



## CONTENTS

### This Issue of the Journal

A summary of the original articles featured in this issue of the NZMJ

### Editorials

A brief history of resuscitation

*Michael Ardagh*

Multidisciplinary approach to breast disease—now is the time for specialist units in New Zealand

*Birgit Dijkstra*

### Original Articles

Knowledge and attitudes towards cardiopulmonary resuscitation in the community

*Peter Larsen, Jake Pearson, Duncan Galletly*

Frequent attenders at Christchurch Hospital's Emergency Department: a 4-year study of attendance patterns

*Debra Kennedy, Michael Ardagh*

Respiratory symptoms and lung function change in welders: are they associated with workplace exposures?

*David Fishwick, Lisa Bradshaw, Tania Slater, Andrew Curran, Neil Pearce*

Postoperative follow-up strategies for patients after potentially curative surgery for colorectal cancer at Christchurch Hospital

*Hayley Simpson, Mark Jeffery, Brigid Hickey, Frank Frizelle, Chris Frampton*

### Review Article

Energy settings for mono- and biphasic defibrillation: guideline of the New Zealand Resuscitation Council

*Duncan Galletly, Peter Larsen, Nigel Lever, Richard Aickin, Warren Smith*

### Case Report

Metastatic basal cell carcinoma

*Nilgun Ozbek, Deniz Meydan, Ethem Güneren, Saban Cakir, Bedri Kandemir*

### Viewpoint

Continuing Medical Education: What for? How? And how much is it worth?

*Jennifer Weller, Alistair Woodward*

## **100 Years Ago in the NZMJ**

The causation of insanity

## **Medical Image**

Ocular Ultrasound

## **Methuselah**

Selected excerpts from Methuselah

## **Letter**

The Health Amendment Act allowing access to clinical records

*Katharine Wallis*

## **Medicolegal**

Researched Medicines Industry (RMI) Code of Practice Complaints 2003

## **Notices**

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

Foundation Fellowship of the Australasian Chapter of Sexual Health Medicine

## **Book Review**

Clinical radiology made ridiculously simple (Hugue Ouellette, Patrice  
Tétreault)

*Tim Buckenham*



## **This Issue in the Journal**

### **Knowledge and attitudes towards cardiopulmonary resuscitation in the community**

P Larsen, J Pearson, D Galletly

We surveyed 400 adult subjects on their prior training, knowledge, and attitudes towards resuscitation. Although a high number (74%) had previously been taught cardiopulmonary resuscitation (CPR), and a majority of them expressed a positive attitude toward CPR, their CPR knowledge was very poor—with only 4% knowing an acceptable rate at which to perform chest compressions, and only 9% knowing the correct chest compressions-to-ventilations ratio for adult CPR. This study suggests that present community CPR educational strategies are of limited efficacy.

### **Frequent attenders at Christchurch Hospital's Emergency Department: a 4-year study of attendance patterns**

D Kennedy, M Ardagh

All emergency departments (EDs) have patients who attend frequently. This study followed one group of frequent attenders over 4 years and showed that, although the number of frequent attenders remains similar each year, it is not the same people making up this number. ED attendances must be monitored to identify new frequent attenders—and the formulation of management plans, aimed at improving the delivery of more appropriate care to these patients, should be ongoing.

### **Respiratory symptoms and lung function change in welders: are they associated with workplace exposures?**

D Fishwick, L Bradshaw, T Slater, A Curran, N Pearce

Welding exposures in industry remain common. In a group of New Zealand welders, we investigated whether previous measures of exposure to various metals influenced changes in their lung function. Respiratory symptoms were common. Over a quarter of welders complained of respiratory symptoms, and we noted an association between nickel exposure and symptoms, as well as aluminium exposure and a fall in lung function across the working shift. This study highlights the importance of reducing potentially harmful workplace exposures.

### **Postoperative follow-up strategies for patients after potentially curative surgery for colorectal cancer at Christchurch Hospital**

H Simpson, M Jeffery, B Hickey, F Frizelle, C Frampton

After surgery, patients with bowel cancer are usually followed up by their surgeons in order to detect recurrent cancer. The frequency of visits and the type of tests useful in detecting recurrence are controversial. This current study, carried out at Christchurch

Hospital, confirmed that there was significant variation in the tests carried out by surgeons. Of the patients who had a recurrence picked up by routine tests, very few went on to have a successful second operation for recurrent cancer.



## A brief history of resuscitation

Michael Ardagh

Three and a half millennia (3,500 years) ago, in Egypt, the inversion method of resuscitation was described, involving hanging the patient by the feet, applying chest pressure to assist expiration, and releasing pressure to assist inspiration.<sup>1</sup> Old Testament prophets described accounts of resuscitation using terms such as ‘crouching over’, ‘mouth-to-mouth’, ‘breathing into’, and ‘pressing upon’.<sup>2</sup>

Nearly one millennium ago, authors recommended ventilating via a bellows and a tube in the trachea. In 1767, the Dutch Humane Society published guidelines for resuscitation of victims of drowning, stating: ‘keep the victim warm, give mouth-to-mouth ventilation, and perform insufflation of smoke of burning tobacco into the rectum’.<sup>1</sup>

Various other accounts of resuscitation include the use of flogging, bouncing on a trotting horse, rolling over a barrel, and sporadic descriptions of divine intervention. Interposed among these accounts of resuscitation is found the evolution of current concepts.<sup>2</sup>

External chest compression was first described by John Howard in the 18<sup>th</sup> century. In the early 20<sup>th</sup> century, Crile described an experimental method in animals combining chest compression, artificial respiration, and parenteral adrenaline. In 1956, Zoll published his accounts of defibrillation. Safer and Elam formally presented mouth-to-mouth ventilation in 1958, and (in 1960) Kouwenhoven, Jude, and Knickerbocker<sup>3</sup> rediscovered external chest compression while testing defibrillation on an animal model of ventricular fibrillation. The paper describing this discovery (of chest compressions used to resuscitate) is widely attributed as being the usher of the modern era of cardiopulmonary resuscitation (CPR).

In the early 1960s, John F Kennedy proclaimed that America would put a man on the moon within 10 years and that ‘cardiopulmonary resuscitation would save thousands of hearts too good to die’.<sup>4</sup> Some might argue that neither of these has been achieved. However, over the next four decades, we saw CPR evolve into a very sophisticated and highly resourced response to victims of out-of-hospital cardiac arrest. Part of this evolution has been the promulgation of the ‘chain of survival’ concept<sup>5</sup>—promoting bystander CPR, early call to the ambulance service, early defibrillation, and early advanced care.

Now the various international committees, councils, and associations provide consensus guidelines through an international liaison committee; and the New Zealand Resuscitation Council (NZRC) is an active participant in this process. In New Zealand, the guidelines are published and taught by the NZRC in a multi-tiered fashion—aimed at resuscitators with levels of expertise ranging from lay person to specialist resuscitator.

In this issue of the Journal are papers considering each end of this continuum. Larson and colleagues<sup>6</sup> surveyed 400 adults about their knowledge and attitudes towards

resuscitation. The results of the study are encouraging—74% had been taught CPR at some time, 73% wanted to know more, and 63% said they would perform mouth-to-mouth resuscitation on a stranger. International comparisons suggest that the willingness to do ‘mouth-to-mouth’ range from 43% in Australia, 15% in the USA, to 3% in Japan.

However, despite the willingness of New Zealanders to do CPR, the authors found that their ability to do it well has room for improvement. John F Kennedy’s enthusiasm for CPR focused on saving hearts; however, the modern teaching of CPR emphasises a generic approach to a collapsed person. The authors point out that if people learn the assessment and management of the airway of a person with impaired consciousness, as well as the control of external bleeding after trauma, then there is potential to save many victims, including in other circumstances apart from cardiac arrest.

Further along the chain of survival is the paper from the NZRC Defibrillation Advisory Group, helping us accommodate new defibrillation technology.<sup>7</sup> History grows, and while we look back at how we got to this stage in cardiac arrest resuscitation, new things come upon us. Two of the more significant defibrillation developments in recent years have been the development of readily available automated external defibrillators (AEDs) and biphasic defibrillators. AEDs deliver defibrillating capacity without the need to interpret the cardiac rhythm. They are compact, easy to use, accurate, and are getting cheaper to buy. The distribution of this capacity to a variety of health professionals, and to lay resuscitators in some contexts (for example, at major sporting events, airports, etc—ie, so called ‘public access defibrillation’), is an issue we will entertain over the next few years.

Biphasic defibrillators, compared to traditional monophasic defibrillators, defibrillate at lower energy levels. However, not all biphasic defibrillators are the same, and the evidence base for the energy sequences to run through during resuscitation is not robust. Furthermore, the difference in machines and the uncertainty about energy doses has the capacity to confuse and distract operators during resuscitation. However, the advice from the NZRC Defibrillation Advisory Group is clearly explained and is sensibly simple, telling us that, no matter what defibrillator we come across, we do essentially the same thing.

In summary, the two papers (by Larson and colleagues) remind us that the work of the NZRC (in defining, promoting, and teaching what should be done in response to cardiac arrest) has been a particularly valuable addition to the recent history of resuscitation in New Zealand.

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## **Multidisciplinary approach to breast disease—now is the time for specialist units in New Zealand**

Birgit Dijkstra

Specialisation in general surgery has been evolving over the past few years.<sup>1</sup> Indeed, surgeons with a specialty interest have generally had extra training in their specialty—thereby improving their skills and increasing their depth of knowledge and experience. These surgeons (with special training and expertise) should treat patients with breast cancer because surgical sub-specialisation in common cancers improves the standard of care, and outcome. Indeed, many studies have shown the benefits (ie, improved patient outcome) of sub-specialisation—when patients are treated by surgeons with a specific interest.

For example, there are many international reports stating that patients treated in a Breast Unit have a better overall outcome. In a Breast Unit, although the primary care of breast cancer is the responsibility of surgeons, overall management also involves radiologists, pathologists, and oncologists (with a special interest and training in breast disease)—ie, a multidisciplinary approach.

The Royal Australasian College of Surgeons' *Guidelines for the Surgical Treatment of Breast Cancer* were published in March 1998.<sup>2</sup> These guidelines are evidence-based, and were developed by surgeons with a specific interest in breast cancer—in collaboration with representatives from pathology, radiology, oncology, plastic and reconstructive surgery, general practice, and breast care nursing. These guidelines state: 'Breast cancer is a complex disease requiring collaboration of a number of health disciplines for its diagnosis, treatment and follow-up. Multidisciplinary management can be best achieved by development of a multispecialist clinic'.

Indeed, there is evidence that a specialist breast clinic improves efficiency of diagnostic work-up.<sup>3</sup> There is also evidence from the United Kingdom (UK), which shows that a lack of a multidisciplinary approach to breast-cancer management adversely affects prognosis.<sup>4,5</sup>

The New Zealand Guidelines Group produced *Guidelines for the Surgical Management of Breast Cancer*, and these similarly state that 'multidisciplinary care involving a close liaison and consultation between appropriate medical practitioners is recommended and leads to more consistent and effective management'.<sup>6</sup>

In 1995, the British Association of Surgical Oncology (BASO) Breast Specialty Group published *Guidelines for Surgeons in the Management of Symptomatic Breast Disease in the United Kingdom*, which were revised in 1998.<sup>7</sup> These guidelines state: 'breast cancer care should be multidisciplinary, providing services as a team from the early detection through to the care of advanced disease' (these guidelines are based on several reports).

Furthermore, in the UK, the Chief Medical Officer published (in 1994) a policy framework for commissioning cancer services suggesting that the care of malignant disease be delivered through Cancer Centres and Cancer Units.<sup>8</sup>

In addition, the Clinical Outcomes Group (under the direction of Professor Haward) spelt out the evidence for delivering breast cancer services via specialised departments,<sup>9</sup> and the British Breast Group produced a report calling for breast cancer to be managed by surgeons, radiologists, pathologists, oncologists, and nurse specialists—each specialising in breast cancer and working as a team.<sup>10</sup> Other countries have also published similar guidelines, each with the same message.<sup>11</sup>

In the UK, the National Institute for Clinical Excellence (NICE) published an updated manual *Improving Outcomes in Breast Cancer* in August 2002. The key recommendations include ‘establishment of a multidisciplinary team’.

The surgeon plays a central role—both in the coordination of this multidisciplinary team, and in the establishment of the Breast Unit itself. Indeed, the patient’s first contact is likely to be with a surgeon who (with the radiologist and pathologist) establishes the diagnosis, and subsequently provides the initial treatment.

The core members of the multidisciplinary team include: breast surgeons, breast care nurses, radiologists, pathologists, oncologists (medical and radiation), plastic and reconstructive surgeons, physiotherapists, and administration staff—and they should all have close liaison with the patient’s general practitioner.

In this era of evidence-based medicine, it is concerning that many District Health Boards (DHB) in New Zealand still do not have multidisciplinary Breast Units—this includes some of the larger DHBs, which are tertiary referral centres. Benefits (of multidisciplinary Breast Units) not only include improved standard of care and clinical outcomes, but Breast Units are also cost-effective—with a reduction in outpatient visits, reduction in diagnostic and treatment delays, and improved efficiency (thus reducing duplication, and administration overheads).

In summary, now is the time to ensure breast cancer is treated optimally in New Zealand—with the establishment of Breast Units that include a multidisciplinary approach.

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## Knowledge and attitudes towards cardiopulmonary resuscitation in the community

Peter Larsen, Jake Pearson, and Duncan Galletly

### Abstract

**Aims** This study examined basic aspects of knowledge and attitudes towards resuscitation in a New Zealand urban community.

**Methods** Using a telephone survey, we questioned 400 subjects aged (over 17 years of age), on their prior training, knowledge, and attitudes towards resuscitation.

**Results** Seventy-four percent of subjects had previously been taught cardiopulmonary resuscitation (CPR). Of these, 12% had been taught during the previous year, and 63% over 5 years previously. Older subjects were less likely to have learnt CPR than younger subjects. Seventy-three percent of those surveyed desired to know more about resuscitation (than they currently did) and 70% thought that resuscitation should be a compulsory component of the New Zealand Driver's Licence test. Sixty-three percent said they would be willing to perform mouth-to-mouth ventilation on a stranger. CPR knowledge was poor, however, with only 4% knowing an acceptable rate at which to perform chest compressions, and only 9% knowing the correct compression-to-ventilations ratio for adult CPR. Overall knowledge was highest for those taught in the previous year, and for those persons aged between 26 and 45 years.

**Conclusions** Although attitudes of the community toward CPR are positive, theoretical knowledge relating to basic CPR is poor. This suggests that present community CPR educational strategies have limited efficacy.

The ability to deliver cardiopulmonary resuscitation, and apply basic aspects of first aid, are important community skills that have been shown to save lives.<sup>1-3</sup>

Survival from out-of-hospital cardiac arrest is dependant upon the rapid institution of bystander cardiopulmonary resuscitation (CPR), and the early arrival of advanced rescuers and equipment. Bystander CPR (comprising airway opening, rescue breathing, and external chest compression; combined with rapid call for ambulance response) improves survival rates from cardiac arrest by 2-3 fold.<sup>1</sup>

Injuries kill more than 1100 New Zealanders each year, and disable many more.<sup>2</sup> Given that many trauma victims die from the effects of haemorrhage and airway obstruction, it is likely, therefore, that basic emergency care skills applied by bystanders (such as control of external bleeding, positioning, and airway opening with cervical spine control) could save at least some of these lives.<sup>3</sup>

The importance of CPR and basic emergency care is recognised in New Zealand by the inclusion of these subjects in the school curriculum (albeit as an optional subject)<sup>4</sup>— and via workplace first aid training by the Department of Occupational Health and Safety.<sup>5</sup>

During 2002, more than 150,000 New Zealanders received formal CPR and first aid training (6, 7). But despite these numbers, and the associated cost, no research has explored the effectiveness of this training in achieving high levels of resuscitation knowledge or skill within the New Zealand community. Furthermore, no research has explored the attitudes of New Zealanders towards resuscitation.

This present study was conducted to examine knowledge and attitudes towards resuscitation in a New Zealand urban community.

