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This Issue in the Journal

Adults' perceptions of the causes and primary prevention of common fatal cancers in New Zealand
A Reeder, J Trevena

We assessed population perceptions of the causes and prevention of common fatal cancers. Among women, breast, cervical and lung cancer were most salient; among men, prostate, lung and bowel cancer – partially congruent with population statistics. There was high awareness that tobacco smoke and sun exposure increase lung and skin cancer risk, respectively, but less awareness of other protective strategies. Prevention efforts should reflect the known risks and potential for gain, with public policies that create supportive environments for healthy behaviours.

Equestrian injuries in New Zealand, 1993–2001: knowledge and experience
G Northey

Participating in an activity that includes one member who is over 500 kg, moves at speeds up to 65 kph and elevates the rider up to 3 m above the ground, can be a risk in itself. Evidence shows that rates of death and injury associated with horse-related activities can vary depending on factors such as age, sex, knowledge and experience, helmet use, environmental factors, and the temperament of the horse. This study was undertaken to review the literature on equestrian injuries in New Zealand and explore a range of preventive countermeasures.

A comparative study of drug utilisation at different levels of the primary healthcare system in Kaski district, Western Nepal
R Shankar, P Kumar, M Rana, A Dubey, N Shenoy

The Nepalese primary healthcare system operates at three levels: primary health centre (PHC), health post (HP) and sub-health post (SHP). The present study was carried out in one PHC, one HP and two SHPs in the Kaski district, Western Nepal. Average number of drugs per prescription was higher at the PHC. The average cost of drugs per prescription and percentage of prescriptions containing antibiotics and injections were higher at the PHC level. Defined daily dose (DDD) of drugs varied.

Pre-hospital antibiotic treatment of meningococcal disease: scope for improvement
T Riddell, C Bullen

The focus of this research was to determine the extent to which Auckland general practitioners (GPs) follow guidelines recommending that they give antibiotics to patients with suspected meningococcal disease prior to sending them into hospital. This study found that only one third of eligible patients received pre-hospital

treatment by their attending GP. This research highlights the need for GPs to give antibiotics more often than they do at present when confronted with a patient they suspect as having meningococcal disease.

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Improving quality (IQ): a systems approach for the New Zealand health and disability sector

Annette King

In the foreword to the New Zealand Health Strategy I noted that people had been telling the Government that they wanted a system that put people at its heart.[1] I also noted that higher-quality care had been identified as a common goal for the health system. Quality is also reflected in a number of the objectives in the New Zealand Disability Strategy.[2]

Improving quality (IQ): a systems approach for the New Zealand health and disability sector[3] gives further focus to the importance of quality. It is a commitment to supporting continuous quality improvement by each person who works within the system, by the people cared for and supported by the system, and by the system itself.

We want to put people at the heart of the system, particularly at the interface between those receiving health and disability services and those delivering them.

In this document the term 'people' is used in its broadest sense, because there should be both an individual and a population perspective to quality improvement within the health and disability system.

The approach in this document is my response to requirements in the New Zealand Public Health and Disability Act 2000, and to advice I have received from the National Health Committee (www.nhc.govt.nz). The Committee highlighted the importance of taking a systems approach to quality improvement. This is consistent with international developments, such as the work of Dr Don Berwick of the United States Institute for Healthcare Improvement,[4] which have highlighted the importance of such an approach. A systems approach recognises that quality is the result of the complex interaction of people, individuals, teams, organisations and systems.

Quality can always be enhanced even though very good work is already happening. Improving Quality reflects this approach by including an ongoing review and updating process. I am confident that this document will help all health professionals to provide continually improving health services to all New Zealanders.

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Acknowledgements: This editorial is a reprint of the foreword to 'Improving quality (IQ): a systems approach for the New Zealand health and disability sector' published by the Ministry of Health, Wellington, New Zealand in September 2003. The full document can be found online at the Ministry of Health web site, URL: http://www.moh.govt.nz/moh.nsf/49ba80c00757b8804c256673001d47d0/f9eb9f14e7626b8ccc256d96007f6b4e/$FILE/ImprovingQualitySystemsApproach.pdf

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Adults' perceptions of the causes and primary prevention of common fatal cancers in New Zealand

Anthony Reeder and Judy Trevena

Abstract

Aims To assess population perceptions of the causes and primary prevention of common fatal cancers, and to help inform the New Zealand Cancer Control Strategy.

Methods A national telephone survey obtained perceptions from a random population sample, 20 years or older, identified from telephone directory listings, supplemented with self-identified Maori from electoral rolls. Quotas were set to recruit population proportions consistent with 1996 Census distributions.

Results The 438 respondents (64% participation) matched 1996 Census distributions for age, sex and ethnicity, but were socioeconomically advantaged. Among women, breast, cervical and lung cancer were most salient; among men, prostate, lung and bowel cancer – partially congruent with population statistics. There was high unprompted awareness that tobacco smoke and sun exposure affect lung cancer and skin cancer risk, respectively, but less awareness of potential protective strategies for other cancers.

