tube fistulous tract fracture occurred at the time of T-tube removal. Relevant diagnostic and therapeutic problems are discussed and the literature is briefly reviewed.

Case report

A 62-year-old woman was presented with the diagnosis of gallstone disease. She had a history of acute cholecystitis 1½ months prior to surgery. The patient underwent LC. During LC, the common bile duct (CBD) was accidentally opened. LC was converted to open cholecystectomy and a T-tube was inserted into the CBD through its opening. Postoperative course was uneventful.

At postoperative day 11, a T-tube cholangiography was performed and was normal. On postoperative day 12, the T-tube was removed. Immediately after the T-tube removal, the patient complained of severe abdominal pain. The abdomen was tender on palpation. Abdominal ultrasonography (US) showed the presence of free fluid within the abdomen. The patient was reoperated with the presumed diagnosis of biliary peritonitis.

At surgery, a fractured, curved fistulous tract was found, which caused the bile leak. A Nelaton catheter was inserted into the fistulous tract and advanced toward the CBD. A suture-ligature secured the Nelaton catheter around the mature fistulous tract to prevent further leakage of bile around the Nelaton catheter. A Penrose drain was placed adjacent to the fractured fistulous tract. Postoperative course was uneventful. The Nelaton catheter and the Penrose drain were removed on postoperative days 7 and 9, respectively. The patient is currently well, 7 years after surgery.
Discussion

Bile leakage after T-tube withdrawal is generally regarded as an exceedingly rare complication. The potential problems associated with the use of T-tubes are not well known to junior surgeons, mainly due to the rarity of CBDE in the era of LC/ERCP. Therefore, some technical details should be emphasised to avoid this complication, which may be associated with a significant morbidity and even mortality:

- The T-tube should have a direct course from the point of entry into the CBD to the abdominal wall. A curved course may result in a fracture of the fistulous tract at the time of T-tube removal, due to the stress on a part of its wall. This could be an aetiologic factor in our patient.

- The T-tube should remain for a time sufficient for the formation of a mature fistulous tract around it. Early (i.e. accidental) removal of the T-tube will be associated with a high incidence of biliary leakage. Generally, maturation of the fistulous tract occurs 7–10 days after the insertion of the T-tube. Ellis recommended that the T-tube should be removed on postoperative day 10, provided that cholangiographic findings are normal. In our clinical practice, we remove the T-tube on postoperative day 12. The maturation of the fistulous tract is impaired and delayed in some clinical situations, such as in patients receiving corticosteroids or immunosuppression, etc. Due to immunosuppression, the liver transplant patient with a choledochocholedochostomy has a 4–20% incidence of symptomatic bile leak after T-tube removal. In these cases, the T-tube should remain for a longer period to allow the maturation of the fistulous tract to occur.

- The material of the T-tube may influence the formation of reactive tissue around it. In the past, PVC (polyvinyl chloride) T-tubes had been associated with a higher incidence of bile peritonitis following their removal (up to 4 %). The same group reported more than 2000 CBDE without this complication by using latex-rubber T-tubes; they postulated that PVC T-tubes were less irritant than latex-rubber (which are currently preferred), resulting in failure to form a walled-off track. Furthermore, the PVC T-tube hardens on contact with bile, and so its removal is more likely to damage the CBD.

- The T-tube cross-arm should fit loosely in the CBD, but the stem should be of a good calibre. This combination can best be achieved by cutting a gutter out of the cross-arm. Also, the trauma of T-tube removal can be reduced by cutting V-shaped sections out of the cross-arm, opposite to its attachment to the stem (Figures 1 [A and B] and Figure 2 [A and B]).

- Before T-tube removal, an obstructing lesion in the CBD (such as a retained stone) should be excluded by cholangiography to avoid increased pressures within the biliary tree, predisposing to the development of biliary leak. The T-tube cholangiography should be reviewed by the surgical team and—if there is no evidence for distal obstruction or retained gallstones—then the T-tube should be removed by a member of the team.
Figure 1 (A and B). The T-tube cross-arm should fit loosely in the CBD, but the stem should be of a good calibre. This can be achieved by cutting a gutter out of the cross-arm.
Figure 2 (A and B). The trauma of the CBD during the T-tube removal can be reduced by cutting V-shaped sections out of the cross-arm, opposite to its attachment to the stem.
This complication may have different clinical presentations. Bile ascites or peritonitis, necessitating laparotomy (approximately 75% of patients), or localised biloma, which can be managed conservatively with or without ultrasonography (US)/computed tomography (CT)-guided drainage (25% of patients), are the most common presentations. Diagnosis is usually easy. The main symptom is pain almost immediately after T-tube withdrawal. Modern imaging methods (US/CT) confirm the diagnosis (presence of free or localised fluid collection/s). ERCP may be used to precisely identify the location of the leak.

Effective drainage of leaked bile and appropriate control of the leak are the aims of treatment. Open laparotomy may be required for the drainage of leaked bile (in patients with biliary peritonitis or ascites) or—in localised biliary collection/s—by percutaneous US/CT-guided drainage. Small collections of bile may be well tolerated and may remain asymptomatic.

During laparotomy, the safest surgical approach is the introduction of a Nelaton catheter into the ruptured fistulous tract through its opening and the advancement of the catheter toward the biliary tree; to achieve tightness, the catheter should be secured in place with a suture-ligature tied around it and the fistulous tract. If a catheter cannot be advanced safely along the fistula tract, then a large tube drain should be positioned adjacent to the site of tract rupture.

If laparotomy may be avoided (see above), bile leak may be controlled by using minimally invasive procedures (including laparoscopy). Obviously, this approach should be confined to surgical centres having the appropriate expertise and the necessary technical facilities. During ERCP, a nasobiliary stent, internal stent, or an endoscopic sphincterotomy may be used therapeutically. Another minimally invasive approach is the introduction—under fluoroscopic control—of a guidewire into the fistulous tract, followed by the advancement of another drain into the fistulous tract.

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References:


Rectus sheath haematoma (RSH) mimicking acute intra-abdominal pathology

Mohammad Imran Khan, Osman Medhat, Octavian Popescu, Amit Rastogi, Tom Thompson

Abstract

**Aim.** Rectus sheath haematoma (RSH) is a rare cause of acute abdomen. We present a case series of patients seen at Wanganui Hospital, North Island, New Zealand.

**Methods.** A retrospective survey of patients developing RSH over a 2-year period (from 2002 to 2004) in our hospital was carried out.

**Results.** Seven patients were identified with RSH (male:female ratio=6:1, age range=16–80 years). Six of the RSH were spontaneous and four out of these six were on anticoagulant therapy post-acute coronary event. Each presented with acute abdomen and all were missed on initial evaluation. Two were diagnosed initially as bowel obstruction, one as acute diverticulitis, one as incarcerated hernia, one as an ovarian mass, and another as non-specific abdominal pain. One patient had traumatic RSH with peritonitis secondary to accompanying jejunal perforation. The ultrasound pick-up rate was 50% of but computed tomography (CT) abdomen was 100% diagnostic. Five (70%) had a significant fall in haematocrit, requiring blood transfusion. All settled on conservative management, with one requiring admission to intensive care.

**Conclusion.** Clinical diagnosis of RSH is unreliable. CT imaging is the procedure of choice and should be promptly carried out especially in those on anticoagulant therapy for early diagnosis and proper management.

With the more frequent use of anticoagulant therapy, especially the low molecular weight heparins (LMWH), the hazards of anticoagulation are also increasingly seen. Rectus sheath haematoma is one such well-recognised complication. It can, however, occur in settings without anticoagulation and is often missed on initial evaluation of the patient because of its rare incidence. It is mostly reported in literature as isolated case reports. We describe a case series of such patients.

**Methods**

A 2-year audit (from 2002 to 2004) of all cases diagnosed with RSH in our hospital was carried out. At times, the teams looking after such patients were directly contacted if more information was needed. The CT and ultrasound reports were requested and discussed with the reporting radiologist.

**Results**

Seven patients (male:female ratio=1:6, age range=16–80 years) with RSH were reported over the 2-year period in our hospital. Their details are summarised in Table 1, and described on a case-by-case basis.
### Table 1. Details of patients with rectus sheath haematoma (RSH) at Wanganui Hospital

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>On anticoag.</th>
<th>Initial diagnosis</th>
<th>U/S result</th>
<th>CT result</th>
<th>Transfusion requirement</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>F</td>
<td>LMWH/Warfarin</td>
<td>Small bowel Obstruction</td>
<td>Suggestive of RSH</td>
<td>Diagnostic of RSH</td>
<td>Yes</td>
<td>Conservative</td>
</tr>
<tr>
<td>58</td>
<td>F</td>
<td>LMWH/Warfarin</td>
<td>Ovarian neoplasm</td>
<td>Suggestive of RSH</td>
<td>Diagnostic of RSH</td>
<td>No</td>
<td>Conservative</td>
</tr>
<tr>
<td>75</td>
<td>M</td>
<td>LMWH/Aspirin</td>
<td>Incarcerated hernia</td>
<td>Diagnostic of RSH</td>
<td>Diagnostic of RSH</td>
<td>Yes</td>
<td>Conservative</td>
</tr>
<tr>
<td>72</td>
<td>F</td>
<td>LMWH/Aspirin</td>
<td>Acute Diverticulitis</td>
<td>Inconclusive</td>
<td>Diagnostic of RSH</td>
<td>Yes</td>
<td>Conservative</td>
</tr>
<tr>
<td>67</td>
<td>F</td>
<td>No anticoag.</td>
<td>Non-specific abdo. pain</td>
<td>Inconclusive</td>
<td>Diagnostic of RSH</td>
<td>Yes</td>
<td>Conservative</td>
</tr>
<tr>
<td>16</td>
<td>F</td>
<td>No anticoag.</td>
<td>Peritonitis</td>
<td>Not done</td>
<td>Diagnostic of RSH</td>
<td>Yes</td>
<td>Conservative</td>
</tr>
<tr>
<td>32</td>
<td>F</td>
<td>No anticoag.</td>
<td>Small bowel obstruction</td>
<td>Inconclusive</td>
<td>Diagnostic of RSH</td>
<td>No</td>
<td>Conservative</td>
</tr>
</tbody>
</table>

F=female; M=male; LMWH=low molecular weight heparin; anticoag.=anticoagulant therapy; abdo.=abdominal; U/S=ultra sonography; CT=computed tomography
Case 1
An 80-year-old woman was admitted as an emergency with sudden onset palpitations and shortness of breath. She had fast atrial fibrillation with congestive heart failure. She was started on intravenous amiodarone and subcutaneous clexane and put on telemetry. Warfarin was introduced later for long-term anticoagulation. Six days after admission she complained of distended painful abdomen, nausea, and constipation. Her abdomen was diffusely tender with a swelling in left lower quadrant. Her blood pressure had dropped to 100/70 mmHg from previously higher levels. Abdominal X-rays revealed dilated small bowel loops with fluid levels. She was treated initially as a case of sub-acute small-bowel obstruction.