## Methods

Over a 2-week period (in June 2002) we conducted a telephone survey of 400 people selected from the 2002 Wellington telephone directory. Telephone numbers were selected as the 10<sup>th</sup> non-commercial entry on consecutive pages of the directory. The first 400 consenting subjects over the age of 17 years were included in the study. It is possible that this method of sampling may have introduced some systematic form of bias. All calls were made between 6:00pm and 8:30pm.

After obtaining verbal informed consent, the telephone questionnaire was delivered by asking a series of 16 questions from a computer database program. These questions sought basic aspects of knowledge and attitudes towards CPR/ first aid, as well as demographic information. The subject's responses were entered directly onto relevant fields of the database. Repetition or clarification (of the question) was provided if the subject felt it was necessary for them to understand. The series of questions are listed in Table 1.

### Table 1. Telephone survey questions

(1) Have you ever learnt how to do CPR?

If yes:

(2) How long is it since you were last taught CPR?

(3) Where were you last taught CPR?

(4) What do the letters 'CPR' stand for?

(5) The letters ABC are sometimes used as an aid for remembering how to perform CPR. What do these letters stand for?

(6) CPR involves giving cycles of chest compressions and expired air breaths. At what rate, per minute, would you give the chest compressions for an adult subject?

(7) How many chest compressions, followed by how many breaths, would you give in each cycle for an adult subject?

(8) Is a cardiac arrest the same thing as a heart attack?

Do you think you would be willing to perform mouth-to-mouth rescue breathing on:

(9) A member of your family?

(10) A stranger?

(11) You pull a 5-year-old child from a home swimming pool. They do not respond, and are motionless. You realise you are alone. What would you do first?

(12) Do you think simple first aid and CPR knowledge should be compulsory in the Driver's Licence written test?

(13) Do you think that you would like to know more about CPR?

(14) What is your age?

- 18–25
- 26–35
- 36–45
- 46–65
- 66 or over

(15) What income bracket are you in?

- less than \$20,000
- \$20 000–\$30,000
- \$30 000–\$40,000
- \$40 000–\$60,000
- more than \$60,000

(16) Which ethnic group do you identify most with?

- NZ European
- Maori
- Cook Island Maori
- Samoan
- Nieuean
- Tongan
- Chinese
- Indian
- Other

As a simple index of the responder's knowledge, we calculated a total knowledge score from responses to knowledge questions 4, 5, 6, 7, 8, and 11, respectively. For each individual, we calculated a score between 0 and 6 as the sum of correct responses from the six questions. P values of less than 0.05 were considered statistically significant. No correction was made for multiple comparisons. Statistical analysis was performed using StatView® v5.0 software (SAS, Cary NC, USA.).

## Results

We rang 526 numbers by telephone to obtain 400 eligible, consenting study subjects. Fifty-nine percent of those surveyed were female; 10% were aged 18–25 years, 19% aged 26–35 years, 26% aged 36–45 years, 33% aged 46–65 years, and 12% aged 66 years and above. Eighty-six percent of those surveyed identified themselves as NZ Europeans, 4% as Maori, 2% as Chinese, 1% as Samoan, and 7% as other ethnic groups. Because of the small numbers included within specific ethnic groups, further analysis related to ethnicity was not conducted.

## **Prior learning of CPR**

296 subjects (74%) had been taught CPR. Of these subjects, 12% had been taught during the previous 12 months, 14% between 1–3 years previously, 11% between 3–5 years previously, and 63% over 5 years previously. Forty-four percent (of those persons taught) learnt CPR through their workplace, 20% at school, 8% through sports groups, and 28% elsewhere. There was no association between the proportion of subjects who had learnt CPR and gender, or income. However older subjects were less likely to have learnt CPR than younger subjects ( $p = 0.01$ , logistic regression).

## **Attitudes to CPR and first aid**

291 (73%) of surveyed subjects wished to know more about resuscitation than they currently did. The willingness to learn more (about resuscitation) increased with age ( $p = 0.03$ , logistic regression). Desire for further knowledge was not related to whether they had previously been taught resuscitation, but those who wished to learn more had lower mean knowledge scores than those who did not (mean [standard deviation] 1.73 [1.1] versus 2.5 [1.2],  $p = 0.03$ , unpaired t-test).

278 (70%) of surveyed subjects responded in the affirmative when asked whether they thought that CPR and first aid knowledge should be a compulsory component of the Driver's Licence test. This opinion was not related to age, gender, or income; or prior learning of CPR.

286 (72%) of surveyed subjects said they would be willing to perform mouth-to-mouth expired-air-breathing on a member of their family—with 252 (63%) willing to perform mouth-to-mouth on a stranger. These responses did not differ by age, gender, or income.

## **Knowledge of CPR**

**ABC:** Only one subject knew that in the context of resuscitation, ABC stood for airway, breathing, and circulation. One percent knew airway, 39% knew breathing, and 27% knew circulation.

**CPR:** 162 (41%) of surveyed subjects knew that 'CPR' stands for 'cardiopulmonary resuscitation'.

**Chest compression rate:** Over half the subjects (55%) were unable to give an answer to this question. Only 15 subjects (4%) gave a compression rate within the acceptable range of 80 to 120 chest compressions per minute. The mean compression rate for the 181 subjects who gave a numerical response was 45 per minute.

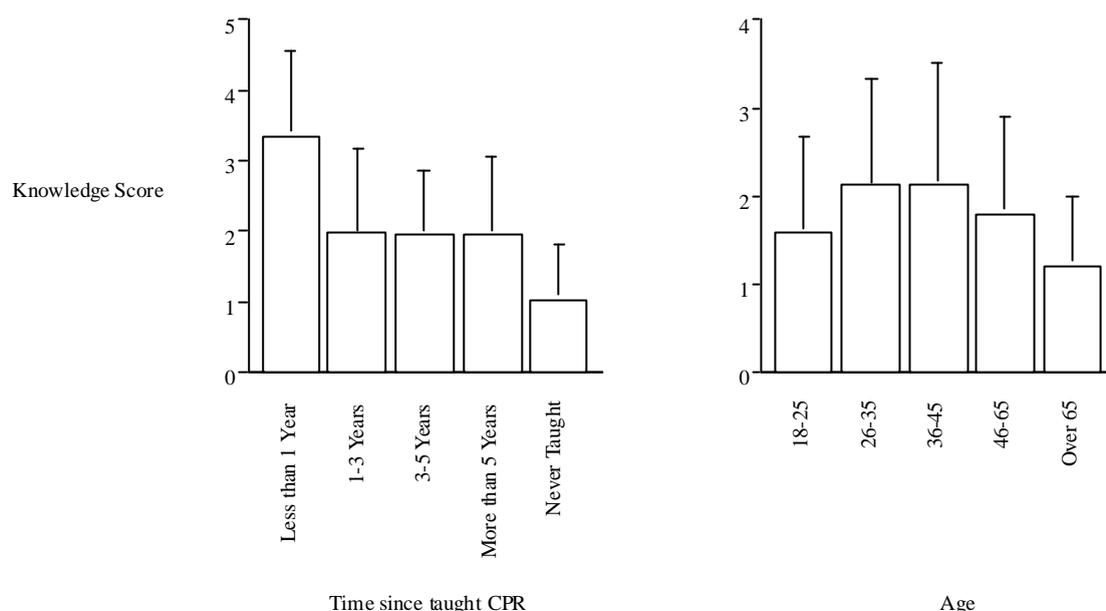
**Compression / Ventilation ratio:** 225 (56%) of surveyed subjects were unable to provide an answer for this question, and only 37 (9%) gave the correct (adult CPR) compressions-to-ventilations ratio—15(compressions):2(ventilations).

**Initial treatment of an unresponsive 5-year-old pulled from a swimming pool:** Sixty-six percent of subjects said that they would start CPR immediately (the correct response), 29% said they would first phone 111, and 5% said they would go to get someone else to help them.

**Heart Attack / Cardiac Arrest:** 163 (40%) of subjects thought a heart attack was the same as a cardiac arrest, with 177 (44%) correctly thinking the two were different. Remaining subjects were unsure of the difference.

The knowledge score derived from the sum of these six questions was correlated to other characteristics of the surveyed subjects (Figure 1).

**Figure 1. Mean knowledge scores of surveyed subjects (n = 400)**



Error bars indicate standard deviation, for time since last taught CPR, and age group in years. There was a significant relationship between time since CPR was taught and knowledge score ( $p = 0.0001$  logistic regression). Knowledge score differed with age ( $p = 0.01$ , ANOVA), and was greatest in those persons aged 26–35 years and 36–45 years.

There was a significant relationship between time (since CPR was taught) and knowledge scores ( $p = 0.0001$ , logistic regression). There was no gender difference in knowledge scores. There was a significant difference in knowledge score with age ( $p = 0.01$ , ANOVA [Figure 1])—with those aged 26–35 and 36–45 having significantly greater knowledge than those aged 18–25, 46–65, or over 65 years. Knowledge score differed with income ( $p = 0.05$  ANOVA, Figure 1), with the highest mean score for those in the \$40–\$60,000 income bracket and the lowest scores in the less than \$20,000, and \$20–\$30,000 income brackets. With age and income in an analysis of covariance, only age was significantly related to knowledge score ( $p = 0.01$ , ANOVA).

## Discussion

This study examined some basic aspects of knowledge and attitudes towards resuscitation in a New Zealand urban community. The results suggest that, while the attitudes towards resuscitation are generally positive, and a high proportion of the

community have received some level of resuscitation training, the level of resuscitation theoretical knowledge is low.

The principle aim of resuscitation training is to ensure that (in the event of a cardiac arrest), as many victims as possible receive effective CPR. Studies have consistently found that bystander CPR increases survival by 2–3 fold,<sup>1</sup> but rates of bystander CPR internationally remain low.<sup>8–10</sup> In Auckland, Crone gave a bystander CPR rate of 55% in 1991–1993,<sup>11</sup> but there are anecdotal reports showing that (since that time) the rate of bystander CPR has fallen to just under 50% (personal communication with St John, Northern Region 2002, and Wellington Free Ambulance, 2001).

Overseas studies addressing a bystander's willingness to perform mouth-to-mouth ventilation on a stranger have found large international variations. In Australia, 47% of people would perform rescue breathing on a stranger,<sup>10</sup> in the United States 15%,<sup>8</sup> and in Japan only 2–3%.<sup>9</sup>

Although the likelihood of contracting HIV from rescue breathing is extremely low (indeed there is no reported case), the American study subjects cited fear of contraction of HIV as the principal concern. In contrast, in the Japanese study, despite the inevitable outcome of untreated apnoea, fear of not being able to perform the skill correctly was cited as the principle barrier.

Clearly, therefore, false perceptions relating to CPR skills are an important factor that modifies a person's willingness to provide an important life saving skill. In this regard, the results from our current study are encouraging—as 63% reported willingness to perform rescue breathing on a stranger.

The perceived value of CPR / first aid knowledge by our study subjects is evident in the observation that 70% answered affirmatively when asked whether such knowledge should be a mandatory part of driver's licence testing. Given New Zealand's high mortality from road trauma, it is not unreasonable to expect that simple concepts of airway control, recovery positioning, stopping bleeding by direct compression, as well as safe scene management, could be included as part of the 'road code'.

The present study indicates that some basic aspects of CPR knowledge are poor. The most commonly used mnemonic to remind people of the initial actions required in treating a collapsed subject is 'ABC' (Airway, Breathing, Circulation). Surprisingly, despite its perceived value by the resuscitation training community, only one subject in the current study was able to recall what 'ABC' stood for, and fewer than one quarter of subjects recalled that B and C stood for breathing and circulation. When asked practical questions regarding the performance of CPR, less than 10% of subjects knew an acceptable compression rate, or the correct compression / ventilation ratio.

It was surprising that despite the importance of understanding the nature of a 'heart attack' and cardiac arrest, fewer than half the subjects believed these to be different. We would argue that if a basic concept such as this is so poorly understood, then, given the major importance of myocardial infarction mortality, it is difficult to understand how the general public is likely to fully appreciate the need for CPR, early access to defibrillation, and early activation of the emergency medical systems with myocardial infarction.

Studies have consistently shown poor retention of skills and knowledge following resuscitation training,<sup>3,12</sup> and consistent with this, knowledge scores were lower in those subjects trained more than 12 months previously. However our results also suggest that *any* previous training increased knowledge relative to untrained subjects.

It could be argued that in real-life emergencies, theoretical knowledge is less important than practical skill, and therefore the simple knowledge score used in this study could not indicate the true deterioration in a person's CPR abilities. However studies have also demonstrated that theoretical information (such as that asked in the current study) tends to be better retained (in memory) than practical resuscitation skills.<sup>12</sup> It is therefore quite possible that, had we been able to ask these people to physically perform CPR, performance could have deteriorated to an even greater extent than theoretical knowledge recall.

The majority of subjects indicated a desire to know more about resuscitation than they currently did, particularly in the older age groups. But despite this, the majority of subjects had not received any training for more than 5 years. This implies that either the desire to learn is not particularly strong in reality, or that the barriers to accessing information on how to perform resuscitation are too great.

In conclusion, the attitudes of the community toward CPR were positive, with an evident desire for greater resuscitation knowledge, and a high willingness to perform CPR. Despite this, specific aspects of knowledge relating to basic CPR was poor, thus indicating the limitation of present educational strategies to increase CPR knowledge within the community.

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## Frequent attenders at Christchurch Hospital's Emergency Department: a 4-year study of attendance patterns

Debra Kennedy and Michael Ardagh

### Abstract

**Aims** To describe the pattern of Emergency Department (ED) use by a cohort of adult frequent attenders over a 4-year period.

**Methods** A descriptive retrospective cohort study was performed of frequent attenders, identified as having 10 or more presentations to the ED, from 1 January 1997 to 31 December 1997. Diagnoses were assigned from hospital records. ED visits for the subsequent 3 years were recorded.

**Results** Seventy-seven patients were identified. They made 1127 (1.7%) of the 65,007 ED visits in 1997. Thirty-five patients (45%) had a medical problem, 22 (29%) had a psychiatric problem, and 20 (26%) had a diagnosis of substance abuse as the main reason for their ED visits. Twenty-seven patients (35%) had a diagnosis in more than one category.

Of the original 77 patients, 46 (60%) were frequent attenders only in the index year. In the final study year, 13 patients (17%) remained frequent attenders, 37 (48%) presented less than 10 times, and 27 (35%) made zero visits. Seven patients (9%) remained frequent attenders in all 4 years. Ten patients (13%) died. Five (6%) were identified as having left the area.

In the final year of the study, there were, by the same criteria, a total of 76 frequent attenders to the ED. Only 13 (17%) of these attenders were from the original cohort.

**Conclusion** Frequent attenders to the ED are not, as commonly assumed, a constant population. The majority of patients change their frequency of attendance over time. Those patients who remain high users have a higher incidence of psychiatric illness and substance abuse. To initiate management intervention, ED records must be regularly monitored to identify the constant stream of new frequent attenders.

Frequent attenders are common in Emergency Departments (EDs). They make a disproportionate number of visits<sup>1-3</sup> and a previous study at Christchurch Hospital suggests their numbers are increasing.<sup>4</sup> Despite this, there has been little research on this population, with neither a standardised term for them (they are variously described as regulars, repeaters, frequent flyers, and frequent attenders), nor a standardised definition (study definitions vary from more than 4 to 12 or more visits per year).<sup>2,5-9</sup>

Most previous studies have focused on snapshot demographics and agree that this population is a vulnerable one: predominantly male, single—with a high incidence of multiple medical problems, psychiatric illness, alcohol abuse, and poor social support networks.<sup>1,2,5,7</sup>

A commonly held belief is that those patients who are identified as frequent attenders persist with these habits over long periods of time, and that those patients who stop presenting must be using another ED or have died. Kne et al suggested that the frequent-attender population is not a constant one and that most frequent attenders do not remain so over time.<sup>9</sup> However, Kne's study is the only one to examine patterns of use over time, and it was undertaken in a large American city where patients might attend multiple EDs.

Our study aims to describe the pattern of ED-use among a cohort of frequent attenders to Christchurch Hospital's ED over a 4-year period.