Conclusions Perceptions of cancer risk and prevention are affected by high-profile programmes. Cancer prevention activities should reflect known risks and the potential for prevention. With high incidence and death rates and potentially modifiable risks, bowel cancer deserves greater attention. A comprehensive cancer prevention strategy needs to go beyond raising awareness and the promotion of individual behavioural change to the development of healthy public policies and practices that create supportive environments for health-promoting behaviours.

Cancer is the second leading cause of death in New Zealand, after cardiovascular disease,[1] and the leading cause of death among those aged 35–64 years. Potentially modifiable behavioural, social and environmental factors may be implicated in as many as 75% of cancers.[2] Lung cancer, the most common cause of cancer death in New Zealand,[3] is linked to tobacco smoke. There is 'convincing evidence' that physical activity and vegetable consumption are protective against cancer of the large bowel,[4] the second leading cause of cancer death. New Zealand melanoma rates are among the highest in the world.[5] Most melanomas are attributed to excess sun exposure.[6] New Zealand has higher cancer incidence rates than Australia, overall (for both sexes), for colorectal cancer (both sexes), and lung cancer and melanoma (females), such that priority needs 'to be given to efforts to discover reasons for the high incidence of cancer in New Zealand, and to enhance prevention, appropriate screening, and early diagnosis.'[7] Reports about public perceptions of cancer causation and prevention have been disseminated overseas,[8–10] but in New Zealand most reports remain unpublished.[11–14] This is despite their relevance for primary prevention and also potential provision of insight into motivations that may affect the uptake of screening and acceptability of diagnostic and treatment services. In New Zealand,

research into ‘better methods of preventing cancer, investigating the social and behavioural factors that discourage people from seeking treatment’ and other social issues is ‘unfortunately sparse’ and uncertainty ‘in prevention, socio-behaviour and epidemiology can only be answered by specific New Zealand-based research.’[15] The aim of this study is to help inform the New Zealand Cancer Control Strategy.

Methods

A national telephone survey was carried out by an experienced contractor (Phoenix Research), August to September 2001, using a computer-assisted telephone interviewing system. The study was approved by the Otago Ethics Committee (reference number 00/03/10). A sample size of around 400 (20 years and older) was estimated as sufficient to obtain point estimates of population frequencies with no more than a 5% margin of error. Quotas were set to recruit proportions consistent with the 1996 Census, by 20-year age bands, sex, self-reported Maori ethnicity and geographic region. Telephone numbers were randomly selected from directory listings. To achieve the desired proportion of Maori, further contacts who identified as Maori were randomly selected from electoral rolls.

Trained interviewers asked to speak with the person in the household, 20 years of age or older, who had most recently celebrated a birthday. Contacts were advised that the questionnaire would take about 12 minutes to complete and that for quality control reasons, including the need to ensure consistency between interviewers, a supervisor would monitor a proportion of interviews. Interviewers offered to call back if the timing was inconvenient. Up to six, mostly evening, call-backs were made. All interviewers were female. In some previous research certain questions were asked of women only by female interviewers.[8] The questionnaire included items designed to explore perceptions of the causes and prevention of cancer, and to provide demographic information. Questionnaire content drew on many sources,[8,11–14,16–18] and was refined through consultation. Presentation of questions was dependent on sex: items about breast and cervical cancer were asked only of women and questions about prostate cancer asked only of men. Questions about melanoma, bowel and lung cancer were addressed to all. Responses are reported in the order that the questions were asked.

For fixed-response questions, interviewers read out permitted answers and electronically recorded responses. For open-ended questions, codes for categorising anticipated answers were provided to the contractor. Other answers were recorded verbatim, coded by one researcher and checked by the other. Where several verbatim responses were similar, a new code was created to encompass them. For questions where multiple responses were permitted, after each response, participants were asked ‘Anything else?’ until either they could provide no further answers or a maximum of 10 replies was reached.

The terms used by respondents for cancer types were categorised to correspond with those used in official cancer databases so that, for example, the category ‘bowel cancer’ includes all mentions of colorectal cancer and cancers of the colon and rectum, whereas stomach cancers form a distinct and separate group. Little difficulty was experienced in classifying responses in this way.

Results

Sample characteristics Of 1565 attempts to perform interviews (Table 1), 1130 contacts were made and 689 were deemed eligible, according to population quotas. Of these, 251 refused to participate, producing 438 completed interviews (64% participation).

The age, sex and self-defined ethnicity distributions of the 438 respondents were similar to the 1996 Census population (Table 2).