Later, ultrasound followed by CT abdomen showed a large rectus sheath haematoma. Her haemoglobin had dropped to 80 from 120 mg/dL. The international normalized ratio (INR) was within therapeutic levels. Anticoagulant therapy was stopped and she was treated with vitamin K, fresh frozen plasma, and a blood transfusion. She improved with conservative management.

Case 2
A 58-year-old woman was seen in the surgical outpatient’s clinic for consideration of chemo-radiotherapy. She was referred from another hospital where she had had modified radical mastectomy a couple of months earlier for grade two ductal carcinoma of the right breast. Her postoperative course had been complicated by pulmonary embolism for which she was started on warfarin after initially receiving LMWH. Presently she had pelvic pain requiring regular analgesia, and difficulty in passing stools. CT pelvis showed a large soft tissue left pelvic mass, with marked rim enhancement in post-contrast study (Figure 1).

Figure 1. Post-contrast image demonstrates two large loculated rectus sheath haematomas, with haematocrit level in the superficial one
A repeat scan, 3 weeks later, showed no change in the size of the mass. Both the radiological and gynaecological opinion was that it is a primary ovarian neoplasm (either a serous or mucinous cyst adenoma or adenocarcinoma). Later, however, review of her initial CT films from the referring hospital showed that she had developed a rectus sheath haematoma during her anticoagulant therapy and the present pelvic mass was consistent with this haematoma.

**Case 3**

A 75-year-old man with previous history of bowel obstruction secondary to adhesions was admitted through the Emergency Department after collapsing with severe central chest pain. He was diagnosed as an acute non ST elevation myocardial infarction. He was anticoagulated with LMWH and started on aspirin and a beta blocker. Two days after admission he developed severe left-sided abdominal pain and constipation. He was passing flatus and was diffusely tender in the abdomen but more on the left side. He had developed a hard tender lump in his left lower abdomen. He was initially considered to have an incarcerated hernia or large bowel obstruction. Abdominal ultrasound, and later a CT scan, showed a large left rectus sheath haematoma (Figure 2). Anticoagulation and aspirin was stopped. He was given blood transfusion and analgesia, and he gradually improved with conservative management.

Figure 2. A left rectus sheath haematoma is illustrated as an elliptical hypodense lesion

**Case 4**

A 72-year-old woman, with a background history of congestive cardiac failure and diabetes, was admitted with acute anterior myocardial infarction. She received
streptokinase and was then started on aspirin and LMWH. Later she developed acute abdominal pain with tenderness in the left iliac fossa. Plain abdominal X-rays and abdominal ultrasound were inconclusive. Blood tests showed mild leucocytosis. She was seen by the surgical team and considered to have acute diverticulitis. She continued to have severe pain and tenderness over the next few days and her haemoglobin level dropped. A CT abdomen at that time showed rectus sheath haematoma. Aspirin and LMWH were stopped and the haematoma was managed conservatively with ice packs, analgesia, and fluid resuscitation. Blood transfusion was not required as there was no drop in serum haemoglobin. One week after admission, she suddenly collapsed and died on the ward with new ECG changes consistent with re-infarction. There was no evidence clinically or on lab tests that she had a re-bleed in the rectus sheath.

**Case 5**

A 67-year-old woman, with background history of diabetes and hypertension, presented with chest and upper abdominal pain. She was diagnosed and treated as a herpes zoster infection case. Three weeks later she suddenly developed a painful and tender lump in the right upper quadrant. Her haemoglobin level dropped so she needed a transfusion. She was seen by the medical team, and a preliminary examination (including plain abdominal X-rays) was inconclusive. Ultrasound abdomen revealed a diffuse echogenic area in rectus muscle. CT scan confirmed the diagnosis of a spontaneous large rectus sheath haematoma. The patient was not on any anticoagulants and her coagulation profile was normal. She responded to conservative treatment.

**Case 6**

A 16-year-old girl, involved in a motor vehicle accident, was admitted through Emergency with diffuse abdominal pain and back pain. Clinically she had features of peritonitis and spinal fracture. CT abdomen and spine showed a fracture of the upper lumbar spine and a bilateral tear of rectus abdominus with haematoma (contained within the rectus sheath). There was also free fluid in peritoneal cavity. Laparotomy showed jejunal perforation treated with suturing and primary anastomosis. The spinal fracture was treated with internal fixation. Her traumatic rectus sheath haematoma settled on conservative management.

**Case 7**

A 32-year-old woman had an ileostomy after resection of gangrenous small bowel secondary to adhesions. The adhesion had developed after her previous laparotomy for appendectomy. She presented with pain in right iliac fossa for about 10 days. She was seen by the surgical team and initially diagnosed and treated as a case of subacute small bowel obstruction. As the preliminary investigations were inconclusive she had exploration of the ileostomy wound which did not show any pathology. She continued to have the pain and felt unwell. CT abdomen later revealed an infected rectus sheath haematoma. It settled on conservative management. The haematoma was most likely due to injury to the inferior epigastric vessels at the site of ileostomy. She had not received anticoagulation prior to surgery.
Discussion

Rectus sheath haematoma is an unusual cause of acute abdominal pain. It can be traumatic or spontaneous. In one series of patients having ultrasound for abdominal pain, 1.8% had RSH. It is more common in Caucasians, females, and in the fifth decade of life. Apart from anticoagulation therapy, which is a well-known risk factor, other predisposing factors include trauma, coughing, straining, laparoscopy, pregnancy, and accidental intramuscular injection of heparin. Four of our seven patients (58%) were on anticoagulant therapy; two were also receiving aspirin and one had received thrombolysis (streptokinase) earlier in the day. In one patient, the haematoma developed after a motor vehicle accident and in another it was spontaneous with no history of trauma or anticoagulation. We are unable to account for the high number of patients who developed RSH on anticoagulation—all were receiving LMWH in therapeutic doses after the acute coronary event, with one also receiving concomitant warfarin treatment.

RSH is caused by the rupture of epigastric vessels and most commonly involves the lower quadrants. Overall mortality is reported to be about 4% but is believed to be higher in the subgroup on anticoagulant therapy and those with significant comorbidity. The single mortality in our series (case 4) was secondary to early reinfarction, unrelated to the RSH.

RSH characteristically presents with an acute onset of severe abdominal pain, worse on movement. Depending on its size, it may cause haemodynamic instability, constitutional symptoms, or symptoms secondary to compression of underlying organs. Abdominal examination usually shows a tender mass, but at times it may not be palpable as the haematoma is deep to the rectus muscle. In our series, only half of the patients had a visible or palpable lump. A positive Carnett’s sign or Fothergill sign may aid in the diagnosis. Because of its rare incidence, it is often initially misdiagnosed. In our series, none of the cases were correctly diagnosed initially. It has been reported to be mistaken for acute diverticulitis, acute splenic disease, strangulated ovarian mass, acute appendicitis, strangulated hernia, or a pelvic mass.

Plain abdominal X-rays are unhelpful. Ultrasound is the usual first-line investigation with a reported sensitivity of about 85–96%, but at times it can be misleading; in our series, its sensitivity was much lower (50%). We think the main role of ultrasound is in the follow-up of RSH patients, after the diagnosis is established by CT imaging which is the investigation of choice in acute cases. CT imaging was 100% diagnostic in our cases which is consistent with the reported literature. CT also helps to rule out other abdominal pathology. In sub-acute cases, magnetic resonance imaging (MRI) may be required for definitive diagnosis.

All our patients were treated conservatively with bed rest, analgesia, ice packs, and haematoma compression. One required intensive care admission. Five of them (70%) dropped their haemoglobin significantly, necessitating blood transfusion. One patient (who was on warfarin) had reversal of anticoagulation with vitamin K, and another patient (who was on aspirin) received platelet transfusion.

Depending on local expertise, life-threatening haematomas that are not responding to conservative management may either need surgical evacuation with ligation of the bleeding vessels or Gelfoam® (Pharmacia & Upjohn) embolisation.
Conclusion

RSH may not be easy to differentiate from other causes of acute abdomen on clinical grounds alone. Early diagnosis by CT imaging is crucial in management, especially in those cases secondary to anticoagulant therapy. Most of these cases settle on conservative management.

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Self-setting apparatus for intercepting and automatically rejecting contaminated rainwater

This extract comes from the New Zealand Medical Journal 1905, Volume 4 (15), p17

The well-framed and comprehensive Public Health Act of 1900 has placed New Zealand (potentially, at least) in the forefront in regard to State sanitation. Many of the provisions of this Act are so drastic, so resolute in interfering with the liberty of the individual where it is inimical to the well-being of the general community, that strong resistance was naturally to be expected. That there has not been such resistance, unless from the irresponsible faddist, whose small and irritable brain can never distinguish between liberty and license, is largely due to the wise and tactful way in which this Act has been administered by the Chief Officer of Health; and no doubt also to the evolution of a sanitary conscience amongst the people themselves.

Even in outlying and isolated districts concessions are being made to sanitary science. In one case which came under my observation a six-years accumulation in a back yard of cow, horse, and fowl manure was hurriedly covered over with numerous dray-loads of shingle in view of a sanitary visitation from the Local Board of Health. Superficial sanitation of this sort is, of course, useless – in fact, for worse; the filth is being retained as permanent source of infection without being visible to external notice.