## Methods

A descriptive retrospective cohort study was performed. For this study, a frequent attender was defined as a patient who presented 10 or more times in a designated 1-year period. Christchurch ED has a computer system that is able to identify patients attending the ED 10 or more times per year, and this was used to identify frequent attenders who presented between 1 January 1997 and 31 December 1997. Paediatric patients (aged less than 15 on 1 January 1997) were then excluded. This cohort was described as Year 1.

The ED at Christchurch Hospital has approximately 65,000 patient visits per year, and serves a population of 330,000.<sup>10</sup> Christchurch Hospital is a tertiary referral centre and, except for obstetrics and gynaecology, provides all major specialties on site. Its ED is the only ED in Christchurch City, and therefore all ED visits in the city are captured on the Christchurch ED computer system.

Demographic information was collected and a primary diagnosis was assigned to each patient from three broad categories: medical (eg, airways disease, ischaemic heart disease), psychiatric (including self harm), or substance abuse (including intoxication and complications—eg, multiple minor injuries or chronic pancreatitis). Diagnoses were assigned by a single investigator (DK)—using information from computer records, management plans, and case notes. When more than one illness was considered a significant factor in the reason for consultations, then entries were made in more than one category. This categorisation is consistent with the methodology used in previous studies.<sup>4,9</sup>

All ED visits made by this cohort were then documented for the next three consecutive years: Year 2 (January 1998 – December 1998), Year 3 (January 1999 – December 1999) and Year 4 (January 2000 – December 2000).

Patients were then classified on a yearly basis, either as: continued frequent attenders (10 or more visits), making less than 10 visits, making no visits, or deceased. The total number of frequent attenders for each of the study years was also obtained, together with their total number of attendances.

Efforts were made to establish the continued presence in Christchurch of patients in the cohort who were no longer frequenting the ED. This was done using computer records, which document any other contact with the hospital (including outpatient clinics, inpatient admissions, and admissions to hospitals outside of the Christchurch area). A documented contact with Christchurch Hospital (after the conclusion of the study period) was accepted as confirmation of a continued residence within the area. Patients who could not be accounted for in this way were followed up via telephone contact with their general practice. Continued contact with the GP after the conclusion of the study was accepted as confirmation of presence in Christchurch throughout the study period.

## Results

A total of 80 patients were identified; and of these, 3 paediatric patients were excluded, thus providing us with a cohort of 77 adults.

These 77 patients made a total of 1127 visits to the ED in the index year (making up 1.7% of the total ED presentations [65,007]).

The median age of the cohort was 41 years (with a range of 17 to 95 years), and there were 44 males (57%) and 33 females (43%).

The most common primary diagnosis was of a medical problem (45%)—followed by psychiatric (29%), and substance-related conditions (26%). Thirty-five percent of the patients had problems in more than one category. (See Table 1.)

**Table 1. Diagnoses assigned**

<b>Diagnoses</b>	<b>Primary</b>	<b>Secondary</b>
Medical	35 (45 %)	13 (17%)
Psychiatric	22 (29%)	10 (13%)
Substance/alcohol	20 (26%)	4 (5%)
<b>Total</b>	<b>77 (100%)</b>	<b>27 (35%)</b>

The total number of presentations made by the cohort fell substantially in each of the subsequent years, from 1127 to 384, as shown in Table 2.

**Table 2: Presentations to Christchurch Hospital's Emergency Department (ED)**

	<b>Year 1 (1997)</b>	<b>Year 2 (1998)</b>	<b>Year 3 (1999)</b>	<b>Year 4 (2000 )</b>
Number of cohort who attended ED	77 (100%)	70 (91%)	55 (71%)	50 (65%)
Total visits by cohort	1127	752	547	384
Median number of visits by cohort members (range)	12 (10–46)	8 (1–69)	5 (1–81)	4 (1–46)
Number of cohort making zero visits	0	7	22	27
Number of cohort making less than 10 visits (%)	0	43 (56)	37 (48)	37 (48)
Median number of visits made by patients who presented less than 10 times (range)		3.5 (1–9)	3 (1–9)	3 (1–9)
Number of cohort presenting as frequent attenders (10 or more visits) (%)	77 (100)	28 (36)	18 (23)	13 (17)
Median number of visits made by cohort presenting as frequent attenders (range)	12 (10–46)	16.5 (10- 69)	20 (10-81)	18 (10–46)
Total number of frequent attenders (10 or more visits) each year	80	72	85	76

The median number of visits made to ED by those who were still attending also declined each year from 12 to 4.

The numbers of patients from the cohort presenting as frequent attenders declined each year—from 77 in the index year, 28 (36%) in year 2, 18 (23%) in year 3, to 13 (17%) in year 4. Forty-six (60%) of the original 77 patients were defined as frequent attenders in the index year only, and not in any of the subsequent years. Thirteen (17%) of the original cohort that were still presenting as frequent attenders did, however, continue to present with great frequency, with a median of 18 (range 10–46) presentations in Year 4.

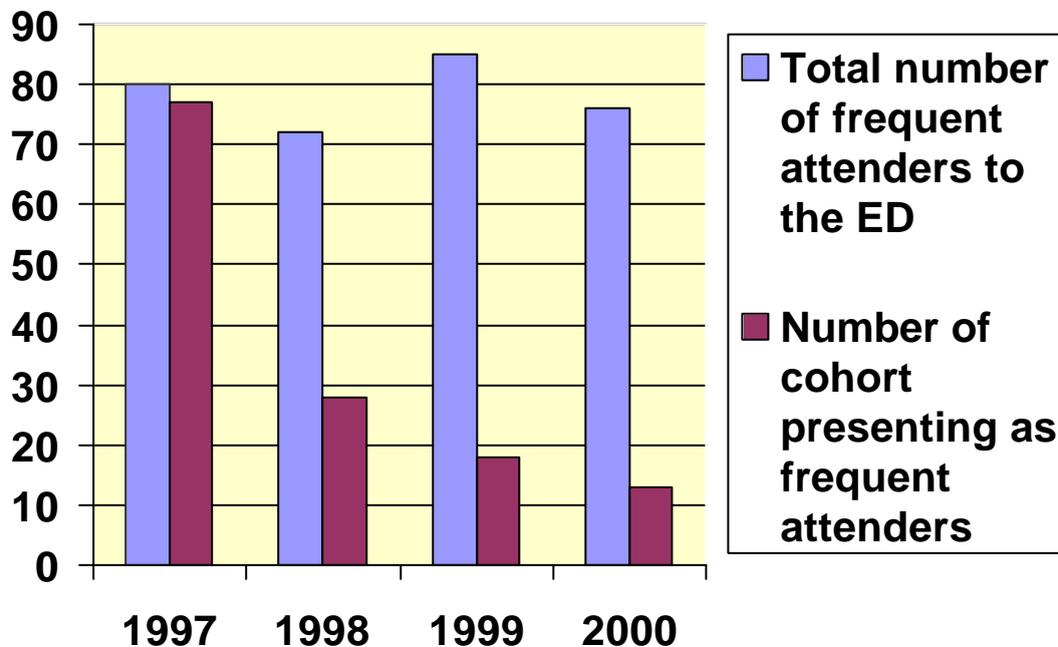
Of these 13 patients, only 2 had isolated medical problems—the other 11 having either psychiatric or substance abuse as a primary or secondary diagnosis. The male-to-female ratio was 6:7.

Seven (9%) of the original 77 were frequent attenders in all 4 consecutive years. Of these 7, 6 had a primary or secondary psychiatric diagnosis, and the remaining 1 patient had a diagnosis of substance abuse. The male to female ratio was 2:5.

A few fluctuations were noted; for example, some patients fell below the threshold definition in one year only to be redefined in subsequent years.

Of note during Year 4, there were a total of 76 frequent attenders to the ED; of these, only 13 (17%) were from the original cohort. (See Figure 1.)

**Figure 1. Number of patients presenting to the ED as frequent attenders**



In Year 4, 50 (65%) patients from the original cohort continued to make ED visits; median 4 (1–46)—of these, 37 (48%) made less than 10 visits with a median of 3 presentations.

Each year, an increasing number of patients made no further ED visits. In Year 4, 27 (35%) of the cohort did not make any ED visits. Of these, 10 had died, 5 were identified as having left the area, and the remaining 12 were confirmed as still in the Christchurch area at the end of the study period. All other patients were confirmed as being present in Christchurch at the end of the study period.

Only 1 patient was lost to follow-up after having presented in each of the 4 study years; his whereabouts could not be confirmed at the completion of the study period.

Of those 10 (13%) patients who died, 4 died in Year 1, 1 in Year 2, 2 in Year 3, and 3 in Year 4. The mean age of death was 56.5 years (range 33–95 years). All died from medical illnesses or the medical complications of substance abuse. There were no documented deaths from trauma or suicide.

## Discussion

Studies have consistently shown the frequent-attender population to be predominantly male, single—with multiple medical problems, often complicated by high rates of psychiatric illness and substance abuse.<sup>1,2,5,7</sup> The patients in this study showed a slight male predominance, and although the majority of patients presented with medical problems (45%), this population also had high rates of psychiatric illness (22%) and substance abuse (26%). Many patients had multiple pathologies, with 35% having illnesses classified in more than one category. These results are comparable to a previous study in Christchurch,<sup>4</sup> although (at that time) the frequent-attender population showed an equal male-to-female distribution.

Frequent attenders have been shown in several studies to make a disproportionate number of ED visits.<sup>1–4</sup> The study cohort of 77 patients made (1127) 1.7 % of the total ED presentations (65,007) in the index year—compared to the average population of Christchurch who generate 20 visits per 100 head of population per year.<sup>10</sup> Indeed, frequent attenders place a large financial burden upon EDs,<sup>2</sup> they have higher admission rates to inpatient beds,<sup>2,6</sup> and they have increased mortality,<sup>3,11</sup> especially from suicide or violence. The Christchurch cohort had a high mortality over 4 years, however all of the deaths were from medical causes, with none attributed to suicide or violence.

There has been only one attendance cohort study previously published. Kne et al<sup>9</sup> (in Rochester, USA) studied a similarly sized cohort of 76 frequent attenders (defined as more than 10 visits—differing slightly to the definition in this study [of 10 or more visits]) from a department of similar size receiving 59,000 visits per annum. Demographic similarities have already been demonstrated between frequent attenders to this ED and frequent attenders to the ED in Christchurch.<sup>4</sup>

Both cohorts accounted for a disproportionately large number of ED attendances: 1.9% of all ED visits in the defining year in Rochester, compared to 1.7 % of Christchurch. They also showed a decrease in the number of patients who continued to be defined as frequent attenders over the study period.

Forty-six percent of the American cohort were frequent attenders in the defining year only, and not in any of the subsequent years (as compared to 60% in Christchurch)—and 17% remained frequent users in all 4 of their study years (9% in Christchurch). The majority of frequent attenders in both studies had medical problems as a primary diagnosis.

Both studies also found that the patients who continue to present as frequent attenders over several years tend to have psychiatric illness and substance-abuse problems either as a primary diagnosis or as complicating a medical illness.

The Rochester study required a more complex follow-up of attendances, to 5 city hospital EDs, and had the potential to miss visits made to other EDs. In Christchurch, we are ideally placed to study the attendance patterns of our patients, as there is only one emergency department in the city.

Therefore, we can be confident of capturing all ED visits made by our cohort. None of the patients (who stopped presenting to the ED) were lost to follow-up, and only one patient was lost after presenting in all 4 of the study years.

This study demonstrated that the population of frequent attenders in Christchurch ED is not constant, but continually changing, thus supporting the findings of the Rochester study. The majority of these patients have medical problems and reduce their frequency of attendance over time, presumably because there has been an improvement in their medical condition or the resolution of a social stressor.

This attrition pattern is similar to that shown in frequent attenders presenting to general practitioners,<sup>12</sup> although the population itself is somewhat different, with the majority of these patients being female and married.

Although most of the cohort decrease their rates of presentation, a small number of patients continue to make multiple ED visits over several years, with no apparent decline in the number of presentations they make each year. Furthermore, this group of patients were shown in both studies to have a high incidence of psychiatric problems or substance abuse as either a primary or secondary diagnosis.

To instigate management interventions, new frequent attenders must be regularly identified given the dynamic nature of this population. Since the majority of these patients have medical problems and are short-term frequent attenders, they may be more easily managed. By identifying this group early, and maximising input into their care, it may be possible to improve their health, and reduce the number of visits they make. The habitual frequent attenders tend to have substance abuse and psychiatric problems and they may require intensive management to reduce their reliance on the ED.

The aim of intervention (in the management of frequent attenders) should be to improve the quality of care delivered as well as to reduce the number of ED visits. Given the complex medical and psychosocial issues, this would seem most likely to be achieved using a multidisciplinary team to produce an individualised and consistent management plan for each patient.

To date, very few studies have been performed to assess the effectiveness of interventions.

Andren and Rosenqvist concluded that social work intervention reduced the number of ED visits.<sup>13</sup> A small study by Pope et al<sup>14</sup> showed a reduction in the number of visits made after implementation of a management plan; however, Spillane et al<sup>8</sup> (in a randomised trial) showed no difference in numbers of visits to ED after implementation of multidisciplinary care plans when compared to a control group, although improvements of the patients' health were not addressed.

In Christchurch Hospital, frequent attenders are currently identified on a monthly basis and are flagged after making 6 visits in the preceding 12 months. An individualised management plan is then produced by a multidisciplinary team (including ED staff, family practitioner, appropriate medical specialist, psychiatric service, and social worker).

Attempts are made to involve the patient in the production of this plan by allowing them a free GP visit to discuss their plan with their GP. Other initiated interventions include a voucher system to enable free GP visits. Studies are currently underway to assess the effectiveness of these interventions in Christchurch.

## Conclusion

This study has demonstrated that frequent attenders are a constantly changing population. Although most continue to attend at a reduced rate, only a small proportion remain habitual frequent attenders, and these patients tend to have psychiatric illnesses and substance abuse problems. To initiate any management interventions, ED attendances must be regularly monitored to identify the constant stream of new frequent attenders, and also to flag habitual frequent attenders. Further research into the effectiveness of intervention is also required, both in terms of reduction of numbers of visits to the ED and the quality of care delivered to this population.

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## Respiratory symptoms and lung function change in welders: are they associated with workplace exposures?

David Fishwick, Lisa Bradshaw, Tania Slater, Andrew Curran, and Neil Pearce

**Aims** This study investigates whether work-related respiratory symptoms and acute falls in forced expiratory volume in 1 second (FEV<sub>1</sub>), previously observed in current welders, are related to measured workplace exposures to total fume and metals.

**Methods** At four work sites in New Zealand, changes in pulmonary function (and reported respiratory symptoms) were recorded in 49 welding workers (and 26 non-welders) exposed to welding fume. We also determined the personal breathing zone levels of total fume and various metals.

**Results** Work-related respiratory symptoms were reported by 26.5% of welders and 11.5% of non-welders. These symptoms were related significantly to their personal breathing zone nickel exposure—with an adjusted odds ratio (OR) and 95% confidence interval [CI] of the high exposure group (compared to a low exposure group of 7.0 [1.3–36.6]). There were non-significant associations with total fume exposure (OR = 2.6, 95% CI 0.6–12.2), and exposure index of greater than 10 years (OR=2.8, 95% CI 0.5–15.0). A fall in FEV<sub>1</sub> of at least 5% after 15 minutes of work was significantly associated with aluminium exposure (OR=5.8, 95% CI 1.7–20.6).

**Conclusions** Nickel exposure from metal inert gas (MIG) and tungsten inert gas (TIG) welding is associated with work-related respiratory symptoms and aluminium exposure from welding is associated with a fall in FEV<sub>1</sub> of at least 5 % after 15 minutes of work.

Previous studies have documented excesses of chronic bronchitis and other respiratory symptoms in welders.<sup>1</sup> More recently, in the same group of workers,<sup>4</sup> we have described<sup>2</sup> both across-shift changes in FEV<sub>1</sub> in welders (and partially exposed non-welders working adjacent to a weld site),<sup>2</sup> chronic bronchitis,<sup>3</sup> and accelerated longitudinal decline in FEV<sub>1</sub>.<sup>4</sup>

However, our previous study of welders<sup>2,3</sup> did not include a hygiene assessment of the workplace. Current welding-fume exposure was assessed using a combination of workplace factors and the use of respiratory protection or local extraction ventilation, but detailed exposure information was not available.