Table 1. Attempted and completed interviews, by call status and contact source

Call status	Telephone directory	Electoral rolls	Total
Contact made:			
Completed interviews	427	11	438
Quota full/non-qualifier	424	17	441
Refusals	248	3	251
No contact made:			
Disconnected number	62	4	66
Invalid number	16	0	16
Language barrier	36	0	36
Unable to contact	17	6	23
Engaged	19	0	19
Answering machine	68	0	68
Fax machine	91	0	91
No answer	115	1	116
Total	**1523**	**42**	**1565**

Table 2. Demographic characteristics of the sample and 1996 Census population

	Sample n	Sample %	Census* %
Sex:			
Females	231	52.7	51.8
Males	207	47.3	48.2
Age:			
20–39 years	183	41.7	44.5
40–59 years	144	32.9	33.4
60+ years	111	25.4	22.1
Ethnicity:			
NZ Maori	47	10.7	10.8
Non-Maori:			
Pacific Island	9	2.1	4.0
Asian	8	1.8	4.2
European	361	82.4	80.6
Other	13	3.0	0.4
Subtotal non-Maori	**391**	**89.3**	**89.2**

*Statistics New Zealand[19]

Respondents were asked to indicate all ethnic groups with which they identified; those reporting more than one were coded according to the census hierarchy (Table 2). If a person said ‘Maori and European’, their primary coding was Maori, whereas if someone said ‘Asian and Pacific Island’ it was Pacific Island. Of the 47 Maori participants, 11 were recruited through supplementary Maori sampling procedures.

Compared with the 1996 Census population, the geographic distribution of the sample included 6% more respondents from the Auckland region and 5% more from the Waikato, but otherwise differed by no more than 3%. The sample was better educated, with considerably fewer reporting no school qualifications (11.6% vs 32.3%) and more reporting secondary (40.0% vs 23.7%) or tertiary qualifications (45.7% vs 27.9%).[20] The sample also contained more in full-time employment (56.2% vs 47.6%) and fewer unemployed (2.1% vs 4.2%).[21]

Female cancers In response to the question 'Which three cancers do you think cause the most deaths among New Zealand women?' most women were able to name three (55%), 31% two, and 11% one. Only 3% (seven women) were unable to name any. The full results are presented in Table 3, where the cancer sites listed in italics were not specifically included in survey questions.

Table 3. Selected causes of cancer deaths, ranked by 1998 New Zealand population statistics* and frequency of mention by sample, by sex

	Population		Sample	
Cancer site (ICD code)	**Rank**	**n deaths (%)†**	**Rank**	**% mention**
Females				
Breast (174)	1	629 (17.1)	1	93
Bowel (153, 154)	2	554 (15.1)	4	18
Lung (162)	3	526 (14.3)	3	34
Pancreas (157)	4	178 (4.8)	-	0
Ovary (183)	5	177 (4.8)	5=	10
Lymphomas (200–202)	6	171 (4.7)	8=	2
Leukaemia (204–208)	7	124 (3.4)	8=	2
Stomach (151)	8	120 (3.3)	8=	2
Melanoma (172)	9	105 (2.9)	5=	10
Brain (191)	10	91 (2.5)	13=	<1
Uterus (179, 182)	11	85 (2.3)	8=	2
Cervix uteri (180)	12	77 (2.1)	2	56
Kidney (189)	13	66 (1.8)	-	0
Oesophagus (150)	14	58 (1.6)	-	0
Bladder (188)	15	53 (1.4)	-	0
Liver (155)	16	37 (1.0)	8=	2
Gall bladder (156)	17	34 (0.9)	-	0
NMSC (173)	18	26 (0.7)	7	7
All other cancers	-	560 (15.3)	13=	<1
TOTAL		**3671**		
Males				
Lung (162)	1	855 (21.9)	2	60
Bowel (153, 154)	2	569 (14.5)	3	40
Prostate (185)	3	524 (13.4)	1	70
Stomach (151)	4	183 (4.7)	6	9
Pancreas (157)	5	165 (4.2)	14=	<1
Lymphomas (200–202)	6	159 (4.1)	7=	6
Melanoma (172)	7	143 (3.7)	4	17
Leukaemia (204–208)	8	133 (3.4)	7=	6
Bladder (188)	9	116 (3.0)	14=	<1
Brain (191)	10	112 (2.9)	12	3
Kidney (189)	11	108 (2.8)	14=	<1
Oesophagus (150)	12	104 (2.7)	13	1
Liver (155)	13	87 (2.2)	9	5
Pleura (163)	14	51 (1.3)	-	0
Gall bladder (156)	15	27 (0.7)	5	14
NMSC (173)	16	40 (1.0)	-	0
Testis (186)	17	5 (0.1)	10=	4
All other cancers	-	530 (13.6)	10=	4
TOTAL		**3911**		

*New Zealand Health Information Service[22]; †percentage of all cancer deaths
NMSC = non-melanoma skin cancer

When asked ‘Do you know of anything that increases the risk of getting breast cancer?’ 54% of women were unable to suggest anything. The most commonly mentioned risk factors were a family history of breast cancer (21%), and tobacco smoking (10%). The wide range of other replies included: ‘not having (medical) checks’ (6%); hormone replacement therapy and diet (5% each); and use of the contraceptive pill, not breast feeding and high fat intake (4% each). No other factors were mentioned by more than 2%. When asked ‘In what age group do you think a woman is most likely to develop breast cancer?’ nearly half (47%) gave age ranges with upper limits of 50 years or less. In addition, 13% said ‘any age’, 5% 40–60 years, and 2% said risk increased with age.