The existence of pathogenic diseases (such as filth ophthalmia) in this and adjoining households is not therefore a matter for surprise. “Knowledge comes, but wisdom lingers”; and even where sanitary axioms have percolated into isolated communities there is still wanting the wisdom to make practical application of these axioms.

By J St. C. Gunn, M.B., C.M., F.R.M.S., London
A Big Sack

A 25-year-old male presents after abdominal trauma. An anteroposterior (AP) pelvic radiograph (Figure 1) was performed.

Figure 1

Question:

What does it show, in particular the arrowed structure?
Answer

Figure 1 shows a pneumoscrotum. This is a general term which implies the presence of gas around the scrotum. There are three routes by which air comes to reside in the scrotum. The first, and most common, is subcutaneous or retroperitoneal air can dissect down the dartos lining of the scrotal cord into the scrotal wall. Second, local gas production due to an infection may cause pneumoscrotum. Third, and more rarely, intraperitoneal gas can move down a patent processus vaginalis into the tunica vaginalis around the testis, to cause a pneumatocele.

This patient was noted to have intraperitoneal gas and soft tissue gas, as evident in Figure 1, which demonstrates a combination of two of the described mechanisms.

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Reference:

Hospital hazards

An important paper has reported upon hospital acquired intravascular cannula-associated *Staphylococcus aureus* bacteremia (CASAB). 276 patients with CASAB were identified as part of a prospective study of *S. aureus* bacteraemia conducted in six hospitals in New Zealand. The mortality rate was 9%. Relapses occurred in both peripheral and central cannula cases. However, the authors report that prolonged treatment is not necessary, and more than 14 days treatment is excessive for most patients who respond promptly to cannula removal and antibiotic treatment.

An accompanying editorial elaborates on the topic and concludes with some very sound advice. “Many of these infections can be prevented by careful attention to hand hygiene, skin antisepsis, regular inspection of the i.v., rapid removal of cannulae that are phlebitic or are not required, and replacement of peripheral i.v. cannulae within 72 h of insertion.”

*Internal Medicine Journal 2005;35:315–8 and 319–30*

Calcium, vitamin D, and fracture of the hip

Dietary supplementation with calcium and vitamin D is widely used to reduce the risk of fractures in older people. Is it effective? Apparently not.

A recently reported randomised trial involving over 3000 women aged 70 years and over found no evidence that calcium and vitamin D supplementation reduces the risk of clinical fractures in women with one or more risk factors. The risk factors, other than age, were low bodyweight (<58 kg), any previous fracture, maternal history of hip fracture, smoker, and poor or fair health. The dietary supplements were a daily dose of 1000 mg calcium with 800 IU of vitamin D. Treated and control patients were all given an information leaflet on the prevention of falls. Who said that good journals won’t publish negative trials?

*BMJ 2005;330:1003–6*

Nurses on the move

The King’s Fund, an independent health thinktank in the UK, has recently reported that the UK National Health Service (NHS) is heading for a staffing crisis as overseas nurses prepare to quit Britain for better-paid jobs in the US. Over the past four years 20,000 Filipino nurses registered to work in Britain. Apparently more than 60% of this ethnic group were considering taking up posts in other countries.

The survey report also indicated that more than 50% of nurses from Australia and New Zealand, and 40% from South Africa, were also considering a move to another country. It would be useful if the other countries were the Phillipines, Australia, New Zealand, and South Africa (as they too are short of nurses).

*Guardian Weekly, 27 May–2 June 2005, p9*
Class troubles

Aspirin, a cyclooxygenase-1 (COX-1) inhibitor, is widely used to prevent platelet aggregation and thus diminish adverse cardiovascular effects.

On the other hand, COX-2 inhibitors lack the antiplatelet effects of aspirin and inhibit the production of prostacyclin. Both of these features favour a prothrombotic state. So it is not surprising that these agents might have an increased cardiovascular risk associated with their use. And they do. Three papers in a recent NEJM illustrate this point. One reports a dose-related increase in death from cardiovascular causes, myocardial infarction, stroke, or heart failure in the celecoxib colorectal neoplasia prevention trial. Another, similarly showed that among patients with a history of colorectal adenomas, the use of rofecoxib was associated with an increased cardiovascular risk. And in the third, the use of parecoxib and valdecoxib after cardiac surgery was associated with an increased incidence of cardiovascular events.

Four COX-2 inhibitors—all showing increased cardiovascular risk—a class effect. The take home message is clear.


Surface fucosylation!?

Have you ever wondered how we tolerate the presence of billions of bacteria in the gut without mounting an inflammatory response?

The private life of Bacteroides, apparently the most common bacterial genus found in the human intestine, has been studied in some depth by researchers in Boston. They have shown that these organisms decorate their capsular polysaccharides and surface glycoproteins with L-fucose. L-Fucose is abundant on the surface of intestinal epithelial cells, and Bacteroides stimulates intestinal epithelial cells to express fucosylated molecules. This molecular mimicry allows Bacteroides to be tolerated by the host.

Additionally, a Bacteroides mutant deficient in the ability to cover its surface with L-fucose is defective in colonizing the mammalian intestine. Presumably the symbionts on our other epithelial surfaces have similar tactics?

Science 2005;307:1689 and 1778–81
PHARMAC and tobacco control in New Zealand: two licensed funded options are already available (with responses by Holt et al and the Editor)

Context

Shaun Holt and colleagues have recently written about PHARMAC and bupropion, citing this as an example of the “adverse effect PHARMAC has on the health of New Zealanders through restricting the availability of medications.”

However, it is difficult to reconcile this argument with the fact that there are already two licensed fully-funded and effective treatment options for smoking cessation—nortriptyline and nicotine replacement therapy (patches and gum).

Nortriptyline is an effective treatment that is available already

The benefits of nortriptyline were alerted to the Journal as far back as July 2002, noting the results of a recent Cochrane review on the effectiveness of both bupropion and nortriptyline. The Cochrane review concluded that nortriptyline and bupropion both had a small effect on cessation. The National Health Committee’s (NHC) revised smoking cessation guidelines of May 2002 supported nortriptyline as a viable alternative. Nortriptyline has been licensed for smoking cessation treatment since April 2003, fully-funded on the NZ Pharmaceutical Schedule.

The backgrounder to the NHC guidelines summarised that there was evidence for the effectiveness of nortriptyline either alone or in combination with NRT, assigning a grade of “I” for the quality of that evidence.

We don’t think that the perceived absence of “A” recommendations for nortriptyline in smoking cessation in some now-dated international guidelines is a problem, for the following reasons:

• The key reason that nortriptyline was not assigned an “A” evidence grading in the US guidelines (June 2000) was because it had not been registered by the FDA for smoking cessation at the time the guidelines were published. That is no longer the case. The US guidelines were restricted to evidence up to 1 January 1999, and any concerns over potential side effects may have been superseded by the publication in 2001 of the Cochrane review. The US guidelines stated that “nortriptyline is an efficacious smoking cessation treatment.”

• Again, the 2000 HEA guidelines for the UK (cited by Holt et al as confining “A” grade recommendations to bupropion) predated the 2001 Cochrane review. Given the HEA guideline’s predisposition to Cochrane reviews as the key evidence source, we are sure they would now be advocating nortriptyline as well; as such they are out-of-date.

• The other relevant guidelines for the UK were those of the Royal College of Physicians (2000). These noted that nortriptyline was the other antidepressant
that appeared to increase cessation (alongside bupropion), noting that bupropion was the only non-nicotine smoking cessation therapy marketed in the US at the time (http://www.rcplondon.ac.uk/pubs/books/nicotine/7-management.htm).

The Cochrane review was substantially updated in July 2004, detailing now six RCTs for nortriptyline smoking cessation. Four more RCTs for nortriptyline smoking cessation \(^{9–12}\) have been published since the two trials\(^{13,14}\) used by the original Cochrane review of 2001. The updated Cochrane review states that overall nortriptyline doubles the odds of smoking cessation, as does bupropion.\(^3\)

**Nortriptyline is licensed for smoking cessation**

Regarding any past “off-label” prescribing of nortriptyline for non-approved indications (Section 25 of the Medicines Act), the background information to the NHC guidelines specifically addressed this issue, stating that “In the case of nortriptyline, there is good evidence to support its use in smoking cessation and considerable evidence from its use as an antidepressant about its safety.” The letter in the *Journal*\(^2\) claimed that Medsafe had advised that if there was a Cochrane review supporting nortriptyline’s use then there was little risk in practitioners prescribing it.

Nortriptyline was registered in New Zealand for smoking cessation within 11 months of the updated guidelines’ publication.

**No mention of the Cochrane review, nor the material in the New Zealand guidelines about nortriptyline**

Having advised the authors of many of these points by email, we were surprised that Holt and colleagues made no direct mention of the Cochrane review, nor the material in the New Zealand guidelines about nortriptyline.

**Cost effectiveness**

We are not aware of the evidence behind the statement that bupropion is “more cost-effective than the majority of treatments currently funded by PHARMAC.” The only head-to-head clinical trial that we are aware of (cited in recent updates to the Cochrane review) did not show a significant difference between the two drugs for this indication. It is difficult to see how spending some $316 extra per course for arguably no extra benefit becomes “more cost-effective”.

Bupropion costs 25 times that of a 12-week course of nortriptyline. Funding bupropion would have meant not funding other almost certainly more cost-effective options. This would have lost the health gains that have happened from spending that money on those medicines, when there would likely be no health gains from bupropion over nortriptyline.

**Comment**

We are very aware of the burden of tobacco-related illness, and that bupropion is a useful adjunct to nicotine replacement therapy. As is nortriptyline. We appreciate the authors’ efforts to improve smoking cessation in Maori through using bupropion,\(^{15}\) although expense to patients may needlessly be a problem. Since the NHC guidelines were published in May 2002, prescriptions for nortriptyline have risen by 60%, hence suggesting perhaps 27,800 courses of nortriptyline for smoking cessation.
PHARMAC is still waiting for the supplier of bupropion to respond to our request for further evidence, so there has never been a formal decision not to fund the drug. Not actively funding bupropion is consistent with Government’s legislative requirement that PHARMAC get the best health outcomes from within the funding provided—where bupropion is overpriced when compared to the alternative. The evidence for nortriptyline is good. Having nortriptyline available is entirely consistent with a Ministry of Health that is committed to smoking cessation and the health of disadvantaged groups in New Zealand.