Therefore, we revisited four of the original eight work sites, to carry out a full hygiene assessment of total fume and metal exposure, in order to ascertain which agents were candidates for producing the adverse health effects seen in the previous study.

## Methods

### Study participants

Approximately 11 months following our first study,<sup>2,3</sup> four of the original eight welding sites were revisited. In brief, 137 welders and non-welders (comprising the consenting population of eight welding sites) were surveyed. In this study, we documented respiratory symptoms; baseline, pre-shift, lung function; and across-shift FEV<sub>1</sub> (forced expiratory volume in 1 second, in litres), FVC (forced vital

capacity in litres), PEF (peak expiratory flow in litres/minute), and FEF<sub>25-75</sub> (forced expiratory flow<sup>25-75</sup> in litres/minute). In addition, we measured FEV<sub>1</sub> change after 15 minutes of work (in both welders and non-welders).

The four welding sites (re-visited for the current study) constituted a total available study population of 85, and 75 individuals consented to participate.

## **Exposure**

### *Welding history*

Previous welding exposure was calculated for each individual as previously described.<sup>2</sup> Briefly, a cumulative index of previous fume exposure (expressed in years) was calculated for all workers—by summing all occupations in years associated with welding exposure, and multiplying by the proportion of time in each job spent welding.

### *Hygiene data*

All hygiene data was generated from site visits to the four chosen factories (factories 1, 2, 3 and 5 from our first study).

At each site, workers were approached and asked to wear personal samplers (GilAir 5, Gilian, USA) on their belt. IOM sampling heads<sup>5</sup> were used to store pre-weighed 25-mm diameter microfibre filters, and sampling was carried out for variable sample lengths (approximating 4 hours). Flow rates were assessed at regular intervals throughout the sample period, and the total volume was calculated as the product of flow rate and time.

Gravimetric analysis (re-weighing the filters) was used to calculate total fume (expressed in mg/m<sup>3</sup>) for all workers. In addition, the filter was used to calculate specific metal levels.

### *Metal analysis*

All air samples were collected on 0.8 µm MCE (metraccil) filters, and subsequently digested in nitric acid. Aliquots were then analysed by an inductively coupled plasma mass spectrometer.

### *Exposure attribution*

For all 75 individuals in the study, a personal level of exposure to all the above parameters was estimated (shown in more detail in Table 1).

All 34 workers who were directly sampled were ascribed their own individual exposure value for all measured parameters. All values were expressed in mg/m<sup>3</sup>. Workers (welders and non-welders) who did not form part of the sampling exercise were ascribed an exposure value according to the following method.

All workers in the study were categorised as either: currently welding, not welding but in the vicinity of a welder, or not welding and not in the vicinity. For each separate work site, the mean (of all measurements in each of these three categories) was calculated and used as the exposure level for the remaining workers in those categories not yet ascribed. The majority of welders carried out metal inert gas (MIG) welds on a mild steel base.

## **Respiratory symptoms and pulmonary function**

### *Respiratory symptoms*

All workers had previously completed an interviewer-led respiratory questionnaire, and this data was again used for analysis. If an individual was new to the study (ie, had not been previously studied), the same investigator (DF) administered the identical questionnaire.

The study questionnaire included demographic data, current smoking habits, and questions about work-related and non-work-related respiratory symptoms. We recorded reports of current or recent cough, phlegm, wheeze, chest tightness, and shortness of breath—and whether these symptoms were related to work (this was defined as a symptom worse at work or improving on rest days). For the purposes of analysis, work-related symptoms were defined as the presence of any work-related lower respiratory tract symptom.

### *Pulmonary function*

As previously described,<sup>2</sup> all pulmonary function testing was performed for those workers who were new to the study when seen during the hygiene exercise. For those workers who had previously been studied, that data was used to assess possible FEV<sub>1</sub> change at 15 minutes of work.

In brief, measurements were taken before shift (time 0), at 15 minutes after the start of a weld (or at a corresponding time for those workers not welding), and again at 7 hours into the working shift. On the

study day, all pre-shift values occurred prior to any exposure to welding fume, and at least 16 hours after any previous weld.

FEV<sub>1</sub>, FVC, PEF, and FEF<sub>25-75</sub> were measured using the best value of three forced expiratory manoeuvres in the standing position. For the purposes of analysis, those workers who sustained a 5% or greater fall in FEV<sub>1</sub> after 15 minutes of work were regarded as having developed a clinically significant fall in lung function, and those workers with lesser degrees of fall, had not. All pulmonary function was measured using a calibrated portable spirometer (Alpha Spirometer, Vitalograph). A small number of workers did not complete three measurements for reasons of work commitment, and these have been excluded from the analysis of lung function.

All variables were then converted either into the percentage-predicted value for that individual, or as a percentage change from baseline, where the measurement at 'time 0' represents the baseline value.

#### *Data analysis*

All data were entered using dbase III (Ashton Tate, UK) and Microsoft Excel, and analysed using SPSS (version 8.0.2). Univariate analysis of the presence or absence of both respiratory symptoms (and a fall of at least 5% in FEV<sub>1</sub>) were carried out by categorising all demographic, smoking, exposure and hygiene data (dust and metal levels). In each case, a reference category was defined, and odds ratios were calculated to express the magnitude of effect for each variable.

Dividing metal exposure into high and low groups was carried out by stratifying—by using a cut-off of the mean value of all measurements in each category (where possible). If stratifying was not possible (for example, in the case of cobalt) where those with measurable exposure were placed in the high category, and those with no measurable exposure were placed in the lower category. That is, any measurable level above the limit of detection was placed in the high category. All cut-off levels between high and low exposure groups were decided *a priori*, and were not subsequently altered.

Logistic regression analysis was carried out using SPSS. Potentially predictor variables (including age, smoking, total fume, and other metal categories with elevated odds ratios) were entered into a logistic regression analysis. Similarly, the magnitude of effect seen for each independent variable in the logistic regression analysis was expressed by calculating an odds ratio and its associated 95% confidence limit.

All work carried out during this study was approved by the Wellington Ethics Committee, and all workers gave written informed consent to participate

## **Results**

As noted above, the industrial hygiene survey was carried out at four of the original eight welding sites included in the study. The working population of these 4 sites consisted of 85 workers, and 75 (89%) are included in the analysis.

The mean age of the 75 workers was 39.2 years (range 19 to 72 years). All workers were male, and 49 (65.3%) of them had only ever been a welder. Twenty-three workers were current smokers (30.7%) and 23 were ex-smokers (30.7%). The remaining workers had never smoked. The mean time spent working in the welding industry was 18.5 years.

Six of the workers reported a previous diagnosis of asthma (8%), although only one worker (1.3%) complained of an asthma attack in the previous 12 months. Of those 36 workers currently welding, 5 (13.9%) reported current use of local extraction ventilation.

## **Exposure data**

Table 1 shows the mean exposure values for each work site. It is clear that there was a wide variation in all parameters measured, and that certain exposures were site-specific.

**Table 1\*. Hygiene assessment findings for total fume exposure and exposure to specific chemicals by welding exposure category**

Agent	Weld exposure	Factory 1	Factory 2	Factory 3	Factory 5
Total Fume	1	0.91	0.5	2.12	5.28
	2	4.355	0.43	1.46	*
	3	1.50	0.1225	*	0.53
Aluminium	1	0.1955	0.0063	0.001	0.033
	2	0.0077	0.014	0.001	*
	3	0.0065	0.001	0.001	0.001
Cobalt	1	0.001	0.011	0.001	0.001
	2	0.001	0.010	0.001	*
	3	0.001	0.001	*	0.001
Chromium	1	0.002	0.001	0.001	0.002
	2	0.001	0.001	0.001	*
	3	0.001	0.001	*	0.001
Copper	1	0.005	0.001	0.007	0.008
	2	0.01	0.001	0.002	*
	3	0.005	0.001	*	0.001
Iron	1	0.089	0.005	0.424	1.49
	2	0.14	0.002	0.329	*
	3	0.193	0.004	*	0.077
Manganese	1	0.008	0.003	0.031	0.180
	2	0.003	0.001	0.037	*
	3	0.004	0.001	*	0.077
Molybdenum	1	0.001	0.015	0.001	0.001
	2	0.001	0.005	0.001	*
	3	0.001	0.001	*	0.001
Nickel	1	0.002	0.038	0.001	0.001
	2	0.003	0.012	0.001	*
	3	0.001	0.001	*	0.002
Lead	1	0.001	0.001	0.001	0.002
	2	0.226	0.001	0.001	*
	3	0.001	0.001	*	0.001

\*Denotes not available (as no workers in this category). All data shown are in mg/m<sup>3</sup> and represent mean values for all workers taken at each site, for each of three exposure categories. In second column, weld exposure 1 = current welding; weld exposure 2 = work adjacent to a welder; weld exposure 3 = not working as welder or adjacent to welder.

### Respiratory symptoms

Sixteen workers (21.3%) complained of one or more work-related respiratory symptom. Univariate analysis relating to the presence or absence of work-related respiratory symptoms assigned odds ratios of unity to referent values. For example in Table 2, 'never smoking' is set as the referent category, and the odds ratio for 'current' and 'ex' smoking measures the effect in comparison to never smokers. Current work-related respiratory symptoms were significantly related to higher exposure to chromium, and non-significantly associated with proportion of the time spent welding in confined spaces.

Table 2 illustrates the results of the logistic regression analysis performed to investigate factors associated with the presence (or absence) of any work-related respiratory symptom, and shows a significant relationship between work-related symptoms and both nickel- and total-fume exposure.

**Table 2. Odds ratios (and 95% CI) for work-related symptoms, by demographic factors and welding exposures (multivariate regression analysis)**

		<b>Work-related symptoms (n = 16 )</b>	<b>No work-related symptoms (n = 59 )</b>	<b>Adjusted odds ratio* (95% CI)</b>
Smoking	Current	7	16	1.9 (0.4–8.8)
	Ex	2	21	0.7 (0.1–4.7)
	Never	7	22	1.0
Age	17–24	1	8	1.0
	25–40	11	23	(0.3–49.9)
	40+	4	28	0.7 (0.1–10.7)
Total exposure index (years)	0–4	9	41	1.0
	4–10	3	12	1.2 (0.2–6.0)
	>10	4	8	2.8 (0.5–15.0)
<b>Current exposure to:</b>				
Total fume	Low	6	30	1.0
	High	10	29	2.6 (0.6–12.2)
Nickel	Low	7	41	1.0
	High	9	18	7.0 (1.3–36.6)

\*Adjusted for all factors in the model.

### **Pulmonary function**

Adequate pulmonary function was available on 70 workers. The mean baseline FEV<sub>1</sub> for all 70 workers was 4.06 litres (range 1.48–5.78, SD 0.85 litres). The mean change after 15 minutes welding/work for all workers was +1.77%, range –20.67 to +22.56). Eight workers had a fall of greater than 10% and eight had a fall of between 5 and 10%. Univariate analysis noted that a fall of at least 5% in FEV<sub>1</sub> was significantly associated with higher aluminium exposure. In comparison to welding for less than four years, welding for between 4 and 10 years was negatively associated with this fall.

Table 3 illustrates the results of the multivariate logistic regression analysis performed to investigate factors associated with the presence (or absence) of at least a 5% fall in FEV<sub>1</sub> after 15 minutes of welding (or after 15 minutes of work in the case of non-welders).

**Table 3. Odds ratios (and 95% CI) for work-related 5% fall in FEV<sub>1</sub> in 70 workers, by demographic factors and welding exposures (multivariate regression analysis)**

	<b>At least 5% fall in FEV<sub>1</sub> (n = 16)</b>	<b>Less than 5% fall in FEV<sub>1</sub> (n = 54)</b>	<b>Adjusted odds ratio* (95% CI)</b>
Smoking	Current	17	1.3 (0.3–6.0)
	Ex	5	1.0 (0.2–4.7)

Never		6	21	1.0
Age				
	17–24	1	7	1.0
	25–40	6	24	1.4 (0.1–16.5)
	40+	9	23	2.2 (0.2–26.4)
<b>Current exposure to:</b>				
Total fume	Low	7	27	1.0
	High	9	27	1.2 (0.3–4.3)
Aluminium	Low	5	39	1.0
	High	11	15	5.8 (1.7–20.6)

\*Adjusted for all factors in the model.

## Discussion

We have previously reported an elevated risk of chronic respiratory symptoms and acute work-related falls in lung function associated with current welding.<sup>2</sup> The current study allowed us to return (approximately 11 months after our first cross-sectional study) to measure exposure levels at four of the eight work sites. We noted that levels of exposure were generally low, and indeed mostly fell below the recommended regulatory levels in New Zealand.<sup>6</sup> Despite this, we found that just under a quarter of all of welders complained of work-related symptoms, and that the same proportion sustained a fall of at least 5% in FEV<sub>1</sub> after 15 minutes of work.

We previously concluded that the main protective factor associated with a fall in FEV<sub>1</sub> (of at least 5%) was the use of local extraction ventilation. Whilst implying that workplace exposures were the cause of the observed effects, the data did not enable us to assess which exposures were responsible.

The current study has used the same clinical information as in the previous study (except for the FEV<sub>1</sub> data for those workers only taking part in the second study), and has combined this with newly collected exposure data.

Stratification (by exposure) was carried out by making certain assumptions, and this will undoubtedly have led to misclassification of various workers' exposure levels. However, unless all workers are personally sampled, creating exposure levels in this way is required, and potential mis-classification is inevitable. Furthermore, arbitrary high and low exposure groups were created from within a group of workers exposed to relatively low levels of metals. Nevertheless, the object of this study was to test the hypothesis that current respiratory symptoms and work-related falls in FEV<sub>1</sub> were related to workplace exposures, so we feel that this form of analysis was justifiable. Indeed, due to the limitations of this study, no attempts were made in this analysis to generalise these data to all eight original factories.

The main findings of the study were that currently reported respiratory symptoms in welders related significantly only to chromium exposure—with non-significant associations (non-significant odds ratios higher than 2.5) with higher levels of confined space welding and nickel exposure. Furthermore, multivariate analysis confirmed current nickel exposure alone as the main determinant of pulmonary symptoms (correcting for the effect of total fume exposure).

Similarly, univariate analyses found that a 5% fall in FEV<sub>1</sub> (after 15 minutes of work) was significantly related to aluminium exposure. There were non-significant

associations with confined space welding. The multivariate analysis confirmed that aluminium exposure (primarily) significantly determined the fall in FEV<sub>1</sub> (again correcting for total fume exposure). The 5% cut-off value was used as the minimum thought to be significant. Indeed, 8 of the 16 workers (recording a fall in FEV<sub>1</sub>) had a fall greater than 10%.

One other potential problem with interpretation lies in the measurement uncertainty, although we feel that 'random' variation in FEV<sub>1</sub> over 15 minutes would either have no effect on the mean fall for the group.

Both these findings appear clinically relevant, as both nickel and aluminium have previously been implicated in respiratory disease.<sup>7-11</sup> The mechanisms underpinning these workplace findings are more complex, and less well understood.

Early work by Keskinen<sup>12</sup> suggested that stainless steel welding, and particularly chromium and nickel exposure, was likely to cause occupational asthma, although this study was only based on a small number of workers. The association between stainless steel welding and respiratory symptoms was also recorded subsequently by Sobaszek,<sup>13</sup> although pulmonary function changes in the welders were not clearly ascribed solely to welding-fume exposure.

Recent work has also noted that stainless steel welding is associated with significant increases in serum and urinary chromium.<sup>14</sup> The situation with aluminium exposure remains less clear again, although work with aluminium has been previously linked to occupational asthma and marked asthmatic responses on specific challenge testing).<sup>15</sup> Furthermore, aluminium exposure has been associated with small-airway dysfunction in welders.<sup>16</sup>

Clearly, certain factors influence the strength with which these results can be interpreted. Eleven months had passed between collection of the clinical data and the hygiene data, as funding for the hygiene component of the study was not available at the time initial clinical assessments were carried out. It is possible, of course, that work practice would have changed between clinical and hygiene assessments, although none of the sites or workers reported major changes in work practice.

Again, the analysis inevitably involved multiple comparisons within small groups. Nevertheless, the findings are biologically plausible and suggest that multiple comparisons alone are not responsible for the significant findings of the study.