When asked ‘Do you know of anything that increases the risk of getting cervical cancer?’ nearly half of the women (47%) could not name any risk factors. One woman declined to answer. Most frequently mentioned were multiple sex partners (23%), not having regular smear tests (9%) and a range of other factors including having sex or a sexually transmissible disease (6% each), having genital wart virus, specifically (4%), tobacco smoking (4%), early intercourse (3%), and having a sex partner who has had several sex partners (2%). ‘Other’ responses (15% in total) included polyps, tampons, diet, genetics, the contraceptive pill, IUD, fatty food and ‘uncircumcised men’.

Male cancers In response to the question ‘Which three cancers do you think cause the most deaths among New Zealand men?’ most men were able to name three (59%), 22% two, 10% one, and 8% could not name any (Table 3). When asked, ‘Do you know of anything that increases the risk of getting prostate cancer?’ most men (80%) could not suggest anything. The most common risk factor mentioned was diet (8%) followed by ‘other’ (7%), which included vasectomy, smoking, not drinking or urinating enough, and cycling. Increasing age and a lack of regular medical checkups were mentioned by 3% each, and a family history of prostate cancer and being overweight or inactive by 2%. When asked ‘In what age group do you think a man is most likely to develop prostate cancer’, less than 2% said that likelihood increases with increasing age. A substantial proportion (41%) mentioned age ranges with upper limits of 50 years or less, 4% said that it was most likely within the 40–60 age group, and 2% said the risk occurred at any age.

Other cancers Men and women were asked ‘What do you understand by the term ‘melanoma’?’ Unprompted answers were coded according to a hierarchy used for presenting earlier survey results,[16] with one answer per person. Overall, 64% were aware that melanoma is a type of skin cancer. An additional 11% mentioned moles and freckles, 9% the sun or UV radiation, 5% cancer, and 3% described melanoma as a ‘skin condition’. Only 3% said that they didn’t know what it was. When asked, ‘Do you know of anything that increases the risk of getting melanoma?’ only 2% were unable to describe any risk factors and most (84%) mentioned exposure to excess solar UV radiation. Also mentioned were having skin that burns easily (9%), moles (5%), unprotected sun exposure at an early age (4%), sun-lamp use (3%), and a family history of melanoma (2%). Over half (55%) replied in the affirmative to the question ‘Have you or anyone else deliberately checked your skin for changes which could be melanoma or other skin cancer in the last 12 months?’ Most of the checks were either performed by a doctor/specialist (32%), self-examinations (16%) or carried out by family members (7%). Few mentioned friends and partners (1%).

When asked ‘Do you know of anything that increases the risk of getting bowel cancer?’ 51% were unable to describe any risk factors. Most frequently mentioned were unspecified dietary factors (28%), inadequate fibre (18%), excess fat (9%), and a family history of bowel cancer (8%). Meat consumption (6%), lack of regular bowel movements (5%), alcohol (4%), smoking (3%) and stress (2%) were other factors mentioned.

In response to the question ‘Do you know of anything that increases the risk of getting lung cancer?’ almost all (98%) identified the relationship between tobacco smoking and lung cancer. Other factors included asbestos (16%), exposure to workplace hazards (14%), second-hand smoke and chemicals (12% each). Some other replies, no more than 3% each, referred to dust, genetic factors, alcohol and non-tobacco smoke. To assess perceived health gain from quitting, respondents were asked ‘How much do you think that a regular smoker can reduce their risk of lung cancer by quitting smoking?’ Most considered that quitting would either ‘greatly’ (53%) or ‘moderately’ (25%) reduce lung cancer risk, whereas only 7% thought that it would ‘completely eliminate’ risk, 8% that it would ‘slightly’ reduce risk and 1% not reduce risk at all.

Discussion

The present study appears to be the only one of its kind published in New Zealand recently, although a number of unpublished reports have been produced.[11–14,16] The 64% response rate obtained exceeds levels reported for earlier population-based surveys where that information is provided.[11,12] Nevertheless, our findings tend to confirm patterns identified previously, although there are difficulties comparing results obtained from prompted and unprompted questionnaire items and telephone and postal surveys. For example, although all surveys report very high levels of awareness of the link between tobacco smoking and lung cancer, surveys where prompts were provided recorded far greater awareness of other risk factors for lung cancer. In one postal survey,[11] exposure to asbestos was selected by 83% from a list of possible factors, whereas in the present study asbestos was mentioned, unprompted, by only 16%. Nevertheless, asbestos ranked second as a risk factor in both studies.