Conclusion

When there are two similarly efficacious treatments available, responsible clinical practice suggests we use the less expensive. Perversely, by siphoning funds from other better potential investments, funding bupropion would have adversely affected the health of New Zealanders by restricting the availability of those medicines.

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Conflict of interest: Scott Metcalfe is externally contracted to work with PHARMAC for public health advice.

References:


Bupropion and PHARMAC revisited: response by Holt et al

The letter from PHARMAC (above) responding to our manuscript entitled PHARMAC and tobacco control in New Zealand: Government policy up in smoke\(^1\) provides a concerning insight into its modus operandi. These concerns include:

- PHARMAC appears to be either unaware of Government policy or does not feel obliged to follow Government policy. In particular, PHARMAC has not provided any substantive justification as to why it has ignored the Ministry of Health’s five-year plan for tobacco control,\(^2\) in particular to give substantial weight to interventions for which there is strong scientific evidence of effectiveness, and to those which give benefit to large proportions of the community, and to maximise the benefits of targeted interventions (people with the greatest health needs such as Maori and low income New Zealanders) and minimise potential adverse effects.

- PHARMAC appears to be prepared to make statements that are simply incorrect. For example, PHARMAC states that it is not aware of the evidence behind the statement that bupropion is more cost-effective than the majority of treatments currently funded by PHARMAC, yet the National Health Committee Guidelines for Smoking Cessation\(^3\) (referenced in the PHARMAC letter) states that smoking cessation interventions cost less than US$1,000 per life year saved, whereas a comparison cost estimate for the treatment of moderate hypertension and drug therapy for hyperlipidaemia are approximately US$10,000 and US$60,000 per life year saved respectively. In addition, we understand that in 2001 PHARMAC was provided with a comprehensive cost-effectiveness analysis of bupropion by the manufacturer which showed that for bupropion the cost per life year saved ($1,540) was similar to that of nicotine replacement therapy ($1,570) but considerably less than that for the use of other common treatments such as hypertension treated with ACE inhibitor or calcium antagonist ($1,815 to
$213,893), statins ($11,667), and oestrogen for postmenopausal women ($13,611 to $162,040).

- PHARMAC appears to consider medications which have different pharmacological effects and different side-effect profiles as equivalent for the purpose of funding. This flawed approach appears to have become a key feature of PHARMAC’s practice. This consideration is relevant to the comparison between bupropion (an ‘atypical’ antidepressant with both dopaminergic and adrenergic actions) and nortriptyline (a tricyclic antidepressant). As mentioned in the National Health Committee Guidelines, there are more concerns about the potential side effects of nortriptyline than with the first-line medications NRT and bupropion.² There will be some patients in whom bupropion is the preferred agent compared with nortriptyline just as there will be other patients in whom nortriptyline will be the preferred agent due to the differing side effect profiles.

- PHARMAC appears to be ‘selective’ in its review of the scientific evidence base on which its decisions are made. For example, PHARMAC does not mention that the Cochrane review⁴ states that there have been 24 trials of bupropion, yet only 6 trials of nortriptyline for smoking cessation. Indeed, the efficacy and safety of bupropion has been demonstrated in a comprehensive Phase 3 programme, with studies in populations such as Maori and African-Americans, and in patients with COPD and ischaemic heart disease.⁵–⁸ In contrast, the 6 studies involving nortriptyline have been limited by their small size, inadequate outcome measures, inappropriate data collection and confounding factors.⁹–¹⁵ In the only published study which has compared bupropion with nortriptyline, the smoking cessation rate at 6 months was 16% with bupropion and 9.6% with nortriptyline, representing a non-statistically significant relative benefit reduction with bupropion of 71% compared with nortriptyline.⁹ As this study was inadequately powered to determine equivalence between the two agents, it does not provide scientific evidence on which to claim that nortriptyline is equivalent to bupropion. Given the importance of smoking cessation in New Zealand (and in Maori in particular), we contend that people should be entitled to treatments which have been proven to be effective and safe in the different populations in which it would be prescribed.

- PHARMAC appears to use delay in the approval of funding as a method to restrict the availability of medications. In this case, bupropion was registered and approved for use in May 2000, and endorsed by the National Health Committee in 2002, despite nortriptyline only becoming available for registered use in 2003.

- PHARMAC appears to have an unfortunate tendency to personally criticise those who advocate the availability of proven medications which are recommended internationally but not available or restricted for use in New Zealand. We refer to its statement “Having advised the authors of many of these points by email we were surprised that Holt and colleagues made no direct mention of the Cochrane review, nor the material in the New Zealand guidelines about nortriptyline”. The information contained in the Cochrane Review⁴ and the New Zealand Guidelines³ was reviewed in our report and the PHARMAC emails were cursory at best.

We stand by our conclusion that the decision by PHARMAC not to fund bupropion is directly contrary to Government policy and is inconsistent with evidence-based
medicine and with United States and United Kingdom guidelines. The PHARMAC decision seriously questions the Ministry of Health’s commitment to smoking cessation and the health of disadvantaged groups in New Zealand, particularly Maori. We concur with the view of Dr Pippa McKay that a review of PHARMAC and its operations is well overdue.16

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Competing interests: S Holt and R Beasley coauthored the study of the efficacy of bupropion in Maori.9 P3 Research and the Medical Research Institute of New Zealand have received research funding from AstraZeneca, Aventis-Pharma, GlaxoSmithKline, Novartis, and Roche. S Holt and R Beasley have received honoraria for speaking at symposia from AstraZeneca, GlaxoSmithKline, and Novartis. S Holt is a Specialist Advisor to the Asthma & Respiratory Foundation of New Zealand. R Beasley is a member of WHO/NHLBI GINA Assembly, the International Association of Asthmology, and the Research Council of the World Allergy Organization. M Harwood is a member of National Maori Ethical Review Working Group (Ministry of Health), the Executive Committee Te ORA (Maori Medical Practitioners Association), and is a coauthor of Hauora IV; Maori Health Statistics 1991 to 2001 (Eru Pomare Maori Health Research Centre).

References:


NZMJ Editor’s response

The recent article on bupropion is the first in a series of peer-reviewed articles on the influence of PHARMAC on drug prescribing in New Zealand. PHARMAC is very important for healthcare in New Zealand. It has a key role in helping New Zealand get the most from its very limited healthcare dollar. It is, however, important that quality of the spending is looked at as well as the quantity of drug acquired.

PHARMAC has a very large budget. Unlike the Drug Industry, it is accountable to the New Zealand public. The series that we are running explores the value we are getting for the money spent.

PHARMAC does not like criticism, if the intimidating phone calls and numerous emails I have been receiving from them are anything to go by. No doubt in the next few months they will try and undermine what we are doing. I expect a lot of correspondence from them (e.g. two letters to the editor in this edition) however it also helps to create a lively and interesting debate.

Frank A Frizelle
Editor, NZMJ
PHARMAC responds to the RMI’s editorial

Like Dr Ben Gray, in his letter in the 20 May 2005 issue of the Journal (http://www.nzma.org.nz/journal/118-1215/1481), we were surprised to see the Chair of the Researched Medicines Industry Association of New Zealand (RMI) given three editorial pages to give her views on PHARMAC.

We do remember Dr MacKay’s item in the September 1999 Medical Association Newsletter that she alludes to, and we responded to her criticisms at that time. We also remember that our response was modified without acknowledgement or our knowledge.

Dr MacKay portrays an image of a paternalistic and altruistic pharmaceutical industry. The reality is that pharmaceutical companies are businesses that have a primary responsibility to their shareholders.

A number of Dr MacKay’s assertions are simply wrong; indeed a number of them have been responded to before in the Journal by PHARMAC1–4 and others.5

PHARMAC is a Crown Entity charged with securing “for eligible people in need of pharmaceuticals, the best health outcomes that are reasonably achievable from pharmaceutical treatment and from within the amount of funding provided” (Section 47(a) New Zealand Public Health And Disability Act 2000). This objective will always create a tension when we are contracting with businesses that (quite rationally) seek to maximise profit.

It is not practical to reply in detail to Dr MacKay’s lengthy (1888 word) editorial in the Letters column of your journal. However, if we are invited we will submit an editorial.

Peter Moodie (Medical Director) and Wayne McNee (Chief Executive)

PHARMAC
Wellington

(NZMJ Note: For the NZMJ Editor’s and NZMA Chairman’s stances on this issue, refer to http://www.nzma.org.nz/journal/118-1215/1481 and http://www.nzma.org.nz/journal/118-1216/1510 respectively.)

References:

Quality use of medicines activities: QSUM and PHARMAC


We thank Dr Crombie for drawing attention to the emergence of the Quality and Safe Use of Medicines Group (QSUM) group late in 2003, and PHARMAC’s later decision to participate in QSUM rather than pursue its own strategies. Our study was intended to capture base-line QUM activity in New Zealand hospitals in 2000–2002, and attitudes to centralised coordination. At the time of the research, PHARMAC’s intentions were to coordinate hospital QUM activities from late 2002. At the time the paper was submitted (late 2003), QSUM was recently formed but PHARMAC’s intentions to participate in their work were unclear.

We are pleased to see the emergence of the QSUM group and look forward to hearing of its activities in future. Support and guidance for local activity can only benefit quality and safe use of medicines in New Zealand

June Tordoff
Lecturer, School of Pharmacy, University of Otago, Dunedin

Pauline Norris
Senior Lecturer, School of Pharmacy, University of Otago, Dunedin

Julia Kennedy
Associate Professor, School of Pharmacy, University College Cork (UCC), Cork, Republic of Ireland

David Reith
Senior Lecturer, Dunedin School of Medicine, University of Otago, Dunedin
Response to Maubach and Hoek’s paper on GP attitudes to DTCA

We read with interest the paper by Maubach and Hoek in the 20 May 2005 issue of the NZMJ (New Zealand general practitioners’ views on direct-to-consumer advertising of prescription medicines: a qualitative analysis. URL: http://www.nzma.org.nz/journal/118-1215/1461).

Whilst the data are clearly presented in the Results and Discussion sections, the data seem to have been glossed over in the Abstract which leaves the reader with the impression that there isn’t much of a problem with DTCA. This highlights the pitfalls of drawing quantitative sounding conclusions from qualitative studies.