The metals noted in this study (to predict significant health effect) are at least consistent with the published data to date, and this study suggests that metal exposure is an important potential cause of respiratory ill-health in welders. It is critically important to keep exposures to the lowest reasonably practical levels, and particularly in situations where nickel and chromium (stainless steel welding) and aluminium (aluminium welding) are likely to be significant.

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## Postoperative follow-up strategies for patients after potentially curative surgery for colorectal cancer at Christchurch Hospital

Hayley Simpson, Mark Jeffery, Brigid Hickey, Frank Frizelle, and Chris Frampton

### Abstract

**Aim** To describe the follow-up patterns of patients with colorectal cancer (CRC) having had surgery with curative intent.

**Methods** A retrospective study was undertaken of follow-up patterns in patients who had undergone 'curative' surgery for colorectal cancer at Christchurch Hospital from 1 January 1996 to 31 December 2000. Patients were identified from three sources: the General Surgical Audit Database (Otago system), the hospital clinical Casemix DRG Database, and the Oncology Service database. Patients were included only if they had surgery with curative intent, within the stated period, and had follow-up at Christchurch Hospital. Data extracted included: patient demographics, details of initial surgery, adjuvant therapies, recurrences, and details of follow-up arrangements (including investigations).

**Results** Of 893 patients coded as having CRC, 284 patients met the inclusion criteria. Patients were excluded for the following reasons: no operation (64), operation before 1996 (18), palliative surgery (345), previous cancer (55), no cancer (32), died within 30 days of surgery (26), follow-up outside of Christchurch region (39), and notes unavailable (30). The median age was 72 (range 28.6–99.9 years). Median follow-up time was 732 days.

Most patients (91%) were followed-up by their surgeon. Patients had an average of 2.6 visits to their specialist in the first year of follow-up. Unplanned clinic visits accounted for 8.3% of all clinic visits—resulting in a number of unplanned investigations. During the follow-up period, patients had 112 colonoscopies, 68 CT scans, 8 abdominal ultrasounds, and 7 barium enemas.

Recurrence was detected in 58 patients (20.4%); 23 (39.7%) recurrences were detected in the first year of follow-up. Of the 279 patients who had some form of follow-up, 9 asymptomatic patients had recurrent disease (detected as a result of a planned clinic visit) and had a potentially curative procedure for recurrence.

**Conclusions** The number of visits per year correlated closely with the earlier findings of Connor et al,<sup>4</sup> however the number of investigations carried out was variable and substantially less than had been reported. Follow-up visits have limited value for the detection of asymptomatic potentially curable recurrent disease.

Colorectal cancer (CRC) is the second-most common malignancy in developed countries, and the third-most frequent cancer in the world in both sexes. New Zealand has one of the highest rates of CRC in the world.<sup>1</sup> About two-thirds of patients with CRC have primary tumour resection for their cure, however more than 50% of those patients will die of their disease.<sup>2</sup>

Following patients is standard medical practice,<sup>3</sup> although the benefits are uncertain.<sup>4</sup> The rationale for follow-up includes clinical audit, patient reassurance, patient preference and the detection of metachronous adenomas and cancers. A main motivation for clinicians following up these patients is to detect curable recurrences and therefore to improve disease-specific survival. A recent Cochrane Review<sup>5</sup> found that although more intensive follow-up is correlated with better survival rates, the detailed components of optimum follow-up are yet to be determined.

There are potential disadvantages to follow-up—including complications from the investigations done (eg, colonoscopy-induced bleeding and perforation),<sup>6</sup> psychological harms (eg, increased anxiety and labelling), and the cost.<sup>7,8</sup>

A New Zealand postal questionnaire study has documented the follow-up surgeons say they provide after potentially curative surgery for CRC. Most surgeons provided some form of follow-up. However, considerable variation was apparent between surgeons in the amount and type of follow-up.

The aim of this study was to document the details of the follow-up by hospital specialists (surgeons and oncologists) for patients with CRC after curative surgery.

## Methods

**Patient population:** Data was extracted from the General Surgical and Vascular Audit Database. A search was made for any patient admitted with colorectal cancer (adenocarcinoma only) over the 5-year period from January 1996 to December 2000. The Clinical Case Mix (DRG related) data codes used by information systems at Christchurch Hospital and the Oncology Service database were searched; and the three databases were cross-referenced to ensure all patients were captured.

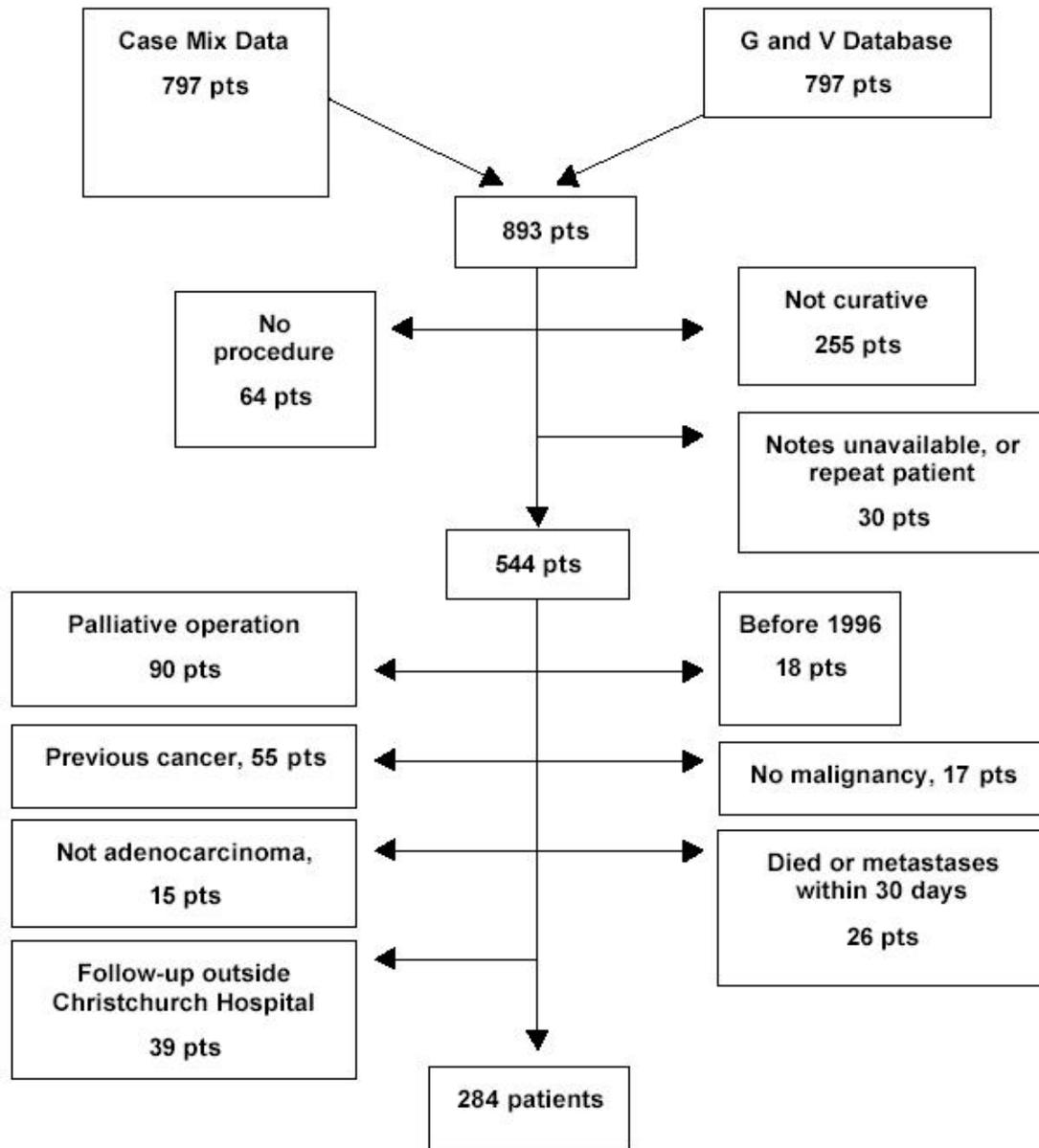
Reasons for exclusions were: no operation, palliative surgery, notes unavailable, operation prior to 1996, previous cancer (other than cervical intraepithelial neoplasia [CIN] of the cervix, and basal cell carcinoma), non-malignant disease, death within 30 days of surgery, and follow-up outside of Christchurch Hospital. The surgical and oncology notes of the remaining patients were reviewed.

**Data collection:** Patient demographics, staging investigations (those tests carried out prior to, or within, 6 weeks of surgery) and details of initial surgery were collected. Recurrences, the method of their detection, and their subsequent management were also recorded. Individual spreadsheets recorded the number and frequency of clinic visits, and whether the visits were planned. An unplanned visit was a presentation to clinic that was not scheduled. All planned examinations and investigations related to the follow-up of the patients were also recorded. All unplanned investigations (where patients underwent an investigation because of an unplanned visit, or because of symptoms) were also recorded.

## Results

**Population:** The population identified from the databases comprised 893 patients. 284 patients were identified as eligible for study inclusion. Reasons for exclusions were: no operation (64), operation prior to 1996 (18), palliative surgery (345), previous cancer (55), not cancer (17), not adenocarcinoma (15), died within 30 days of surgery (26), follow-up outside of Christchurch Hospital (39), and notes unavailable (30) (Figure 1). Details of the cancers resected are provided in Table 1. The median length of follow-up was 2 years (732 days)—ranging from 0 days (45 days excluding those patients that did not attend follow-up) to 1697 days. The median age was 72 (range 28.6–99.9 years), and 152 (53.5%) of the patients were female.

**Figure 1. Exclusions from the study (pts = patients)**



**Table 1. Details of cancers resected**

Details of cancer	No. of patients (of 284)	Percentage
Cancer of the colon	209	73.6%
Cancer of the rectum	73	25.7%
Both cancers	2	0.7%
Stage Dukes A	22	7.7%
Stage Dukes B	150	52.8%
Stage Dukes C	111	39.1%
Stage Dukes C with distant resectable liver metastases	1	0.4%

**Staging investigations (preoperative):** All patients had a full blood count (FBC) and liver function tests (LFTs) within 6 weeks of surgery. Most patients (96.8%) had a chest X-ray (CXR), 100 (35.2%) had a preoperative staging CT scan, and 23 (8.1%) had a preoperative abdominal ultrasound (U/S) (Table 2).

**Table 2. Preoperative staging investigations carried out**

Staging investigation	Number of patients (of 284)	Percentage
Full Blood Count (FBC)	284	100%
Liver Function Tests (LFTs)	284	100%
Chest X-Ray (CXR)	275	96.8%
Abdominal ultrasound (U/S)	23	8.1%
CT scan	100	35.2%
Barium Enema (BE)	182	64.1%
Colonoscopy	92	32.4%
Sigmoidoscopy	53	18.7%

**Assessment of the colon:** 182 patients (64.1%) had a barium enema, 92 (32.4%) had a colonoscopy, and 34 patients had both. Of 284 patients, 240 (84.5%) patients had their colons assessed prior to, or within 6 weeks of surgery (Table 2).

**Follow-up—consultation and examination:** Five frail and elderly patients had no follow-up. The remaining 279 patients had at least one clinical visit for follow-up. The majority (85-89%) of patients had 1-4 planned clinic visits per year over the follow-up period. A few patients had far more clinic visits (range was 0–14 in year 1), and nearly 15% had no follow-up visit in their third year of follow-up (Table 3). They attended a mean of 2.6 planned visits in their first year of follow-up, 1.7 visits in their second, and 1.3 visits in the third year they were followed. 231 patients (82.8%) had all of their follow-up carried out by surgeons. Forty-four patients (15.8%) had follow-up with both an oncologist and a surgeon. Four patients (1.4%) had exclusive follow-up by an oncologist.

Overall, there were 1344 planned visits. During these visits, 325 rectal examinations and 301 sigmoidoscopies were performed. Follow-up blood tests included 345 FBCs, 296 carcinoembryonic antigen (CEA) measurements, and 319 LFTs. The use of these tests was variable—for example, in the first year of follow-up, 165 patients (59.1%) had no blood tests, 31 patients (11.1%) had six or more tests (CBC, LFT, and/or CEA measurement), and 1 patient had 28 tests.

**Table 3. Number of visits per patient followed**

	0	(%)	1-4	(%)	≥5	(%)	No. followed	Range	Average
Year 1	3	(1.1)	250	(89.7)	26	(9.3)	279	0-14	2.6
Year 2	20	(9.3)	188	(88.3)	5	(2.3)	213	0-8	1.7
Year 3	20	(14.8)	114	(84.4)	1	(0.7)	135	0-5	1.3
Year 4	8	(12.9)	53	(85.5)	1	(1.6)	62	0-6	1.2

**Follow-up—scheduled investigations:** 112 colonoscopies were done during the follow-up period. 68 CT scans, 60 chest X-rays, 8 abdominal ultrasounds, and 7

barium enemas were also done. 219 patients (78.5%) had none of these investigations, and 8 patients (2.9%) had 6 or more planned radiological investigations.

**Unplanned visits and tests:** 122 visits were unplanned, comprising 8.3% of all clinic visits (Table 4). The unplanned investigations resulting from these unplanned visits were as follows: 78 CT scans, 8 MRI scans, 24 colonoscopies and 13 barium enemas. 76 FBCs, 69 LFTs and 42 CEA tests. 50 CXRs and 19 abdominal ultrasounds were done following unplanned visits. At least 12 rectal examinations and 9 sigmoidoscopies were done during an unplanned visit or because of symptoms and signs. These examinations are often not recorded in notes or clinic letter and therefore this figure is likely to be an underestimate.

**Table 4. Unplanned visits and investigations**

Frequency	1	2	3	4	5	Total
Visit	64	15	5	2	1	122
PR (per rectum)	10	1	0	0	0	12
Sigmoidoscopy	7	1	0	0	0	9
FBC (full blood count)	39	11	2	1	1	76
CEA* measurement	25	4	3	0	0	42
LFT (liver function test)	41	9	2	1	0	69
CXR (chest X-ray)	35	4	1	1	0	50
U/S (ultrasound)	17	1	0	0	0	19
CT <sup>†</sup> scan	47	14	1	0	0	78
MRI <sup>‡</sup> scan	4	2	0	0	0	8
BE (barium enema)	13	0	0	0	0	13
Colonoscopy	22	1	0	0	0	24

\*Carcinoembryonic antigen; <sup>†</sup>computed tomography; <sup>‡</sup>magnetic resonance imaging.

**Recurrent colorectal disease:** Of 284 patients included in the study, 58 (20.4%) had recurrent disease (local recurrent disease, metachronous tumours, and distant metastases) detected. This represents an incidence of 0.1 recurrences per patient follow-up year (58/570). Most recurrences (70.7%) were diagnosed by the end of the second year of follow-up, and 89.7% had been diagnosed by the end of the 3<sup>rd</sup> year (Table 5). Thirty-six (62.1%) of these patients were symptomatic when disease was diagnosed. Further colorectal disease was diagnosed in 36 patients (62.1%) after a planned clinic visit. A symptomatic patient was more likely to make an unplanned visit.

**Table 5. Disease detected with time since surgery**

Year after colorectal surgery	Number of patients in whom further disease was detected	Percent
1	18	31.0%
2	23	39.7%
3	11	19%
4	5	8.6%
5	1	1.7%

**How were recurrences diagnosed?:** Twenty-nine patients (50%) were investigated because of symptoms. Although 36 patients were symptomatic at their follow-up visits, some of these patients were further investigated for a different reason such as a rise in CEA. Colorectal cancer or metastases were diagnosed in 8 patients (13.8%) because of a raised CEA, 7 patients (12.1%) because of a CT scan abnormality, and 6 patients (10.3%) as a result of a physical examination. Other investigations (including CXR, colonoscopy, LFT rise, anaemia, U/S) each accounted for two or fewer recurrences.

Twelve (20.7%) of the patients with detected disease had a further procedure with curative intent. Two patients were waiting for a potentially curative procedure at the time of the survey. The remainder of the recurrences have been managed supportively 26 (44.8%)—with palliative surgery 10(17.2%), chemotherapy 3(5.1%), or radiotherapy 5(8.6%).