When women were asked to name the three most commonly fatal cancers among New Zealand women, 45% named fewer than three. Those perceived as most common included the three most frequent causes of cancer death, but in an order probably influenced by screening programmes. Lung and bowel cancers each cause around seven times more deaths among women than cervical cancer, and they warrant increased attention. Lung cancer is mostly caused by tobacco smoke and is readily preventable; bowel cancer is linked to nutrition[4] and there is ‘sufficient evidence’ that colon (and breast) cancers are related to physical inactivity and many are, therefore, also potentially preventable.[23] The far greater prominence afforded breast cancer relative to lung and bowel cancers has been noted elsewhere.[24]

Despite awareness of the cancers, about half the women were unable to name any risk factors for cervical cancer and breast cancer. Although there was moderate awareness that cervical cancer was related to sexually transmissible infections, any increased publicity should support preventive empowerment rather ‘victim blaming’. The prominence of ‘family history’ as an explanation for breast cancer requires qualification, as most cases have no such history. There was a lack of consensus about the age at which women are most likely to develop breast cancer. Nearly half gave

ages less than 50 years old – the age at which the national breast screening programme in New Zealand presently begins. Although this may reflect a possible greater impact of cases among acquaintances that occurred at a younger age, women may also have been influenced by a promotion featuring Lucy Lawless, an actress in her 30s. This demonstrates the need to frame and target messages appropriately in order to avoid unnecessarily raising anxiety. The dissemination of primary prevention information (healthy nutrition and physical activity) among younger women could complement the secondary prevention focus (breast screening) among older age groups.

The cancers most commonly perceived as fatal by men in New Zealand included the three most common, but in a different order. As among women, lung and bowel cancer deserve greater prominence. There was limited appreciation that prostate cancer mainly affected older age groups, with 40% including ages younger than 50 years as the age of greatest risk. As mentioned with respect to breast cancer among women, this may reflect the possible greater impact of cases when cancer occurs at a young age. There is currently inadequate evidence to support prostate screening, though GPs are likely to refer men over 50 years of age for tests.[25] There was little knowledge about causation, reflecting a lack of evidence of risk factors for prostate cancer, although a recent New Zealand study found that vasectomy did not increase risk.[26]

In addition to high awareness among both sexes of the link between lung cancer and smoking, most respondents (85%) considered that quitting would reduce risk of lung cancer. This promising result suggests that in New Zealand health promotion campaigns about the risks of smoking and the benefits of quitting have successfully raised public awareness about causation and the efficacy of preventive strategies. Nevertheless, around 25% of New Zealanders over the age of 15 years remain daily smokers and the prevalence of smoking has not declined significantly in recent years.[27] Clearly, high awareness of risk and preventive strategies is not sufficient to further reduce smoking prevalence. The addictive nature of nicotine reinforces the need to strengthen tobacco control efforts and maintain a broad approach that goes beyond individual behaviour change and removes social and environmental support for smoking. The creation of smoke-free workplaces and public places is one such strategy. Tobacco control efforts could be funded directly from tobacco taxes, which raise around $800 million a year; at present, less than 10% of this amount is spent on tobacco control, despite smoking being the leading cause of preventable, premature death. In Australia, the public health benefits of tobacco control are well appreciated,[28] but the estimated amount committed per death in 1998 was low (less than $500 compared with $419 619 for road safety, $34 603 for cervical cancer, and $20 172 for breast cancer programmes).[29] A similar pattern is likely to exist in New Zealand, but appears to be undocumented.

Our results confirm high levels of awareness that melanoma is a skin cancer related to excess sun exposure,[11,13] yet there is little evidence of recent improvement in adults' sun protective attitudes and behaviours.[30] This may be due, at least partly, to the widely held,[13] and correct, perception that melanoma is largely curable if treated early. In order to reduce the frequency of risk behaviour there is a need to build stronger social and environmental support for sun protection. For example, this can be achieved through policies and practices that promote shade provision at recreational

facilities and the rescheduling of outdoor activities to times outside the hours of highest solar UV risk. As is the case with smoking, focusing on individual responsibility alone would prevent fewer cancers. The promotion of cosmetic tanning by 'health' centres, despite evidence that it increases the risk of melanoma and other skin cancers, is another case in point. Given doubts about the effectiveness of voluntary standards, solaria could be included under radiation protection legislation, presently under review.[31] Considering the preventability of skin cancer and significant health service costs (conservatively estimated at $30 million a year[32]) it is surprising that, since the demise of the Public Health Commission in 1994, preventive efforts have been left almost entirely to the Cancer Society and the Health Sponsorship Council. Nevertheless, skin cancer has recently been identified as a cancer prevention priority.[15]