The paper reports a study involving 20 GPs. The authors make a number of assertions based on numerical manipulations of a very small sample that are at odds with the qualitative method chosen. Such data should be interpreted with caution. That said, there is remarkable agreement in the views of the 20 interviewees to those of the 1600 who wrote to us with their opinions in 2002. It appears from the results presented here that the current NZ permissive approach to DTCA is not supported (in absolute numbers it appears that only 2 interviewees wanted the status quo with the rest not favouring any version of the status quo). The results could equally have been summarised as: “The majority of respondents did not support continuation of DTCA under either a self or government regulatory model.”

The FDA survey, which the authors selectively quote in Table 1, is not a peer-reviewed publication. The data are referenced to a PowerPoint presentation taken from the web of ‘preliminary findings’ that has not been updated since posting over 2 years ago. Some of the figures in the table have been misquoted. A more up-to-date and peer-reviewed journal article paints a much less rosy picture of the current DTCA situation in the US and concludes “Most(US) physicians have negative views of DTC pharmaceutical advertising.”

To compound matters, the authors have chosen to compare the FDA figures with numbers from our report (part of an exercise designed to gather evidence from GPs of the effects of DTCA on their practice and gauge whether there was support for advocacy on behalf of general practice at large for banning of DTCA). With 1600 rapid responses from GPs, there clearly was such support. We publicly state (again!) that we have never claimed this to be research. Only those with a vested interest have claimed it as such in order to discredit and obscure the fact that the view of academic general practice (and indeed academic public health) is that DTCA is of net public health harm. This position has been endorsed by the RNZCGP, NZMA, NZNO, College of Midwives and most other overseas professional bodies and is consistent with the views of the current Minister of Health who has publicly stated her intention to ban the practice.

At the end of the day, surveys of complex issues are at best a snapshot of (usually) partially informed groups and are often of questionable generalisability. In contrast, the ongoing and mounting evidence of repeated partial and misinformation served up
to regulators, physicians and the public by the pharmaceutical industry is persuasive: Neither self nor central regulation is likely to be effective in protecting consumers interests against misleading DTCA.

Finally, we agree with the authors’ last comment and those of Bob Erlich the editor of the industries own DTC magazine. When (not if) DTCA of prescription medicines is banned in New Zealand (and probably severely curtailed in the US), the pharmaceutical and marketing industries will only have themselves to blame.

Les Toop
Professor

Dee Richards
Senior Lecturer

Tony Dowell
Professor

Departments of General Practice, Christchurch and Wellington Schools of Medicine, University of Otago

References:


Maubach and Hoek’s response

Toop and his colleagues have made several points about the paper we coauthored on DTCA and we respond to these as follows:

Reporting and interpretation of the research findings

Toop et al suggest that the presentation of numeric findings is unusual in qualitative research. This is true, but we included the counts for each response option to address a referee’s suggestion that we provide a more detailed context for our interpretation of participants’ comments. Similarly, we had originally quoted more widely from the FDA survey, but reduced the number of comparisons made between this and Toop et al’s findings to address a referee’s concern that the wording of the statements varied. The purpose of our work was not to gather evidence for one position or another, but to explore whether a range of views on DTCA existed and, if so, to examine what these
were. We were careful to note the limitations of our qualitative data and did not seek to generalise our findings to a wider population.

We agree that our research participants did not support the current approach to DTC regulation, and we noted, in both the abstract and the body of our paper, that they had serious concerns about DTC. However, we repeat that these findings cannot be interpreted as support for a ban on DTC (just as they cannot be construed as support for the continuation of DTC in the forms tested). Respondents’ ambivalence over whether DTCA should be banned suggests alternative regulatory options require evaluation to assess whether these might address the concerns participants raised. Ultimately, this is an empirical question that neither Toop et al’s “evidence” nor our research has addressed.

**FDA data and US context**

Toop et al criticise the FDA research we drew upon as not being peer-reviewed, implying that this would guarantee the quality of the research. We note that the value of the academic peer-review process has been widely debated\(^1,2\) and that the FDA has a number of rigorous research controls, including full stakeholder consultation at each stage of the research design process. The FDA research team includes highly qualified social scientists who work closely with academic researchers, and who regularly present their work at industry and academic fora. The FDA survey achieved a similar response rate to Toop et al’s survey, the questionnaire was disinterested in its tone and content, and the results were carefully reported. As far as we can ascertain, the FDA survey was a properly conducted research exercise; we believe the resulting data are more valid and reliable than the “evidence” upon which Toop et al rely.

We were careful to acknowledge that the debate over DTC includes a range of views. At one end of the continuum are those who, like Toop et al, are opposed to this advertising, and we provided an overview of the main criticisms they level at DTC. However, there is also evidence that some doctors believe DTC brings benefits\(^3,4\) and, in the interests of presenting a balanced perspective, we aimed to explore these divergent opinions in greater detail. We note that, although Robinson et al concluded doctors had generally negative perceptions of DTC, their respondents also reported some beneficial aspects to this advertising.\(^5\) Again, these studies highlight the complex opinions on DTC that doctors hold, and reinforce the need for policy makers to undertake a careful and critical evaluation of all the available research before making regulatory decisions.\(^6\)

**Policy implications**

Whether DTC will be banned in New Zealand, as Toop et al confidently predict, remains to be seen and would appear to depend on the outcome of the up-coming election. Just as Ms King has stated her opposition to DTC, Dr Brash has stated his opposition to moves that would restrict prescription medicine advertising.\(^7\)

Unfortunately, the decision on how to regulate DTC seems unlikely to be informed by dispassionate research and may instead be based on “evidence” mustered by groups with a stated interest in the outcome. We believe it is a great pity that Toop et al chose to gather “evidence” rather than conduct research when they undertook their survey. They clearly have excellent links with the GP community and, had a thoughtfully designed questionnaire and an unbiased covering letter been fielded, policy makers
could have had robust data on which to base a decision that has important implications for both public health and marketing regulation.

Janet Hoek
Professor

Ninya Maubach
Tutor and Research Associate

Department of Marketing, Massey University, Palmerston North

References:


Animal and vegetable fats, and Coronary Heart Disease

In the 1970s, Money and Rammell as well as Money, Rammell, and Carthew investigated the possibility that animal fats were getting the blame for coronary heart disease (CHD) for the wrong reason; for their saturation, rather than for them being poor (in comparison with vegetable oils and fats) sources of antioxidants.

In 1996, Scott reviewed the literature of this area and stated that “the cardiovascular disease benefit has been suggested from antioxidant vitamins preventing the conversion of LDL (low density lipoprotein) cholesterol into more atherogenic forms.”

In recent years’ correspondence (to several authorities), Money has stated that the pulmonary artery’s virtual freedom from atherosclerosis appears to be a useful, but unnoticed, clue to the understanding of CHD. It carries venous blood, so is not subjected to much oxidant stress.

If this freedom is significant re CHD, it could likely mean that our dietary anti/pro-oxidant balance is not optimum, especially for young people, where CHD begins.

Don FL Money
Retired Veterinary Scientist
Upper Hutt, Wellington

(Retired as Superintendent, Nutritional Diseases, Animal Health Division, Wallaceville Research Centre, Upper Hutt.)

References:

Postnatal exercise: the mother’s wellbeing is important too

Without doubt, regular physical activity, and more specifically regular exercise, provides most people with both physical and mental health benefits. For some, a regular pattern of exercise becomes an ingrained habit, however interruptions such as lifestyle transitions can distract the most well-intentioned and most avid exercisers.

Physical activity surveys suggest that women aged between 25–34 years have the lowest activity levels of all New Zealand adults. Family responsibilities have been postulated to account for decreased physical activity levels in this age bracket, with mothers shown to be less active than women without children. As a period of biological, psychological, behavioural, and social change, the transition into motherhood is dramatic and undoubtedly impacts on a woman’s desire, commitment, and ability to resume or maintain exercise regimes.

There has been a gradual acceptance that exercise is beneficial for women during any part of the reproductive process. Benefits are particularly apparent for those women exercising postpartum, where exercise has been found to improve cardiovascular fitness, contribute to weight loss, and prevent long-term weight retention. Koltyn and Schultes demonstrated that a single bout of exercise reduced depression, state anxiety, total mood disturbance, and increased vigour in postpartum mothers. Stress relieving exercise may facilitate postpartum adaptation and help prevent or manage postnatal depression, a disorder that afflicts 10–15% of all mothers.

Although standardised guidelines for exercise during pregnancy have been advanced (Table 1); in the absence of strong research support, these guidelines are arguably prudent rather than proven. Recommendations for mothers resuming exercise postpartum, similarly lack a research basis. The American College of Obstetricians and Gynecologists (ACOG) provide non-specific recommendations and advocate for new mothers to gradually return to exercise when they are ‘physically and medically safe’ (p10). As situations, tolerances, and exercise responses vary, the ACOG asserts that exercise should be individualised. There appear to have been no published studies documenting adverse affects (in the absence of medical complications) as the result of a prompt resumption of exercise postnatally.

<table>
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<th>Year</th>
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| 1985 | Maximum heart rate = 140 bpm  
Maximum duration = 15 minutes  
Core temperature not to exceed 38°C | |
| 1994 | ‘Most women can exercise moderately to maintain cardio-respiratory and muscular fitness.’ | |
| 2002 | ‘In absence of complications 30 minutes or more of moderate exercise a day on most, if not all, days of the week is recommended.’ | |
Many women are genuinely eager to resume exercise soon after giving birth. For some, this transition is straightforward, while others struggle to resume their exercise habit. A recent study sought to understand this discrepancy by capturing personal experiences, and identifying exercise barriers of mothers attempting to resume exercise. Ten first-time mothers (3–15 months postpartum, who had been active prior to pregnancy) were interviewed.

The mothers perceived more barriers towards resuming exercise than they had encountered prior to pregnancy. Five main barrier groupings emerged from discussions with the mothers. These were intrapersonal (e.g. tiredness, low energy, low motivation, soreness and complications, low exercise tolerance, high expectations, and appearance concerns), interpersonal (ethic of care/sense of entitlement, domestic chores, unpredictable routines, organisational demands, the health and mood of their baby, and lack of partner support), sociocultural (lack of support from family, friends, and other mothers), physical environment (access to preferred exercise environment, available finances, and weather) and healthcare environment (lack of information, advice, or encouragement).