There were 21 asymptomatic patients with disease detected at a scheduled visit. The asymptomatic disease was found because of: CEA rise (8), CT scan finding (5), colonoscopy (2), sigmoidoscopy (1), abnormal examination (1), CXR (1), LFT (1), FBC (1), or U/S (1). Twelve were treated palliatively [supportive care (7), chemotherapy (2), palliative surgery (1), mechanical stent (1), radiotherapy (1)]. Three of these patients were considered to have metachronous primary tumours and underwent further bowel resection. All three remain disease-free.

Six further patients went forward for a potentially curative resection; five for distant metastases and one for local recurrence. Three patients had pulmonary nodules resected—one patient has since died from metastatic disease, one is currently living with pulmonary metastases, and one patient is alive with no evidence of disease. One patient had liver metastases resected but died from metastatic disease. Another patient had their potentially curative procedure aborted (as un-resectable metastases were identified at laparotomy). This patient subsequently died of their metastatic disease. One patient had a successful resection of a local recurrence and they are alive with no evidence of disease.

In summary, of six patients with recurrent asymptomatic disease (detected at a planned visit) operated on with curative intent, two are alive and disease-free, one patient is living with pulmonary metastases, and three patients have died from their disease.

## **Discussion**

This study examines the follow-up of patients undergoing potentially curative surgery for CRC at Christchurch hospital over a 5-year period. To ensure access to the complete follow-up details for each case, only follow-up carried out on patients operated on and followed entirely at Christchurch Hospital was included. There were a large number of exclusions from this study (609), reflecting a deliberately sensitive search strategy, which captured patients not having resections such as patients having diagnostic procedures, stent insertions, and colostomy formations. The high number of palliative procedures reflects the significant morbidity and mortality associated with colorectal cancer. The search was broad and resulted in significant numbers of irrelevant cases. These exclusions, however, did allow the formation of a homogenous group, presenting with their first cancer.

As with any retrospective study, completeness of the data set was a problem: there were both incomplete and missing notes. Those patients with missing notes were excluded. The effect of incomplete notes on the accuracy of the results is unknown. The frequency of some of the investigations are almost certainly underestimated; for example, it is likely that more rectal examinations and sigmoidoscopies were actually done than were recorded. Any follow-up and/or tests by the patient's own general practitioner (GP) were not included.

Preoperative staging was surprisingly poor. The need for preoperative staging in planning appropriate treatment has been a developing aspect of management in CRC over the last 10 years.<sup>9</sup> Some experts argue that no preoperative assessment is needed (as symptomatic patients need treatment),<sup>10</sup> however careful preoperative staging directs management decisions, so patients can minimise the impact on their quality of life (regardless of whether treatment is palliative or curative).<sup>11</sup>

Some patients with rectal cancer will benefit from preoperative chemoradiotherapy,<sup>12</sup> and there is increasing evidence that short-course preoperative radiotherapy may lead to lower local recurrence after rectal cancer surgery.<sup>13</sup> Indeed, more than 15% of patients did not have their colons screened prior to, or within, 6 weeks of surgery. This may have affected the recurrence rate, as 'recurrences' may be previously missed synchronous carcinomas. The rate of synchronous carcinomas cited in the literature is between 2 and 8%.<sup>17</sup> A complete colonoscopy is recommended to safeguard patients against apparently metachronous cancers, which are actually overlooked synchronous cancers.<sup>18</sup> Just 32.4% of patients in this study underwent a staging colonoscopy.

The findings from this study with respect to follow-up visits are consistent with those of Connor et al<sup>4</sup>. Connor et al<sup>4</sup> sent questionnaires to practicing general surgeons in New Zealand asking about follow-up for patients treated curatively for colorectal cancer. The response rate was 66% (107/163). Ninety-seven percent of surgeons stated that they followed their patients about 4-monthly for the first year. Table 6 shows the consistency of that data with our study. The frequency of visits has been changed to monthly (for comparison with the data from Connor et al's study).<sup>4</sup>

**Table 6. Comparison between Connor et al's study and our study (regarding the number of follow-up visits made per colorectal patient per month)**

Year (after colorectal surgery)	Connor et al's study	Our study
Year 1	4	4.62
Year 2	6	7.06
Year 3	9	9.23
Year 4	10	10.00

The amount and type of follow-up practice that Connor et al reported was more intensive and differs from the data extracted in this study. For example, in Connor et al's<sup>4</sup> study, they found that (in the first year of follow-up) 52% of surgeons reported using a CEA test; however, in the present study, only 26.88% of patients had this test in their first year of follow-up (Table 7).

**Table 7. Proportion of surgeons using CEA (carcinoembryonic antigen) testing versus the proportion of patients having CEA tested**

	Connor (surgeons)	This paper (patients)
Year 1	52%	26.88%
Year 2	56%	28.17%
Year 3	51%	22.22%
Year 4	48%	25.80%

The biggest discrepancy between the Connor et al<sup>4</sup> study and our study is in the data related to radiological imaging. In the Connor study<sup>4</sup>, 34% of surgeons said they used ultrasound in the first year of follow-up, but in our study, only six patients (2.2%) had a planned abdominal ultrasound during the whole follow-up period (mean 732 days). CT scans were more widely used than ultrasound—13.6% of the patient population had a CT scan. Forty-one percent of surgeons reported performing abdominal imaging in the first 2 years, but in our study 78.5% of patients did not have an abdominal ultrasound, barium enema, colonoscopy or chest X-ray in the entire follow-up period.

Postoperative screening of the colon and rectum aims to identify the 1 percent per year incidence of metachronous CRC and precursor lesions. The Cochrane study<sup>5</sup> generally supports the use of postoperative colonic screening, although the optimum intervals are uncertain. The general recommendations are for a perioperative total colonic screen (and postoperative screen) at 2 and 5 years, however it is acknowledged that the data for such recommendations is flimsy.

A report (funded by the New Zealand Government) will soon be issued with recommendations for high-risk groups, and it is likely that postoperative colon screening will be supported.<sup>14</sup> Unanswered questions include: at what age to stop (screening), and how far out from the original surgery to continue to screen the colon with colonoscopy.

In the study by Connor et al,<sup>4</sup> 63% of surgeons questioned said they would screen the bowel in the first 2 years of follow-up. Indeed, the mean time followed in this study was 2 years, however (during that 2-year period) only 31.9% of patients had a colonoscopy and 2.5% of patients (seven) had a barium enema. It is not known, however, if patients were later scheduled for colonoscopies.

This discrepancy between the findings of Connor et al<sup>4</sup> and the present data could be due to several factors. Specifically, it is possible that the practices at Christchurch Hospital do not reflect the practices elsewhere in New Zealand. Furthermore, restricted access to radiology and colonoscopy services may be a factor. The non-respondents in the Connor et al<sup>4</sup> study may have skewed the data, as responders may use investigations more frequently than non-responders.

The variability of follow-up visits, and the use of blood tests and demonstrated radiological investigations, exposes the need for a general protocol for follow-up after colorectal cancer surgery. The difficulty with this, however, is that the exact mix of follow-up (to optimise resource use and patient survival) is unclear.<sup>5</sup>

One of the main stated purposes of intensive follow-up (of patients with CRC operated on for cure) is to identify asymptomatic recurrences at an early and treatable

stage<sup>2</sup>. Our data on recurrences showed that, of the 21 asymptomatic patients with disease discovered at a planned follow-up visit, only nine patients were managed with a potentially curative second surgical procedure. Three of these patients had a second bowel primary and remain disease-free. Only two of the remaining six patients are alive and free of disease; one following resection of local recurrence and one following a successful resection of a single pulmonary metastasis.

We know (from many studies) that, even when a potentially curable procedure is undertaken for patients with recurrent disease, the 5-year survival rate is only 25–35%.<sup>15,16</sup> Therefore, one of the aims of the follow-up of these 284 patients (to detect asymptomatic and potentially curative recurrence at a planned follow-up visit) was achieved in only two cases over this follow-up period.

This unsatisfactory detection rate could be explained by under-utilisation of investigations, limited resources, or poor patient compliance. Alternatively, the mix of follow-up investigations may not have been optimal. For example, a more intensive follow-up schedule in the first 12–24 months may be required. Scheduled follow-up might also delay the confirmation of recurrent disease if patients defer the reporting of the onset of new symptoms until their allocated clinic appointment.

Since this study was performed, a Colorectal Cancer Unit has been established at Christchurch Hospital. Therefore, under this new clinical management structure, it would be interesting to compare current rates of detection (of asymptomatic recurrences) with the data in this current study.

## Conclusion

Preoperative staging investigations to determine the best management of individual patients is under-utilised. Moreover, follow-up of patients after potentially curative CRC remains a controversial area, where large prospective randomised trials have found conflicting evidence for various methods of practise<sup>5</sup>. This study shows that (although surgeons follow-up most patients), the frequency of follow-up and range of follow-up investigations are variable. Indeed, patients potentially cured of asymptomatic recurrent disease by follow-up are disappointingly few. The reason for this is unclear, but could relate to sub-optimal follow-up programmes. This area of clinical practise is the subject of ongoing clinical trials.

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## **Energy settings for mono- and biphasic defibrillation: guideline of the New Zealand Resuscitation Council**

Duncan Galletly, Peter Larsen, Nigel Lever, Richard Aickin, and Warren Smith

The New Zealand Resuscitation Council (NZRC) has received many requests from health professionals in New Zealand to provide a clear guideline regarding the energy settings to be used for the defibrillation of ventricular fibrillation using *biphasic* devices.

On the basis of available evidence, the following rationale and recommendation were developed by the defibrillation advisory group of the NZRC, and were approved by the NZRC in September 2003.

### **Introduction**

For a person suffering a ventricular fibrillation arrest, the key determinant of survival is the time interval between collapse and the delivery of a defibrillating shock.<sup>1</sup> International guidelines, emergency medical services, and (now) public access defibrillation programs are all based upon this evidence. To achieve successful defibrillation, sufficient electrical current needs to flow through the myocardium,<sup>2</sup> but this need must be balanced by the caution that excessive current may cause direct injury to the myocardium.<sup>3</sup>

The shock output from defibrillators is measured as Joules of energy. Currently, the internationally agreed recommendation for *monophasic* waveform shock energies (in the treatment of ventricular fibrillation and unstable ventricular tachycardia) is an initial escalating triplet of shocks from 200, 200 (or 300), then 360 Joules, followed by further shock triplets maintained at 360 Joules.<sup>4</sup> Although long experience has shown that this energy sequence is clinically effective<sup>1,4</sup> there is no conclusive evidence to indicate that this sequence is indeed the optimal for maximising the number of victims who survive VF/VT arrest.<sup>5,6</sup> The uncertainty in the optimal energy sequence is due primarily to a paucity of systematic research, which in turn is due (in part) to the significant ethical difficulties of resuscitation research.

In recent years, a range of defibrillators delivering *biphasic* shock waveforms have become available. Compared to *monophasic* waveform shocks, research clearly indicates that *biphasic* shocks achieve defibrillation rates equivalent to those of monophasic shocks, but at lower energies.<sup>6,7</sup> A theoretical advantage of low-energy defibrillation is that it may result in less myocardial injury caused by the direct effects of the electrical current,<sup>8</sup> but, in the clinically used range, the relevance of myocardial injury is not conclusively known.<sup>4</sup>

*Biphasic* waveforms vary in their shape according to the electronic method used in their production. The shape of the *biphasic* waveform used in a particular defibrillator differs according to manufacturer, and it is probable that the energy required for each *biphasic* waveform shape to be optimally effective differs according to that shape.<sup>9,10</sup>

Just as with *monophasic* waveforms, the ideal sequence of energy settings for *biphasic* defibrillators (used for a population of VF / unstable VT victims) is not presently known.<sup>4,6</sup> Unfortunately, there are no dose-response studies to define optimal energy sequences based upon large-scale systematic study of human victims of ischaemia-induced ventricular fibrillation, and it is on the basis of less conclusive evidence that different energy sequences have been recommended by manufacturers for different devices delivering different *biphasic* waveforms.<sup>4,6</sup>

Although there are competing claims for particular *biphasic* waveforms and energy sequences, to date there is no conclusive evidence that any particular brand of *biphasic* device or waveform (or energy sequence), results in greater hospital-discharge rates of neurologically intact victims of human VF / unstable VT, than any other brand.<sup>4,6,11</sup>

Unfortunately, wide variations in manufacturer recommendations have the potential to create considerable confusion when a rescuer is faced with an unfamiliar defibrillator (of unknown waveform) during a cardiac emergency—and may create educational problems in attempting to provide a simply remembered guideline for recommended energy sequences.

Furthermore, although low (120–200 Joule) energy *biphasic* shocks appear to be more effective than high energy (200–360) *monophasic* shocks,<sup>4,6</sup> it is not conclusively known whether high energy *biphasic* shocks are more effective than low energy *biphasic* shocks—and it is therefore impossible to state whether *biphasic* settings should optimally be lower than (or indeed similar to) the present *monophasic* settings.<sup>6</sup>

## **Recommendation**

With the above considerations in mind, and because of the absence of conclusive human research evidence, the following recommendation is made by the NZRC. (We emphasise that the primary aim of this recommendation is to promote safe practice while further research evidence becomes available; it does not imply that higher shock energies are proven to be more effective).

The NZRC recommends that, for manual defibrillation, *mono-* and *biphasic* energy settings (for the treatment of VF / unstable VT in the adult), the initial settings should be 200, 200 Joules, followed by a third shock at the maximum available energy setting (up to a maximum of 360 Joules). All subsequent shocks should be given at the maximum available energy setting (up to a maximum of 360 Joules). If the rescuer is using a manual defibrillator that is not capable of delivering energies of 200 Joules, it is recommended that the maximum energy output be used throughout the resuscitation procedure.

In infants and children, it is recommended that *monophasic* and *biphasic* energy levels (using manually operated defibrillators) be given with initial escalating settings of 2, 2, and 4 Joules/Kg, followed by subsequent shocks at 4 Joules/Kg.

This NZRC recommendation provides:

1. **Simplicity.** Applying to both *mono-* and *biphasic* defibrillators, the recommendation avoids confusion where rescuers are unfamiliar with the available device, and where several types of defibrillator are used within a healthcare facility.
2. **Familiarity.** It follows closely the traditional, 200, 200, 360 Joule recommendations.
3. **Escalation.** It provides for the possibility that high-energy *biphasic* shocks are more effective than low energy shocks in refractory VF, and that rescuers may wish to escalate energy settings (to the maximum available) in the case of VF / VT refractory to lower energy shocks.
4. **Applicability.** The recommendation encompasses the energy outputs of all manual defibrillators currently available in New Zealand.

The implications of this recommendation, for the major brands of defibrillator available in New Zealand, are shown in Table 1.

**Table 1. Energy settings for three major brands of *biphasic* defibrillator available within New Zealand, used in accordance with the NZRC recommendation**

Defibrillator brand	Shock sequence (J=Joules)
Physio-Control Lifepak 12/20	200J, 200J, 360J, all subsequent shocks 360J
Zoll M Series	All shocks 200J
Philips/Laerdal Heartstart XL/4000	All shocks 200J

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## Metastatic basal cell carcinoma

Nilgun Ozbek, Deniz Meydan, Ethem Güneren, Saban Cakir, and Bedri Kandemir

The incidence of distant metastatic basal cell carcinoma (BCC) is very rare—it affects 0.0028% to 0.5% of the population.<sup>1,2</sup> Indeed, only approximately 230 cases have ever been reported.<sup>2</sup> The aim of this case report is to present a case arising on the hairy scalp that metastasised to bone and the regional lymphatics.