Lack of unprompted awareness about the protective role of physical activity in reducing bowel cancer risk[34] suggests that more publicity is needed, especially given New Zealand's high incidence rates, particularly among women.[7] With respect to causation, large proportions in an earlier study selected items, such as poor diet and family history,[11] that were perceived to increase the risk. In response to an unprompted question, however, 51% of our sample could not name any risk factors. Nevertheless, the high ranking of nutritional factors is common to New Zealand studies.[11–13,16]

There was considerable variation in awareness about different cancers, and knowledge about the relative frequency with which specific cancer deaths occur among the population may be better than knowledge about appropriate preventive strategies for most cancers. The proportions saying that they did not know of anything that increased cancer risk ranged from 1% for lung cancer (there was almost universal awareness of the causal link with smoking) and 2% for melanoma (linked with excess sun exposure), to 51% for bowel cancer and 80% of men for prostate cancer (reflecting that causation is not scientifically well understood). It is perhaps more surprising that about half of the women did not know of any risk factors for cervical cancer (46%) or breast cancer (54%). Overall, there is a need for clear, consistent, and coordinated messages that reflect current evidence about risk and prevention. It is likely that the socioeconomically advantaged nature of the study sample, in terms of education and employment when compared with the 1996 Census population, has resulted in an underestimate of this need. Furthermore, our study mostly focused on relatively high-profile issues. Known key modifiable risk factors to be targeted should include exposure to tobacco smoke (lung cancer), physical inactivity (bowel, breast, possibly prostate and other cancers), obesity (bowel, oesophageal, and post-menopausal breast cancer), inappropriate nutrition (oral, stomach and bowel cancer), alcohol consumption (oral, pharynx, oesophagus, larynx and possibly breast cancers), transmission of infectious diseases (liver, cervical and stomach cancers), excess sun exposure (skin cancer), and occupational exposures.[15] Preventive activities need to go beyond raising awareness and encouraging individual behaviour change to include modification of the social and economic environment. The comprehensive New Zealand Cancer Control Strategy provides opportunities for promoting policies and practices that assist the development of health-promoting behaviours.

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Equestrian injuries in New Zealand, 1993–2001: knowledge and experience

Glenda Northey

Abstract

Aims The aims of this study were to investigate the extent of equestrian injuries in New Zealand and provide a range of prevention interventions.

Methods An examination of New Zealand Health Information Service (NZHIS) morbidity data for 1993 to 2001 and mortality data for 1993 to 1999 was undertaken. Recent studies on equestrian injuries were evaluated.

Results NZHIS data indicated that as a result of horse-related injuries 5613 people were hospitalised between 1993 and 2001 and there were 16 fatalities between 1993 and 1999. Horse-related injuries were most prevalent in young females aged 10 to 19 years. Among Maori (the indigenous people of New Zealand), men predominated in horse-related injury numbers. Overall, half of equestrian injuries occurred in those under the age of 19 years. The major injury site was the arm. High equestrian-injury rates were recorded in rural regions.

Conclusions The findings indicate that age and regionally specific practical injury prevention strategies, health promotion messages and educational programmes are required. In particular, clear rules and regulations on protective and safety clothing are likely to enhance safety. Education in horse behaviour is required to facilitate safer environments on and around horses. A code of practice for horse riding and trekking establishments could decrease the risk of injury to those who hire horses.

Sport and Recreation New Zealand's 2001 data stated that horse riding and equestrian sport and leisure activities in New Zealand had a participation rate of 5% over a 12-month period for New Zealand adults,[1] and 9% for those aged 18 to 24.[2] During 2001, 133 400 adults participated in a horse-related activity and horse riding was included in the list of top sports and activities undertaken by New Zealand women.[1]

However, death and injury from horse-related activities in New Zealand have not been well documented, and consequently injury prevention opportunities have been limited.

Buckley and colleagues investigated injuries due to falls from horses for the period 1977–1986. Findings suggested that most horse-related injuries involved a fall that resulted in head injuries, thus indicating a need for helmet use and safe riding practices.[3] Furthermore, while young people were most likely to experience severe injuries, they were not over represented within participation rates. Buckley and colleagues concluded that the rate of hospitalisation due to falls from horses was comparable to the rate of injuries from playing rugby. Numbers of horse-riding claims to the Accident Compensation Corporation in 2001/2 were approximately one thirteenth of rugby claims. However, the long-term costs of horse-riding claims were

higher, with ongoing claims for horse-riding injuries averaging $16 582 per claim, while rugby injuries averaged $13 516 per claim.[4]

A recent examination of New Zealand recreational and adventure tourism injuries found that 'of the commercial adventure tourism activities, horse riding and cycling were the only significant contributors to overseas visitor injuries'.[5] It suggested that there was a need to focus industry attention on standards of safety for horse-riding participants by the introduction of regulatory codes of practice.