Elements of the latter theme are arguably key catalysts to inactivity. The mothers in the study tried to seek exercise information but had limited success, with few healthcare professionals providing exercise advice, guidance, encouragement, or support. Although it is not possible to generalise from this study, other researchers have noted that the mother’s long-term health and wellbeing tends to be a marginal component of postnatal healthcare. In response to a lack of information and encouragement, some mothers may remain uncertain, nervous, and perhaps discouraged from exercise. Mothers therefore may be left with the notion that compared to their babies’ health, their own health is of lesser importance.

Providing consistent and trustworthy postnatal exercise education, advice, and encouragement is the first step in assisting mothers to resume their exercise. As an outcome of the Jenkins’s study, an exercise brochure has been produced for local (Dunedin) mothers. The brochure details general postnatal exercise recommendations and the exercise benefits and barriers perceived by the first-time mothers within the present study. More importantly, the brochure provides examples of the strategies that mothers employed to overcome the most common barriers.

Health professionals should be concerned that mothers may be the most inactive sector of the New Zealand adult population. Given that mothers are often the primary caregivers, this can impact on child and family activity patterns. Programmes designed to reverse the trend towards child obesity and to increase child and family activity, should also consider the mother as role model. If we really want to make a difference, then information, education, and supporting infrastructures are required to ensure that this important sector of the population has the appropriate assistance to resume exercise.

Similarly, to ensure safety and appropriateness of exercise advice and guidance, individualised exercise programmes should be provided by trained health professionals.

Acknowledgements: We thank Sport Otago for funding the study, the Otago Plunket Society for providing advice and support, and the Dunedin City Council for assisting with the production of the brochure.
References:


Prenatal testing for aneuploidy in New Zealand: time for action

Background

Screening for aneuploidy and particularly Down Syndrome (Trisomy 21) is inevitably becoming part of early antenatal care due to increasing knowledge and expectations by women and the availability of methods of risk prediction. Since the first description of the association between low maternal serum alpha fetoprotein and fetal chromosomal abnormalities the possibility of detecting women at risk of having a baby with aneuploidy has become available. At present in New Zealand this is available in some centres by the ultrasound measurement of fetal nuchal translucency (NT) in the first trimester of pregnancy.

A system of maternal serum screening in the second trimester of pregnancy was developed, but some time ago funding was withdrawn and the patient is now required to pay $75.00 for the testing. The ultrasound scan on which the first trimester risk prediction is based is funded in part or full by the Health Benefits subsidy provided for early pregnancy scanning services. It is therefore a reasonable deduction for women to make that as funding is available, the funder must believe that the procedure is worth doing.

The funder and the Ministry of Health must then take some responsibility for the situation in New Zealand whereby women are using the result of the NT scan to decide on the advisability of further testing for aneuploidy in their fetus.

The further testing performed after nuchal translucency scanning usually involves invasive procedures such as amniocentesis or chorionic villus sampling. Both these tests, whilst being considered diagnostic do have their own risks including loss of the pregnancy.

Implications of current situation

Further screening prior to invasive diagnostic testing, such as first trimester maternal serum testing is either unavailable or, in the case of second trimester serum screening, has had Government funding withdrawn, thus creating a disincentive for patients and clinicians to use this approach. The fact that second trimester maternal serum screening is no longer funded is not only a disincentive for this type of testing but also implies that the Ministry of Health does not consider it to be a valuable part of antenatal care provision.

Evidence detailing the efficacy of an integrated approach to prenatal screening for trisomy 21 using a combination of ultrasound and biochemistry in the first and second trimesters, the so called “Integrated test” has been presented over 5 years ago. In the United Kingdom, the National Screening Committee has already commenced a process of introducing nationwide screening with defined targets both for programme outcomes in terms of detection rates and national coverage. An
Current evidence

The SURUSS trial\(^4\) has shown that for a 3% false positive rate, a test programme with ultrasound and first and second trimester biochemistry can achieve a detection rate for Trisomy 21 of 92%. This contrasts with a detection rate of 67% for ultrasound (NT) alone at the 3% false positive rate. Higher false positive rates such as 5% only increase the ultrasound detection rate to 73% but with an increase in invasive testing with its attendant risks of procedure related pregnancy loss. Of interest, offering second trimester maternal serum alone (as was formerly the case in New Zealand) achieved a detection rate of 77% for a 3% false positive rate. Combined first and second trimester serum testing which avoids the problems of having sufficient well trained sonographers available will achieve an 82% detection rate for a 3% false positive rate. It would seem that there is little evidence to support the use of nuchal translucency scanning alone as is the widespread practice in New Zealand at present. Other outcomes of nuchal translucency scanning such as determining accurate gestation or detecting obvious fetal anomalies fall outside the concepts of a screening programme for fetal chromosomal abnormality.

The current situation in New Zealand can be described as an ad hoc arrangement where individual women may avail themselves of screening but not within the framework of a properly designed screening programme and all that this involves. A screening programme as distinct from opportunistic testing, includes pre and post test counselling, quality assurance procedures around the actual testing and audit of the performance of the programme with changes as new knowledge becomes available. The purpose of such an approach would be to offer the best possible tests for the minimal harm to woman and fetus. This is a fundamental principle of any screening procedure.

There is a very real likelihood, based on data from SURUSS\(^4\) and FASTER (the First and Second Trimester Evaluation of Risk trial, presented in abstract form at the Society of Maternal-Fetal Medicine 24th Annual Clinical Meeting in the USA in 2004) that the current approaches here have led to a high invasive testing rate for a relatively low detection rate. This implies that more chromosomally normal pregnancies are being lost than is necessary for a barely acceptable detection rate. The principal reason for prenatal testing for aneuploidy in New Zealand remains maternal age. Maternal age related risk effectively just states the prevalence in the population. Using maternal age alone as the screen for aneuploidy has been shown to be an inefficient and indeed a crude form of screening leading to high numbers of invasive tests for low detection rates. This is not only because most women having babies are under the age of 35 years at delivery but also because at any age, most babies are likely to be normal. Experience in France evaluating the impact of antenatal screening showed that offering amniocentesis to women $\geq$38 years of age resulted in a detection rate of only 59.1% in that age group.\(^5\) At present on the data that is available from the cytogenetics services in New Zealand (personal communication, LabPlus, Auckland District Health Board) and the loss rates after invasive testing, it is apparent that using age and/or age combined with NT, more unaffected pregnancies are likely to be being lost that abnormal ones are being
detected. This must surely be an unsustainable and undesirable situation. The median age of the pregnant population and the demography of this population are changing and the demands for prenatal testing for aneuploidy will continue to increase. The problem of providing the best form of screening based on the best current evidence will remain and will require resolution.

There are a number of misconceptions that have been used to oppose an integrated first and second trimester approach including that women prefer the earliest screening possible irrespective of the likelihood that earlier testing may be “slightly” less efficient. In fact, for a detection rate of Trisomy 21 of 85%, the first trimester combined scan and blood has a false positive rate of 4.2% as opposed to the first and second trimester integrated test with a false positive rate 5 times lower at 0.9%.

Also, it is well recognised that around 20% of Trisomy 21 fetuses miscarry between the first and second trimesters and should all of these have been detected, then women would have had to go through a medical procedure when nature would have effected a spontaneous miscarriage. There is considerable evidence that at least in the first half of pregnancy, the decision to terminate a wanted but affected pregnancy is very traumatic regardless of gestation and it may be the doctors rather than the women who perceive advantages of ending the affected pregnancy as soon as possible. Even in the study by Wapner, only half of the women who elected to terminate the pregnancy did so before 16 weeks. Recent data also suggests that health care professionals place a higher value on earlier tests than pregnant women do.

The way forward

The two recent studies (SURUSS and FASTER) provide good evidence about the performances of a number of screening procedures and give us an opportunity to establish a system in New Zealand which would satisfy the prerequisites of a screening programme. The introduction of such a programme requires a commitment on the part of government in the first instance, not the least because equity of access is an important criterion of any programme. Other criteria require participation by caregivers including training in counselling and accreditation for the scanning and laboratory procedures. These latter criteria would be best met by a staged introduction of a programme with performance goals to be achieved over an agreed period of time.

Of greatest importance is the decision to commence a programme. There are many details which would require discussion and resolution but these are secondary to the commitment to move from the current unsatisfactory situation. For example, first and second trimester maternal serum testing has a higher detection rate of trisomy 21 than NT alone and could be introduced almost immediately. Once all sonography services participating in a future programme were accredited, a coordinated serum and ultrasound programme would be feasible with very high detection rates for low false positive rates and an achievable target of one case of trisomy 21 detected for every six amniocenteses (16%) examined by the cytogenetics laboratories. This would be a huge reduction on the current workloads where 1.2% of the amniotic fluids examined test positive when done after screening. The actual components of prenatal screening such as the inclusion of fetal nasal bone findings on ultrasound remain to be validated within a screening programme. Differing approaches to serum testing such as repeated measures screening can be decided upon based on current evidence once the programme is agreed in principle.
The need for action now

The screening for and detection of aneuploidy is a health issue. For many women, it is an important part of prenatal care. International evidence shows that the current New Zealand situation can be dramatically improved and at present it is probable more harm than good is being done. The key question is not when or why but how will New Zealand resolve this issue. In fact, the National Screening Unit in the Ministry of Health has an opportunity to develop a uniquely New Zealand solution which could be a model for elsewhere. Few countries actually have properly constructed screening programmes as opposed to screening testing. There should be few impediments to proceeding with this now. The test costs are modest and most of the personnel and the ultrasound services are in place already. There is little doubt from informal surveys conducted by the author that clinicians would welcome progress on the issue. It would be prudent for the Ministry of Health to act to limit any further potential adverse effects due to the lack of a programme. Failure to do so risks the further development of ad hoc testing lacking all the quality assurance and other vital features of a coordinated national screening programme.