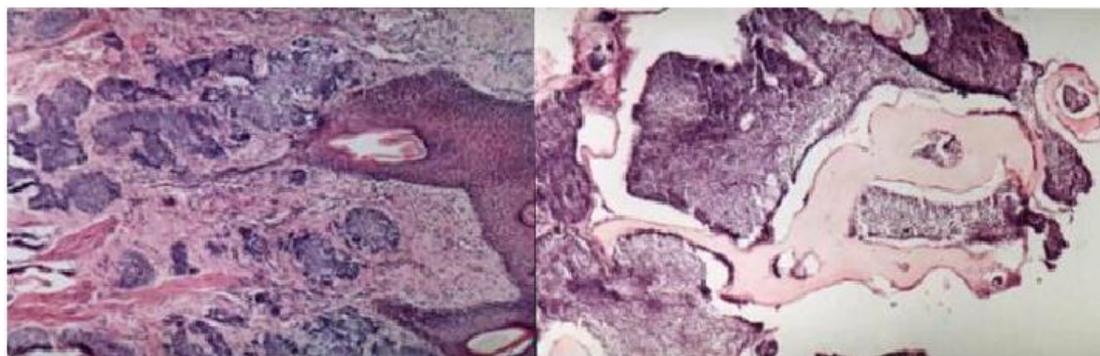
### Case report

A 62-year-old Caucasian woman was first admitted to Samsun Regional Hospital in 1993 for a 5 × 4-cm lobulo-ulcerated mass on her posterior scalp. Basal cell carcinoma was diagnosed by the authors based on histopathological examination, with clear margins after excisional surgery.

Three years later (in 1996), an ulcerated 4 × 3.5-cm lesion recurred. She underwent surgery, but the margins were not clear. She did not return for follow-up, and had no further treatment at that time.

In 1997, she underwent surgery for recurrence of BCC [Figure 1(a)], although tumour-free margins were not achieved.

**Figure 1. (a) Cutaneous basal cell carcinoma with metatypical differentiation infiltrating the dermal proliferated connective tissue, H&E (Haematoxylene and Eosine), x200 magnification; (b) Metastasis of primary cutaneous metatypical basal cell carcinoma infiltrating marrow space between the bone spicules, H&E, x200 magnification**



a

b

Again, she did not attend follow-up. In 1998, she was admitted with right-lower extremity pain, weakness, a destructive lesion that was affecting the L3 (vertebra) and putting pressure on the medulla spinalis, and bilateral multiple cervical

lymphadenopathy. In addition to the bone metastasis at L3, bone scintigraphy revealed pathological involvement of the seventh rib. At that time, she had no scalp lesion.

Discectomy and corpectomy were performed at L2–3 and 4. Metastatic BCC was confirmed in the bone specimens [Figure 1(b)]. She received 50 Gy of external irradiation between T12 and S1. In 1999, she was treated with cisplatin and 5-fluorouracil. In 2000, after recurrence of the scalp lesion, the regimen was changed to methotrexate, bleomycin, and vincristine—with no favourable response, however.

In 2001, a 5 × 8-cm nodulo-ulcerated lesion on the occiput was irradiated with 60 Gy. A clinically complete response was achieved. One year later (in 2002), an expansive lesion of the right seventh rib causing pain and fixed ulcerated multiple lymphadenopathy bilaterally was noticed in the neck.

Her seventh rib was then irradiated with 10 × 30 Gy, and her neck was irradiated bilaterally with 50 Gy. Subsequently, a fourth recurrence was detected in the occiput. Wide excision and reconstruction were then performed. She has remained well since May 2003 (one year ago).

## Discussion

The criteria for the diagnosis of metastatic BCC was defined by Lattes and Kessler:<sup>3</sup> the primary carcinoma arises in the skin, metastases must be demonstrated at a site distant from the primary, and histological similarity between the primary and metastases must exist. Our case met all three criteria.

It is not known why BCC metastasises (rarely). The predictors of aggressive behaviour were reviewed recently, and high-risk factors include—a defect in cellular immunity,<sup>3</sup> the size and site of the primary, depth of invasion, incomplete surgical resection, resistance to radiation therapy,<sup>4</sup> multiple lesions, age at presentation, recurrences, and infiltrative histologic pattern.<sup>5</sup>

The lymph nodes, lung, bone, skin, spleen, and brain are sites of metastasis.<sup>6,7</sup> A large primary tumour is characteristic of most cases of metastatic BCC,<sup>4</sup> since it involves larger vessels, which may facilitate seeding of the tumour via a haematological route.<sup>2</sup> BCC of the scalp may have a greater tendency to metastasise because of the increased concentration of large-calibre vessels.<sup>6</sup> Indeed, our reported tumour was large and originated from the scalp.

Once it metastasises, BCC is highly malignant, with a median survival of 8 months.<sup>6,7</sup> The 5-year survival is 12%. The prognosis is better when only regional lymph nodes are involved, because of their accessibility for surgical removal.<sup>8</sup> Most patients surviving with metastatic BCC for more than 2 years have had metastasis to regional lymph nodes that were then removed surgically.<sup>6,8,9</sup> Our patient has survived for 5 years (since diagnosis) in good general condition, despite bone and regional lymphatics metastases.

In conclusion, the rarity of metastases in BCC has limited the determination of predisposing factors. In our reported case, the scalp-originated tumour, non-curative treatment, and large primary tumour were predisposing factors. Our patient has lived for more than 5 years since disseminated disease was diagnosed. We suggest that although the prognosis is generally poor after metastasis has occurred, aggressive

surgical resection, radiotherapy, and chemotherapeutics may be useful in some patients.

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## **Continuing Medical Education: What for? How? And how much is it worth?**

Jennifer Weller and Alistair Woodward

### **Introduction**

Continuing medical education (CME) has many important purposes. These include assisting doctors to make independent and well-informed decisions about their practice, improved quality of care, and more efficient use of healthcare resources. CME is certainly an essential element of any modern health system, but exactly what it should consist of, and how it should be provided, are less certain. The cost of CME in its current form is considerable, and on the whole is borne by the New Zealand taxpayer. Full-time specialists receive in the order of \$7000 each per year. Add \$4000 for 2 weeks paid leave for CME, and the cost per specialist is around a third of the yearly course fees for a medical undergraduate. Is this investment in CME a good use of public money? Perhaps not; recent systematic reviews suggest that a good deal of CME achieves little in terms of changing physician behaviour and improving patient outcome.<sup>1,2</sup>

Any assessment of the effectiveness of educational interventions begins with the question of what are the desired outcomes. Often it is assumed that the purpose of CME is to improve patient management. But is the only legitimate outcome measure of the value of a CME program a change in physician behaviour or patient outcome? And what constitutes improved behaviour or improved outcomes? Better 'patient management' may mean different things depending on one's point of view. For instance, funders, patients and doctors may have different conceptions of what constitutes optimum care.

### **Measuring educational outcomes**

Measures that have been used in the past in studies of CME include: improved patient outcomes, observed changes in physician practice, improved end of course examination score, and physicians' opinions on whether a particular intervention led to changes in their practice.

Patient outcomes include HbIAc levels in diabetics, rates of back surgery, or scores for quality of consultations with adolescent patients.<sup>3-5</sup> There is a trade-off here between specificity and relevance. Measures such as HbIAc levels are tightly correlated with particular aspects of medical care, but CME programmes tend to be more general in their scope.

Another problem with measuring educational outcomes is that confounding factors beyond the control of the physician may affect the result. For instance, the patient may have been correctly prescribed the pills but chose not to take them, or the effects were not as anticipated. In a meta-analysis of interventions aimed at improving management of hypertension, there was no change in patients' blood pressures despite

doctors doing a better job of following up patients and prescribing according to guidelines.<sup>6</sup>

Shifting the focus to changes in physician behaviour avoids factors beyond the reach of CME that influence the effectiveness of treatment.<sup>6</sup> For example, a study of an educational intervention concerned with diabetes reported positive changes in the rate of foot examinations and dilated eye examinations.<sup>3</sup> Other studies of this kind have been less encouraging, finding no change in doctors' behaviour after lectures, receipt of written evidence-based management recommendations, or participation in organised CME events.<sup>1,7,8</sup> Referral practice with stroke victims was found not to change following an educational intervention (attendance at a lecture).<sup>9</sup> Moreover, evidence-based practice in the management of acute myocardial infarction has not been adopted universally, despite numerous publications and presentations.<sup>5,10</sup>

A simple method to assess the result of an intervention is to compare pre- and post-test scores.<sup>9,11,12</sup> In this way it is possible to show that CME participants often know more about a topic after they have spent time reading, listening, or discussing, but it is a big jump to assume this increase in knowledge will translate to a change in physician practice.

### **Self-reported changes**

Another way of enquiring about the effectiveness of CME is to seek participant opinion, including self-reported changes to practice.<sup>12-16</sup> A survey of NZ specialist anaesthetists found 93% (261/292) believed that participation in organised CME meetings had changed their practice and 70% described specific changes they had made to their management of patients.<sup>13</sup> Similarly, general practitioners attending an Annual Refresher Course reported that traditional CME had changed their practice, and many were able to give concrete examples of these changes.<sup>14</sup>

Perhaps the scope of CME evaluations should be expanded. Taking part in educational activities may result in subtle changes in medical practice, changes that are important but difficult to measure. When asked why they attend CME events, physicians often report they attend to keep up-to-date, to stay in touch with other fields of medicine, to gain reassurance about their own standard of practice, to interact with experts and colleagues, and to learn about recent advances.<sup>13,14</sup> Some of these variables can be measured directly; others (such as 'interacting with experts') are less open to scrutiny.

Studies based on self-reports shine a rather more positive light on CME than does research drawing on 'objective' outcomes such as prescribing habits, but one should be cautious in interpreting the results. It may be that doctors do not accurately report their own practice. Well-run CME activities in the traditional conference mode are non-threatening, entertaining, and relaxing, and doctors may confuse enjoyment with effectiveness. Moreover, doctors may choose to attend only those CME sessions in which they are interested and fail to recognise areas in their practice in need of improvement.

### **The challenge**

We have an obligation to use taxpayers' money wisely and wherever possible to improve patient care. Traditional CME activities (such as large conferences) are

popular with doctors and organisers but it is difficult to tell how effective they are. Nevertheless, there is ample evidence that doctors frequently fail to put knowledge into practice, despite exposure to CME activities. For example, the record of implementation of best practice guidelines is patchy, at best. How can we do CME better?

## **Improving CME**

Systematic reviews of educational outcomes, and educational theory offer some hints on how CME could be better organised. By most standards, conferences, printed educational materials and didactic lectures have only weak effects.<sup>1,2,17</sup> Indeed, simply providing people with written information is not a reliable way to change clinical practice.<sup>10</sup>

On the other hand, well-constructed interactive sessions can lead to change in physician practice.<sup>1,2</sup> Audit and feedback<sup>18</sup> may also be effective in improving physician practice, although the effects tend to be small. Local opinion leaders may have an important role to play in influencing the practice of their workplace colleagues, and these people should be considered a valuable resource for CME.<sup>19</sup>

Meetings that provide an opportunity for small group interactions and learning centred around workplace practice seem to be effective.<sup>20</sup> Other innovations that hold some promise include local, practice-based initiatives providing structured time to work with colleagues,<sup>21</sup> and the portfolio-based learning programs such as those available to Canadian physicians.<sup>22</sup>

And what of conferences? It would appear they are popular with doctors, but would almost certainly be more effective if they combined didactic lectures and more interactive sessions. Support for conference organisers to adopt a variety of educational methods could be one function of CME co-ordinators.

## **Using more effective strategies to implement guidelines**

It is notable that successful educational interventions, measured in terms of objective outcomes, have generally resulted from a targeted intervention aimed at a very specific area of clinical practice. An effective intervention must overcome the barriers impeding change, and some of the barriers to change are not too difficult to identify. New forms of practice are unlikely to be adopted if they impose additional costs or require extra time, especially if there are no additional resources provided, the change has low face value to the practitioner, or it is unsupported by colleagues.

Innovations may be the cause of disagreement between professional groups. CME programs are generally run by individual medical colleges for the benefit of their members. But substantial changes in healthcare do not rest entirely in the hands of the individual practitioner or professional group. Therefore, educational interventions aimed at just one professional link in the chain of patient care may be doomed to failure if the change is not supported at other levels.

Effective interventions are characterised by convincing evidence for the need to change, a clear protocol for new treatment, consensus among colleagues and between professional groups, and organisational support for change. Effective interventions tend to be those that use a variety of methods (including feedback and support), and

act at multiple levels, from the patient, through the primary care physician and practice nurse to specialist services and healthcare organisations.<sup>7,23–25</sup>

## Conclusion

Continuing medical education is expensive. Whether the expense is warranted is impossible to say. Because the desired outcomes of CME are unspecified, it is unclear exactly what it achieves, and unclear how we should measure its effectiveness. But what is known is that traditional CME programs will not, on their own, close the gap between current medical practice and optimum healthcare.

There are no universal solutions, but the studies we have summarised here show many ways in which CME can be improved. For this to happen, it will require education of providers, co-operation between professional groups, and commitment from professional organisations.

## Summary

There are many views on what Continuing Medical Education (CME) aims to achieve, and how its effectiveness should be assessed. Traditional forms of CME are popular with doctors, but there is ample evidence from systematic reviews that there are more effective educational strategies. To get better value from the large amounts currently spent on CME will require well-planned targeted strategies incorporating a range of interventions and crossing professional boundaries. Professional colleges responsible for continuing education of their members will need to co-operate more strongly, and the substantial commitment that healthcare organisations currently make to CME will need to be sustained.

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## **The causation of insanity**

*This extract is taken from an article by Dr Barraclough that was published in the New Zealand Medical Journal 1904, Volume 3 (12), p346–7.*

### **Masturbation**

This is a highly important subject, and one of very serious import to the well-being of the race. From feelings of entirely false modesty it is rarely mentioned, and all the time it is steadily eating its way like a hideous sore into the very heart of the social organism.

It is a very delicate subject with which to deal, but the truth must be spoken at any cost, as the unwholesome vice is more terribly common than most people have any conception of. It is worse than alcohol, because it is indulged in in secret, and is rarely spoken of.

Let it be said at once that, loathsome and degraded as the habit is, it cannot be said that it is harmful if only indulged in occasionally, especially if it is accompanied by a certain amount of moral obliquity, which prevents the victim from worrying and fretting over his, or her, infirmity. Unfortunately, however, it is often one of the manifestations of transmitted nerve-instability, and in these cases the habit rapidly becomes confirmed. Sexual volition is impaired, the frequency with which the habit is practised becomes increased, until we have those cases of frightful excess in which it is done openly and shamelessly.

In many cases of great excess, however, masturbation is the effect of insanity rather than the cause, and one not unfrequently notices that the vice ceases as soon as the mental health is restored. There is one direct way in which masturbation may produce insanity, and this occurs in those individuals who have a very tender conscience, who fully appreciate the loathsome nature of the habit, but whose will-power is too weak to enable them to throw off the chains which bind them. A sense of shame prevents their confiding in any one, and they fret in secret until a condition of melancholia, often delusional, is induced.