Informed by a desire to improve horse-related injury prevention opportunities, the aims of this research were to: (1) examine the extent of equestrian injuries in New Zealand; and (2) recommend a range of appropriate countermeasures based on current recommendations from published research.

Methods

Mortality data for the period 1993–1999 and morbidity data for the period 1993–2001 were sourced from the New Zealand Health Information Service (NZHIS) Minimum Data Set. Records were selected using the ICD-9 (Ninth International Classification of Diseases) codes 827 'Animal-drawn carriage', 828 'Accident involving animal being ridden', and 829 'Other road vehicle accidents', where the injured person was the rider of the animal or occupant of an animal-drawn carriage. While these codes may include incidents involving animals other than horses, these records are assumed to be minimal.

Morbidity records relate to those patients hospitalised for three hours or more with a primary diagnosis of injury. Records were only included if the person survived the injury, and if the record was the first admission for the injury event. Data were grouped by age: 0–9 years, 10–19 years, 20–29 years, 30–39 years, 40–49 years, 50–59 years, and 60 years and older. All data were analysed using SAS Version 8.1 for Windows.

Ethnicity data were examined only for the period 1996–2001 as changes were made to the definition of ethnicity in 1995. Consequently, 1996 was the beginning of a new time series for ethnicity data.

An evaluation of the findings of recent studies on equestrian injuries, both national and international, was also undertaken.

Results

Analysis of NZHIS data for 1993–1999 found that 16 people died following horse-related injuries. For the period 1993–2001, 5613 people were hospitalised for horse-related injuries. Females accounted for 69% (n = 3893) of injuries and 56% (n = 9) of deaths. Those most at risk of horse-related injuries were young females between the ages of 10 and 19 years, who accounted for 35% of these injuries. Nearly half of the total injuries sustained (46%) were to those under 19 years of age. Those aged between 10 and 29 years received 55% of horse-related injuries. In those aged 50 years and above (9% of all patients), males were more at risk than females although the injury numbers for this age group were low (2.5% of all injuries) (Figure 1).

An examination of the data on ethnicity indicates an interesting trend relating to Maori (the indigenous people of New Zealand) when results are juxtaposed with those of other ethnic groups (Figure 2). The majority (88.6%) of those injured were NZ Pakeha/European/Other; 11% were Maori and 0.4% Pacific. Within Maori those most at risk were Maori males. Approximately two thirds (67%) of injuries to Maori were to males, compared with 26% to NZ Pakeha/European/Other males. Maori females accounted for 33% of injuries to Maori, while NZ Pakeha/European/Other females sustained 73% of injuries to NZ Pakeha/European/Other. In the age group 60 years and over, all Maori injuries were to Maori males. Injuries to Maori were highest in the regions of Bay of Plenty (30%), East Coast (21%) and Northland (17%).

Figure 1. Hospitalisation numbers for horse-related injuries by gender and age

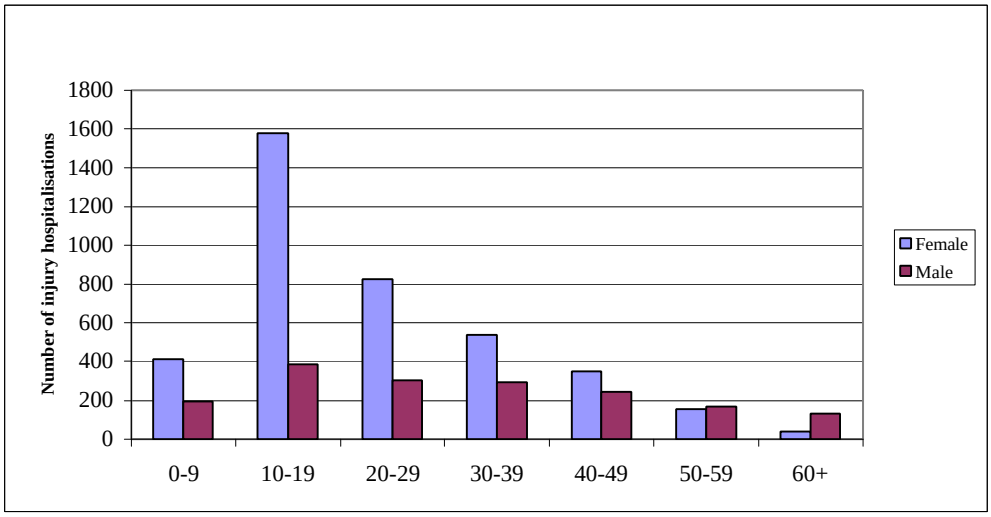
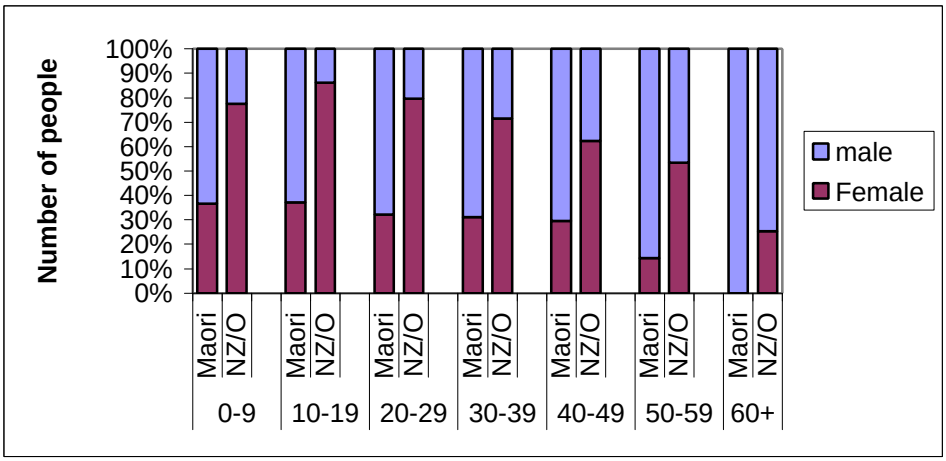