Peter Stone
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Auckland

References:


Memories of Dr Verney Cable

I was interested to read Ron Easthope’s obituary of the late Verney Cable. Verney regularly chaired a Grand Round every Saturday morning at Wellington Hospital during the 1960s and the early 1970s. He added to the clinical presentations a piquancy that was all of his own, and bits of his wisdom and knowledge.

Morning tea was served after these sessions with Dr Cable, and, if one could be bothered going, (hardly a difficult task on a winter’s Saturday morning), one met many colleagues, both active and retired. During those years, several senior GPs around town were helping establish the Royal New Zealand College of General Practitioners. They did not press for better links between hospital medicine and general practice, and they never showed up at the Grand Rounds.

When Dr Cable went, the rounds were shifted to a mid-week slot where they lost a lot of their value, and the change of time and venue made it almost impossible for most GPs and many of the specialists, to attend.

Thinking of Dr Cable, I think of the disintegration of the profession that has occurred since he retired. No Saturday morning Grand Round, no monthly meetings of the Wellington Division, no Annual Ball, no paper edition of the Journal, weakened contacts between specialists and general practitioners. Instead we have a million dotcom addresses, most of them yielding nothing that we need to know.

With disintegration goes loss of control, and the Medical Council is now telling GPs that ambulance drivers, paramedics, their own staff, colleagues (with whom they may be in active competition), plus a few patients, will shortly be commenting on their fitness to practice medicine.

There is no forum left. A good Grand Round had enormous value. I read Dr Verney Cable’s obituary with sadness and regret, but I am glad to have known him.

Roger M Ridley-Smith
Khandallah, Wellington

Sexual Misconduct (05/125C)

Charge
A Complaints Assessment Committee (CAC) alleged Dr Boyd had been convicted of an offence punishable by imprisonment for a term of 3 months or longer, and that the circumstances of the offending reflected adversely on Dr Boyd’s fitness to practice medicine.

On 18 May 2004, Dr Boyd pleaded guilty in the Wellington District Court to the following offences:

- Two charges under s134(1) Crimes Act 1961 of having sexual intercourse with two girls aged between 12 and 16;
- Four charges under s 134(2)(a) Crimes Act 1961 of indecently assaulting girls aged between 12 and 16.

The Solicitor General successfully appealed to the Court of Appeal the original sentence of 2 years imprisonment, which was increased to a total of 3 years imprisonment.

Background
At the time of his offending Dr Boyd was a registered medical practitioner.

In February 2001 Dr Boyd made email contact with a 14 year old girl. Shortly after this he met her and on the 16 February 2001 Dr Boyd had sexual intercourse with this victim. He continued to have a sexual relationship with her through 2001.

In March 2001, shortly after making contact through an internet chat room Dr Boyd met in person another victim and began a sexual relationship with her that lasted about 11 months. She told Dr Boyd she was 15 years old and he told her he was a doctor.

In April 2001 Dr Boyd met another 15 year old victim through the internet. He arranged to meet the girl at her home when her parents were not there. He fondled the girl’s breast and touched the outside of her genitalia. The victim described the assault as “unexpected and unwelcome”. In addition, Dr Boyd sent her an email attaching pictures of him holding his erect penis in his hand. He also sent a video clip of him masturbating.

On 2 September 2001 Dr Boyd met another of his victims through an internet chat room. He met her in person on only one occasion during which time he digitally penetrated the girl’s vagina. The 13 year old girl was frightened by this indecent assault.

In February 2002 Dr Boyd made contact with a 14 year old girl through the internet. He knew how old she was and he told her he was 25 years old and a doctor. She went with another girl to Dr Boyd’s apartment where Dr Boyd plied them with alcohol. Later that night a small party developed at his apartment during which he groped the
breast of this victim. A 15 year old male at the party intervened and prevented any continuation of the offending.

Dr Boyd notified the Tribunal in writing he accepted the charge.

**Finding**

The Tribunal had no hesitation in concluding Dr Boyd’s offending did reflect adversely on his fitness to practice medicine. The reasons for this conclusion were as follows:

- Dr Boyd’s behaviour was predatory.
- Dr Boyd traded on the fact he was a doctor.
- The offending was sustained.
- There was a significant age difference between Dr Boyd and his victims.
- His offending had a significant impact on his victims.

**Penalty**

The Tribunal was concerned that, notwithstanding his honesty in admitting his guilt, Dr Boyd did not appear to have displayed insight into his own emotional and possible psychological/psychiatric shortcomings. He rationalised his offending by referring to stresses external to him and did not show any appreciation of his own deficiencies.

The Tribunal found Dr Boyd’s behaviour was so far removed from the standards expected of a medical practitioner that his name must be removed from the register. In addition the Tribunal marked its disgust at his behaviour by formally censuring him.

The Tribunal made no order as to costs, due to Dr Boyd’s poor financial position.

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

Reference No: 05/125C.
Keith Graham Murray

Dr Keith Murray was well known for his talents as a doctor, a sportsman and more recently as a website designer. His death on April 4, at the age of 38, was met with disbelief and profound sadness among his family, vast circle of friends, and those who came to know him professionally over the years.

The hundreds who attended his funeral service paid tribute to a man who led a life characterised by academic and professional achievements, a passion for fun, friends, sport, adventure and travel, and who carried throughout his life an ability to touch people's hearts wherever he went.

Keith Murray and his sister Judy were brought up in Wormit, a small village near St Andrews in Scotland, the son of Graham and the late Gill Murray.

From a young age he celebrated a succession of academic and sporting achievements, and was envied by many for his dedication and determination in all that he undertook.

Fondly known as a "quiet achiever" for his gentle and modest manner, Keith drove himself equally hard at Madras College, St Andrews, and Aberdeen University, where he graduated with MB ChB in 1989. After graduation he began work in Inverness, then Stirling, before making the move Down Under to New Zealand in 1990. His love of the outdoors, nature, beauty, freedom, adventures and wild escapes meant that Murray quickly realised New Zealand was his new-found paradise.

Murray's first few years in New Zealand included hospital posts in Timaru, Christchurch and Hamilton. He returned to Christchurch in 1995 to complete training in general practice, followed by a Postgraduate Diploma in Sports Medicine. This combined his skills and clinical interests, and he went on to become a GP and business partner in Gloucester Sports Clinic. He next moved to Greymouth, where he worked as medical officer in the emergency department. During this time he studied towards a Diploma of Community Emergency Medicine.

Patients and colleagues alike talk of Murray's qualities: "professional, thorough, kind", "a good listener, excellent teacher", "a loved and respected colleague with a lovely gentle manner". Murray had only one critic, and sadly that was himself. Over the last few years, Murray developed a keen interest in computers and decided to launch himself in a different direction. With his usual tenacity and inherent desire to reach for the stars, he graduated with distinction with a Post Graduate Diploma in Health Informatics, then just last year completed a Diploma in Website Design. Murray's own website, http://www.mistyflip.co.nz is a visual feast, showcasing his talents as a sportsman, photographer, and a lover of life. Websites he designed for others reflected these talents, along with his enthusiasm for fun, friends and the outdoors.
Filmmaking was his last major achievement. The Dudes is a 24-minute windsurf movie which he made after his last annual trip with friends to Maui last year, making its premiere at Hokitika's Wet West Film Festival in January.

Murray is remembered by his friends and family for his smiling eyes and cheeky grin, inspirational dedication to life and overwhelming sincerity. As one friend said, "We have been enriched by his presence on this earth. He often amused us, sometimes baffled us, always warmed us." Murray is survived by his father Graham, of St Andrews, Scotland, and sister Judy, of Christchurch.

We are grateful to Bruce Rennie at The Press newspaper (Christchurch) for allowing us to reprint this obituary that appeared in their feature entitled “A talented all-rounder” on 21 May 2005. The photograph is from Keith’s website.
Allan Gordon Cumming

Gordon Cumming (CNZM, QSO, MBChB, FRCOG, FRANZCOG) was born in Dunedin. He was a distinguished and much-loved doctor, a leading citizen, and a wonderful family man and friend. He died recently aged 94.

Gordon was educated at Otago Boys’ High School; he graduated in Medicine from Otago University in 1933, and was a medallist in medicine and clinical medicine.

Gordon was a House Surgeon at Dunedin Hospital in 1934–5 and went to London where he studied Obstetrics and Gynaecology (O&G). His teachers included Victor Bonney, renowned for his speed operating; a feature of his pupil also. The size of Gordon’s surgical operating lists was phenomenal by today’s standards. He was awarded the MRCOG in 1939 and volunteered for the Navy in 1940.

Gordon married Molly Bellerby who have must have had a difficult time in war-time Britain, trying to travel to the various ports Gordon was sent to. Molly had equal skills to Gordon’s in managing what seemed an impossible workload. This was a very happy marriage.

Gordon was appointed to the Armed Merchant Cruiser Rawalpindi, but asked to be transferred to destroyers. The Rawalpindi was sunk by two German battle cruisers on 21/11/1940, and all but 38 of her crew died. He served on the Russian convoys with their notorious winter voyages close to the Arctic Circle; the ice-encrusted ships being in danger of capsize and sometimes losing more than half the number of ships to the German U-Boat and warship attacks.

Gordon then transferred to the Royal New Zealand Navy and served in the Pacific on the Cruiser Gambia with a crew of 900 men and three gynaecologists—the others being Pat Dunn of Auckland and Reg Hamlin who set up the Fistula Hospital in Addis Ababa, Ethiopia now run by his wife Catherine.

In 1946, he worked with Doris Gordon in Stratford before coming to Palmerston North in 1948 as its first O&G Specialist. Not easy pioneering when 2000 deliveries had occurred for many years to the considerable satisfaction of the present deliverers. These were the days of Surgeon General Practitioners and it was quite an experience doing a caesarean for a surgeon who thought he had done more caesareans than you.

Gordon’s remarkable manual skills and his calm tact soon had the speciality of O&G established and quite typically with excellent relationships. His own obstetric practice was very large. He said he delivered about 10,000 babies in a working lifetime.
Gordon’s sense of duty was remarkable, so much so, that his work seemed to be his joy; indeed, many patients were treated free of charge.

John North was Medical Superintendent at this time when clinical medicine was “king”. You could have virtually all you wanted. In retrospect there was, unlike today, not much to want, except training and good planning, which North and Cumming were very good at. John North eliminated tuberculosis in nurses by chest X-raying every admission.