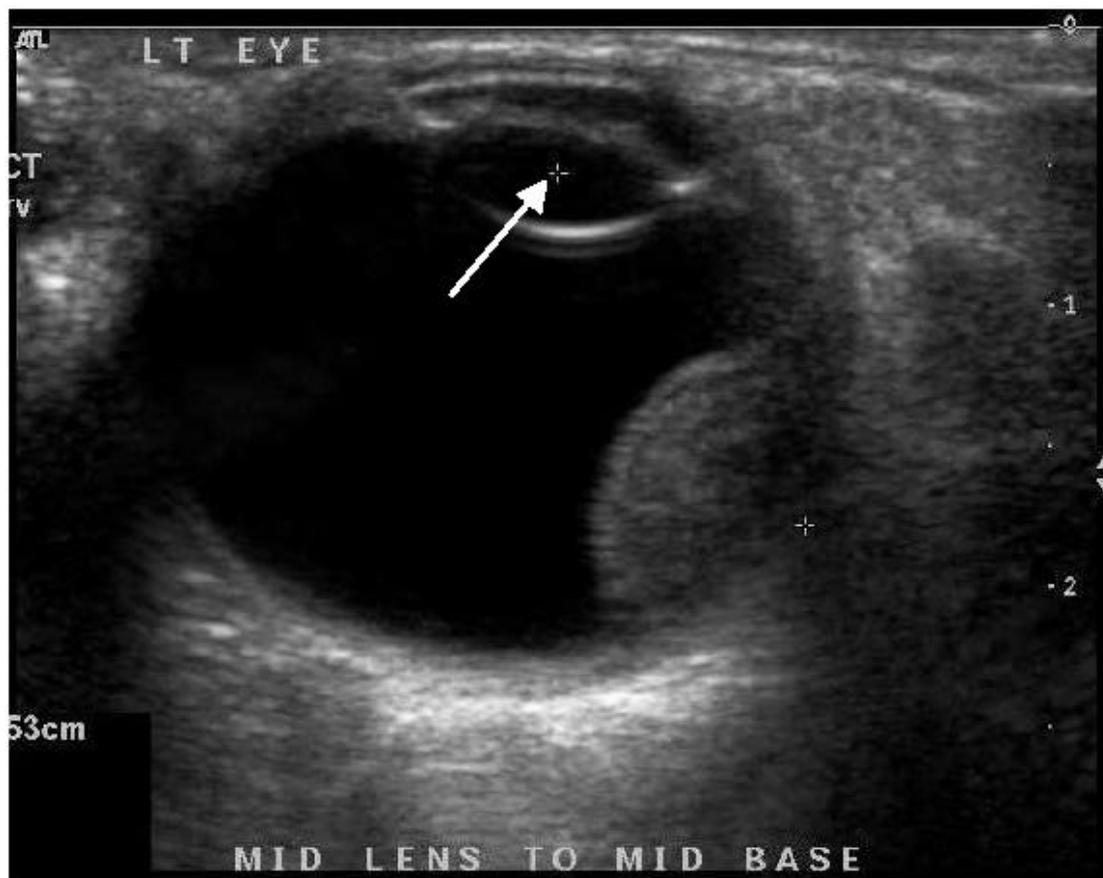
Even where the masturbation is not the direct cause of insanity it colours the pathological picture with its own sombre hues. Any one with the necessary experience may walk round the wards of the asylum and pick out the masturbators unerringly.



## Ocular Ultrasound

The presented image demonstrates an echogenic choroidal mass with the retina draped over it. The anterior structure (arrowed) is the lens. The appearances are consistent with a primary melanoma, but the differential diagnoses include metastatic lesion or haemangioma.

Ocular ultrasound is a useful diagnostic tool when fundoscopy is difficult due to cataracts or haemorrhage.





## **Stem cell research in USA**

In defiance of the Bush administration, stem cell research could get a big boost in California from an initiative by scientists and patient-advocacy groups. They propose the state should raise \$3billion to fund stem cell research, and Californians will vote on the measure in November, during the presidential elections.

Federal funds can only be used to conduct research on about 60 embryonic stem-cell lines created before August 2001. "The reality is that many of these lines petered out, or never grew, or were not normal," says Evan Snyder at the Burnham Institute in La Jolla, California. "This is not the way science should be done."

California has challenged the Bush government over the past two years by passing a law that makes it clear scientists can harvest stem cells from embryos donated at fertility clinics, and established the US's first state-wide registry to locate such embryos. Last month, New Jersey became the only other US state to pass such a law.

California hopes to go one step further by injecting state money into stem cell research into stem cell research. "What the California proposition intends to do is to put some teeth into this policy," says Snyder.

New Scientist 20/3/04 p7

## **Staff told not to publicise ineffectiveness of its drug**

*CMAJ* (the journal of the Canadian Medical Association) has published details of an internal document from the drug company GlaxoSmithKline that advised its staff to withhold the findings of a clinical trial in 1998 showing that the antidepressant paroxetine had no benefit in treating adolescents.

The association has publicised the document on its website in an early release of its Analysis column ([www.cmaj.ca](http://www.cmaj.ca)).

Last year, the drug, which is marketed as Paxil in North America and Seroxat in the United Kingdom, was banned for paediatric use in several countries because of a perceived increased risk of suicide.

The UK Medicines and Healthcare Products Regulatory Agency advised doctors last June that they should not prescribe the drug to patients under the age of 18.

The column says the document gives guidance on two clinical trials, study 329 and 377, whose results were, according to the document, "insufficiently robust" to support application to regulatory authorities for a label change approving Seroxat for use in children and adolescents.

Study 329, conducted in the United States from 1993 to 1996, showed paroxetine to be no more effective than a placebo, while study 377 showed that the placebo was "actually more effective than the anti-depressant."

BMJ 2004;328:422

## **Conflict of interest and clinical trials**

Financial conflict of interest is an area of active debate. While data exist on the perspectives and roles of academic institutions, investigators, industry sponsors, and scientific journals, little is known about the perspectives of potential research participants.

Investigators in Rochester, NY surveyed 5478 people with heart disease, breast cancer, or depression, who had agreed to take part in clinical trials. Between 64 and 87% of the respondents felt that disclosure should be part of informed consent.

The majority rated such knowledge as “extremely” or “very” important. Most said that they would still be willing to take part in clinical trials, irrespective of the degree of competing interest revealed.

J Med Ethics 2004;30:73–9

## **Rofecoxib, another drug that is of no use for dementia**

Studies of the brains of patients with Alzheimer’s disease (AD) have noted the presence of acute phase reactants, chronically activated microglia, and elevated expression of the cyclo-oxygenase–2 enzyme in neuritic plaques and tangles. In epidemiological studies, patients without dementia who take nonsteroidal anti-inflammatory drugs (NSAIDs) for long periods appear to have a reduced risk of developing AD. The ability of NSAIDs to inhibit cyclo-oxygenase–2, which is thought to be involved in inflammation, suggests a possible mechanism of action for these effects.

This hypothesis was investigated in a double-blinded, multicenter trial in the US in which 692 patients with mild or moderate AD aged 50 years or older were randomly assigned to receive 25 mg rofecoxib or placebo daily for 12 months.

However, the results showed no benefit to those treated with rofecoxib as the progression of AD was the same in both arms of the trial.

Neurology 2004;62:66–71

## **Laparoscopic resection of rectosigmoid carcinoma**

Colorectal cancer is one of the commonest malignant diseases worldwide, and laparoscopic resection of colorectal cancer has been used since 1991. However, because of early port site recurrence associated with this procedure, most hospital authorities were concerned about the adequacy of tumour clearance and long-term survival after laparoscopic resection. Yet surgeons were reluctant to discontinue this technique prematurely because of the benefits of better post-operative recovery and reduced surgical stress. Laparoscopic surgery was therefore recommended for colorectal cancer only as part of the randomised controlled clinical trial.

In a trial reported from Hong Kong 403 patients with rectosigmoid carcinoma were randomised to receive either laparoscopic assisted (n=203) or conventional open (n=200) resection of the tumour. Survival and disease-free interval were the endpoints and these were found to be highly comparable.

The operative time of the laparoscopic group was significantly longer, whereas postoperative recovery was significantly better than for the open resection group, but these benefits were at the expense of higher direct cost. The distal margin, the number of lymph nodes found in the resected specimen, overall morbidity and operative mortality did not differ between groups.

Lancet 2004;363:1187–92



## **The Health Amendment Act allowing access to clinical records**

The Cervical Screening Programme (CSP), although not without its problems, has been successful in reducing the incidence of, and mortality from, invasive cervical cancer.<sup>1</sup> It is notable that this success has been achieved without the loss of confidentiality of the private medical records of participating women.

With a view to improving the evaluation of the Programme, open access to the private medical records of all women on the CSP has been granted. This access is not limited to the records of the 150–200 women who develop invasive cervical cancer each year, and has no safeguards.

In my opinion, this unfettered access is not only unnecessary but also wrong.

Open access to the private medical records of women means a loss of confidentiality of the doctor-patient relationship. Furthermore, confidentiality is essential for patients to have trust in their doctor, and trust is essential for patients to receive appropriate care.

When caring for a patient, a doctor has access to a patient's body and personal details, and the patient willingly allows this invasion of privacy. The information is given in trust that it will be used solely for the purposes of obtaining an appropriate diagnosis and treatment. To respect the privacy of this information is to respect the patients themselves, and accordingly to justify the trust that is placed in the doctor.

Any use of this information, other than that for which the patient has authorised, represents an invasion of the privacy of the patient, and a breach of the trust that made the patient willing to consult the doctor in the first place.<sup>2</sup> Allowing the CSP evaluators open access to this information represents a betrayal of this basic trust that a patient places in her doctor.

If a patient does not have faith that the information she hands over will be kept confidential, then she may withhold information—this in turn may lead to her receiving an incorrect diagnosis and inappropriate treatment. With this new Act in place, women will no longer be able to confide in confidence; there is now the fear of 'Big Mother' watching them and monitoring them.

Contrary to the reassurances of the CSP, there are no safeguards to this access. There is no way a doctor can cover up (or withhold) any information deemed unnecessary to the CSP evaluators, and (until they have looked through everything) there is no way the evaluators can work out what is necessary for their evaluation process. In practice, the evaluators have the ability to waltz into a private medical clinic, demand a woman's notes, and sit down to peruse them at their leisure. Confidentiality is like pregnancy—you cannot have just a little bit of it; it is all or nothing.

When the CSP was first introduced, women were promised absolute confidentiality of their medical records—but, down the track, we find this promise has been broken. How can we expect people to have faith in a health system that breaks promises and overrides individual rights?

Anyway, who stands to benefit from this policy change? Certainly not individual women who can opt off the Programme—and yet continue to have regularly cervical smears, recall and appropriate treatment. Not women as a whole, either because there may well be a backlash against the Programme as a result of this Act. By showing a complete lack of regard for the doctor–patient relationship, and a lack of respect for the individual rights of women, the CSP risks losing cooperation of women and their smear takers, which in turn may lead to the eventual downfall of the Screening Programme. The effectiveness of the CSP, depends on increasing the number of women participating in the Programme and on improving the evaluation of the Programme.

Evaluation of the Programme could be improved if it was done regularly using pre-existing evaluation strategies. If women were contacted for consent close to the time of their smear being taken, then they would not have died or disappeared without trace as claimed.

Failing to obtain consent before accessing the medical records of women betrays a complete lack of respect for the individuals concerned, and treats women as sources of useful information rather than as individuals worthy of respect. It is also showing a complete lack of regard for the value of the therapeutic doctor-patient relationship. No wonder people are turning away in their droves from traditional medicine towards alternative healthcare when we treat them in this way.

Academics driving the way forward in healthcare, with the emphasis on evidence-based medicine and showing little regard for the individual, are, in my opinion, largely to blame.

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## **Researched Medicines Industry (RMI) Code of Practice Complaints 2003**

The RMI received four complaints and one appeal was lodged under the Code of Practice during 2003 as follows:

### **1. Pfizer Pharmaceuticals Group versus Eli Lilly regarding promotional material relating to a mailer and health check questionnaire**

The complaint was heard by the Code of Practice Standing Committee (“COPSC”) in May 2003 whereby Pfizer alleged breaches of Principle 4 of the Code of Practice (“Code”). The Committee did not uphold the complaint as the Committee decided there is no accepted definition of the term “generation” and in relation to the unsupported claim of excellent safety, the Committee was of the view that the use of the term in the given circumstances did not amount to a breach of the Code. The Committee noted that the health check questionnaire satisfied the requirements of the Medicines Act 1981 and was not a disguised promotion.

### **2. Eli Lilly versus Pfizer Pharmaceuticals Group regarding advertisements relating to Viagra in journals and television**

The complaint was heard by the Committee in May 2003 whereby Eli Lilly alleged a breach of Principle 4 of the Code. The COPSC upheld the complaint due to the use of a unqualified superlative and statements that were outrageous and manifestly excessive and un-referenced and unsubstantiated. The Committee ordered the material to be withdrawn, ordered Pfizer to take appropriate care not to advertise or otherwise act in breach of the Code and imposed a \$10,000 fine. An appeal was lodged by Pfizer and the Appeal Committee upheld the COPSC decision in its entirety and dismissed the appeal.

### **3. Pfizer NZ Ltd versus Eli Lilly regarding promotional activities in relation to Cialis**

The complaint was heard by the COPSC in November 2003 whereby Pfizer alleged breaches of Principle 3, note 7, Principle 4, note 4 and Principle 6 note 2 of the Code. The Committee did not uphold the complaint as it was permissible for a company to issue a press release regarding their products and that other statements contained therein had supporting evidence.

### **4. Roche Products versus Abbott Laboratories regarding two television direct-to-consumer advertisements for Reductil**

The complaint was heard by the Committee in December 2003 whereby Roche alleged breaches of Principle 6 of the Code. The COPSC upheld the complaint however no penalty was given as Abbott Laboratories immediately withdrew one advertisement and made changes to the second advertisement that was in breach.

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

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

Applications close on **30 June 2004** with the Secretary to the Faculty of Medicine,  
University of Otago Medical School,  
P O Box 913,  
Dunedin,  
from whom further details may be obtained.





The Royal Australasian  
College of Physicians

*Adult Medicine Division*

## **Call for Applications for**

## **Foundation Fellowship of the Australasian Chapter of Sexual Health Medicine**

The RACP has formed the Australasian Chapter of Sexual Health Medicine within the Adult Medicine Division. Foundation Fellowship will be available to experienced registered medical practitioners who practice in Sexual Health Medicine in Australia and New Zealand.

Those applying for admission will be considered on the basis of the following criteria:

1. Fellowship of the Australasian College of Sexual Health Physicians (FACSHP);
2. Broad experience in all aspects of clinical Sexual Health Medicine;
3. Ongoing contribution to Public Health policy development in the control of sexually transmitted infections on a population basis in Australasia or overseas;
4. Full-time academic position in Health Sciences relevant to Sexual Health Medicine at senior lecturer level or above;
5. Evidence of clinical training in Sexual Health Medicine;
6. Attainment of academic qualifications in Sexual Health Medicine;
7. Evidence of participation in Continuing Medical Education and Quality Improvement in the field of Sexual Health Medicine;
8. Evidence of contributions to the field of Sexual Health Medicine by:
  - participation in research in the field with appropriate supervision and collaboration
  - development of professional or academic activity
  - regular contributions to undergraduate/postgraduate education; and/or
  - publications in scientific journals and/or contributions to scientific meetings.

For specific details concerning eligibility, please refer to the detailed criteria in the *Guidelines for Determining the Eligibility of Candidates for Foundation Fellowship* in the Application Package.

Applicants must demonstrate a satisfactory practice history (no professional misconduct, or disciplinary issues).

Foundation Fellows will participate in ongoing professional activity in the field of Sexual Health Medicine and are strongly encouraged to supervise trainees and participate in a Maintenance of Professional Standards (MOPS) Program. Payment of the annual subscription for Fellows is a requirement of the Chapter. Continued Fellowship is conditional upon a satisfactory practice history.

### **Application Process**

Application Packages may be downloaded from the RACP Website at <http://www.racp.edu.au/public/sexualhealth.htm>

**or obtained from:**

Australasian Chapter of Sexual Health Medicine

Telephone: +61 (0)2 9382 7457

Email: [sexualhealthmed@racp.edu.au](mailto:sexualhealthmed@racp.edu.au)

**Closing date for applications: Wednesday 28 July 2004**



## **Clinical radiology made ridiculously simple**

Hugue Ouellette and Patrice Tétreault. Published by MedMaster. ISBN 0940780410. Contains 109 pages. Price \$US24.95

This is a soft-cover, basic radiology textbook. Its target audience is medical students, medical radiation technologists (MRTs), and junior doctors. The authors have selected areas of radiology that are particularly relevant to junior doctors—in particular, in areas they would expect them to have radiographic skills thereby enabling them to attempt a reasonable interpretation in the acute clinical setting.

It is by no means comprehensive, although this is not a weakness of the book, in fact, that increases its appeal—as the understanding of radiological principles is more important than the detail, and helps lay a foundation for ongoing learning.

The uniqueness and appeal of this book relate to its commonsense approach to imaging—based on an explanation of the physical principles and the anatomy behind the images. The illustrative analogies are entertaining, and facilitate understanding and retaining of information. The line drawings are of just as good quality as the radiological reproductions. Furthermore, the authors have attempted to make the learning experience fun and entertaining, and in my opinion have succeeded—the lightness of tone does not detract from the value of the book.

In summary, this is a fine attempt to simplify clinically important radiology and place it in a context of simple physics and anatomy. Its particular appeal will be to medical students, house surgeons, and paramedical staff who view radiographs as part of their job. I commend the authors on their efforts.

**Tim Buckenham**

Clinical Professor of Radiology and Consultant Vascular Radiologist  
Christchurch School of Medicine and Health Sciences