Dr Algar Warren was appointed as a second specialist. I was a House Surgeon to Gordon, and later (in 1960) an obstetrician colleague. Paediatrician Donald Malcolm set up the first Neonatal Unit and was a close and highly valued colleague.

Gordon retired from Palmerston North Hospital in 1975. He was President of the Manawatu Division BMA, Member of the National Medical Services Advisory Committee, President NZ Obstetrical & Gynaecological Society, Council Member of Regional Council of RCOG , and attended the RCOG Council meeting in London, Member of Maternal Deaths Assessment Committee.

He was also a member of the Palmerston Hospital Board 1968-74, Chairman 1977 until 1989 and Initial Chairman of Manawatu–Wanganui Area Health Board. He was a member of the New Zealand Nursing Council for many years also. Altogether he served on 9 different national bodies.

Gordon had the curious experience of chairing the Area Health Board meetings in the room where he had previously delivered babies. His Board time was a time of great expansion for Palmerston North Hospital with massive building projects, his association with George Gordon as Secretary (CEO) was a most congenial.

Gordon’s caring for his patients was legendary. He had the extraordinary ability at night to know when he was wanted in the Obstetric Unit appearing often as the midwife walked to the phone, as I have witnessed myself. A patient who had a blood transfusion accident during surgery spent 3 months in hospital with endless complications—for the next 40 years, Gordon visited her and her husband regularly at home. When she was dying in Palmerston North Hospital 3 years ago he sat for hours at her bedside.

He was also much involved outside medicine. As Surgeon to the Manawatu Rugby Union he regularly attended games and many other organisations, including the Returned Services Association and Patron of Ex-Royal Navelmen’s Association. Every Anzac Dawn Service he would read the Lesson. He served on 11 different local organisations.

There are rare people, touched by real greatness, skilled, immensely hardworking, endlessly interested in people, on whom responsibility rests with graceful ease, such a man was Gordon Cumming.

Molly, his wife, died in 1985. Gordon is survived by 1 son and 2 daughters.

This obituary was written by Gordon Parry (a nephew) and John Crowley (an O&G colleague).
Brian Morrison Corkill

Brian Corkill died on 11 April 2005. His professional career was devoted to obstetrics & gynaecology and medical administration.

Brian was born in Wellington on 24 September 1924, the son of TF and AE Corkill. Dr TF Corkill was a Senior Physician at the Wellington Children’s Hospital and he also conducted a large obstetric practice.

Brian was appointed the Sims Black Travelling Professor in 1960 by the Royal College of Obstetricians and Gynaecologists in London.

The first 8 years of Brian’s education took place at Wellesley College and then followed 4 years at Scots College in Wellington. After leaving school, Brian spent 5 years in Dunedin studying Medicine while the sixth year of that training was at the Wellington Hospital. He graduated MB ChB in 1945 with Distinction in Medicine.

In 1946 and 1947, Brian was a Junior and Senior House Surgeon at Wellington Hospital and, after being awarded the Auckland Travelling Scholarship in Obstetrics and Gynaecology, he went to The Royal Women’s Hospital in Melbourne where he spent a year working as a Resident Medical Officer. The next step in the process of becoming a specialist in Obstetrics and Gynaecology was to go to Britain for further experience and to complete the required postgraduate diplomas. Brian initially worked in Belfast at The Royal Maternity Hospital and The Royal Victoria Hospital before transferring to The Norfolk and Norwich Hospital.

While in Britain, he completed the requirements for Membership of The Royal College of Obstetricians and Gynaecologists and the Fellowship of The Royal College of Surgeons of Edinburgh. After arriving back in New Zealand he became a Fellow of The Royal Australasian College of Surgeons. He was elected FRCOG in 1965 and became a Foundation Fellow of The Royal New Zealand College of Obstetricians and Gynaecologists in 1982.

On returning to Wellington, he commenced practice as an obstetrician and gynaecologist sharing rooms in the family home with his father. He was later appointed to the staff of Wellington Hospital in a part-time capacity, but in 1973 he elected to become a full-time hospital specialist, and this change of direction was in part due to his ambition to try to get the Wellington Hospital Board to improve the facilities for the provision of women’s health.

At this time, the inpatient obstetric & gynaecological services were housed in a building that The Department of Health had condemned some time previously. Before he became a full-time hospital specialist he was the part time Medical Superintendent of The Alexandra Maternity Home (1953–1957) and The Bethany Maternity Hospital (1954–1973).
For his services to Bethany, he became a Member of the Distinguished Service Order of the Salvation Army. He was also Head of the O+G Department at Wellington Hospital from 1970 to 1975.

After he left private practice, he became involved with the administration of Wellington Hospital. His two major achievements were helping [along with others] in establishing the Wellington School of Medicine and his advisory role in the planning of Wellington Women’s Hospital. Over this time he also had other duties put his way. These posts included: Acting Dean, Wellington School of Medicine; Assistant Dean, Wellington School of Medicine; Director of Medical Services, Wellington Hospital; Deputy Medical Superintendent in Chief, Wellington Hospital Board; Acting Medical Superintendent in Chief, Wellington Hospital Board; Medical Superintendent in Chief, Wellington Hospital Board, 1984–1988.


He also had various external appointments. In 1974, he was an examiner for the RCOG in London and in 1980 he was the external examiner at the Fiji School of Medicine. In 1972, he was a Visiting Lecturer at the Royal Women’s Hospital in Brisbane, and in 1978 he held a similar post at The Royal Hospital for Women in Sydney.

All of us who worked with or for Brian knew he could be fairly outspoken if things were not going to plan, but away from the hospital he was a much softer person. Brian set himself high standards and expected this of his colleagues. In his clinical practice as an obstetrician he was a great role model and mentor to his younger colleagues. Soon after Brian returned to Wellington in 1953 he met Philippa Tweed and then made the most important contract of his life—Philippa was a marvellous help mate and mother to their three children: Caroline is a General Practitioner in Invercargill, Michael is a Rheumatologist in Auckland, and Nigel is an Accountant in Hamilton.

One often thought of Brian as always working but he was a member of the Ruapehu Ski Club and he enjoyed holidays with his family—this meant Ruapehu in early spring, and Hawke’s Bay or Taupo in the summer. While he was in practice his golfing activities were limited but on retirement he played golf at least twice a week until his health began to fail. He did find retirement difficult initially.
He was always involved with his church and was for many years was on the vestry of the Wellington Cathedral and served on the finance committee of that church. He was a trustee of the Cathedral from 1982 to 1991.

Brian greatly improved the obstetrical and gynaecology services in Wellington and he served his community in an unequalled way as a medical administrator. He really did make a difference.

We are grateful to Graeme Sharp and Adrian Stewart for this obituary.
The Postgraduate Medical Committee in the University of Auckland invites applications for this study award established in 1986.

The Award has been set up to enable professional workers in the field of geriatrics (particularly those who are not usually eligible for study grants) to travel abroad to study geriatric care. In some instances, appropriate study within New Zealand may be funded.

Under the terms of the Award, the Postgraduate Medical Committee will provide a grant-in-aid, of $10,000, towards the cost of airfares and living expenses for the period of the study leave.

The Award is to be taken up between 1 October 2005 and 30 September 2006, although the exact timing is subject to negotiation.

**Closing date for applications: Monday, 22 August 2005**

Further details are available from:
Secretary of the Postgraduate Medical Committee, University of Auckland
Tel: (09) 373 7599 x 84468 (please leave a message),

or email: cthomas@ihug.co.nz
Swanson’s Family Practice Review (5th Edition)

Alfred F Tallia, Dennis A Cardone, David F Howarth, Kenneth H Ibsen (eds).
Published by Elsevier Mosby, 2005. ISBN 0323030009. Contains 686 pages and approximately 2100 practice questions. Price AUD$121.00

This is an extraordinary book which provides a problem-oriented approach to Family Medicine / General Practice. It is a comprehensive text, and is directed both towards continuing medical education, and the general practice candidate sitting PRIMEX examination. There are sections on Epidemiology and Public Health, Adult Medicine, Women’s Health, Maternity Care, Behavioural Science and Communication, Children and Adolescents, General Surgery and Surgical Subspecialties, Geriatric Medicine, and Emergency and Sports Medicine. It includes an illustrated review at the end that has high-quality photographs of common skin conditions.

I have not had the privilege of seeing earlier editions but this is a book that could find great use in the teaching of both undergraduates and postgraduate students, as well as practicing general practitioners requiring an update to their knowledge. It is completely case-based and each case is followed by a number of multi-choice questions. Answers and explanation is provided for each. While these are not referenced with respect to evidence base, suggestions for further reading are included with each chapter.

The book has an American approach to medicine and includes things such as “tips on passing the Board Examinations,” however it has a practical approach to the cases (most of which are very realistic) and the book is without doubt family medicine / general practice based.

I have no hesitation in recommending it to PRIMEX candidates and to GPs wanting a painless way to update their knowledge. I will use the review copy for that purpose!

Jim Reid
Head of General Practice
Dunedin School of Medicine, University of Otago
Dunedin
How to Treat Yearbook 2004


This is the inaugural edition of the Australian Doctor’s How to Treat Yearbook. Included are the “How to Treat” articles that have appeared in Australian Doctor over the past 12 months. It contains a host of straightforward and useful articles with direct application to general medical practice that on many occasions are outside the realm of a normal textbook. With the exception of one article—The unwell returned traveller—all are written by various specialists with comment at the end of each section by a General Practitioner. Some case studies are included. Articles include (among others) COPD and pulmonary rehabilitation, dyspepsia, lymphoedema, gout, offensive body odour, and facial pain. Altogether 49 separate articles are included.

The book is not indexed which makes it difficult to use as a reference. However there is a subject index, but it is very difficult to find specific information about specific subject matter without scanning through an applicable article.

There is a heavy pharmaceutical industry presence in the form of advertisements interspersed throughout the book—many for medications which are not available in New Zealand. This is a little disconcerting but reflects the funding basis of the publication. It does not however detract from the content.

This is a book that would be of benefit to those sitting PRIMEX and to GPs who want an “overall update” on a particular subject. It is not however a reference text.

Jim Reid
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