Figure 2. Hospitalisation numbers for horse-related injuries by ethnicity, age and gender (NZ/O = New Zealand Pakeha/European/Other)



Data indicated that the major injury site was the arm (28%) (Figure 3). This included fractures and dislocations. Arm fractures and dislocations increased from 186 (26%) in 1993 to 206 (31%) in 2001. Head injuries accounted for 25% of injuries. However, the number of head injuries decreased from 175 (25%) in 1993 to 134 (20%) in 2001. Leg injuries accounted for 15% of injuries. Leg fractures and dislocations also decreased from 145 (20%) in 1993 to 100 (15%) in 2001.

Between the ages of 0 and 9 years, 68% of injuries were to the arms. Between the ages of 10 and 19 years, head (30%) and arm injuries (33%) were almost equal in numbers. Head injuries and fractures/dislocations of the neck and trunk increased for those aged 30 years and over. Between 50 and 59 years, neck and trunk injuries were most common (31%).

A regional comparison of injury rates revealed that Greater Auckland sustained the highest number (600) of horse-related injuries. However, the region's injury rate was one of the lowest (10 per 100 000). The highest injury rate was recorded on the East Coast (32 per 100 000) followed closely by the Bay of Plenty (31 per 100 000), Northland (28 per 100 000) and Manawatu/Taranaki/Wanganui (21 per 100 000) regions. The lowest rates were in regions that have significant urbanisation, although Greater Auckland and Wellington/Wairarapa (8 per 100 000) include urban and rural areas (Figure 4).

Figure 3. Hospitalisations for horse-related injuries by injury site

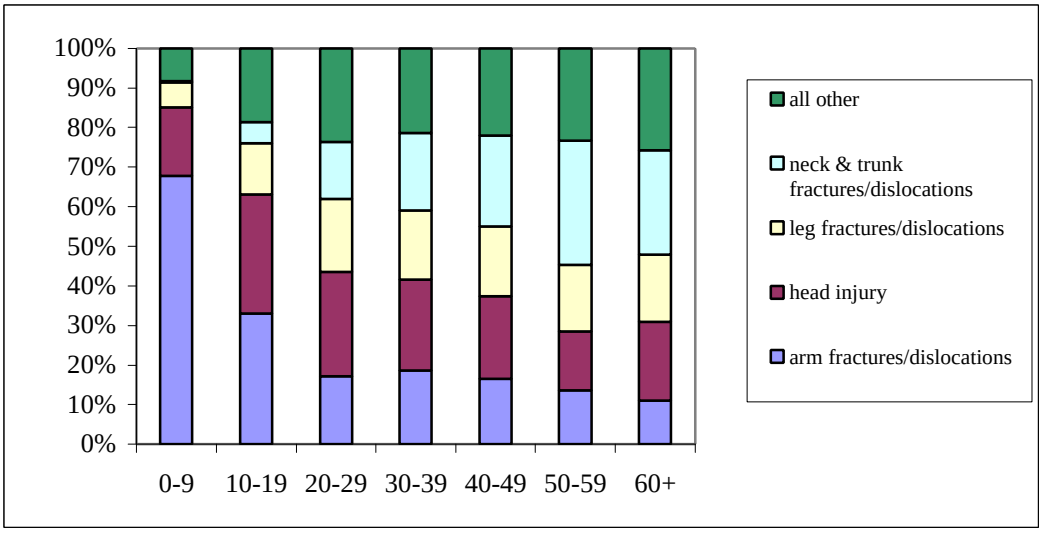
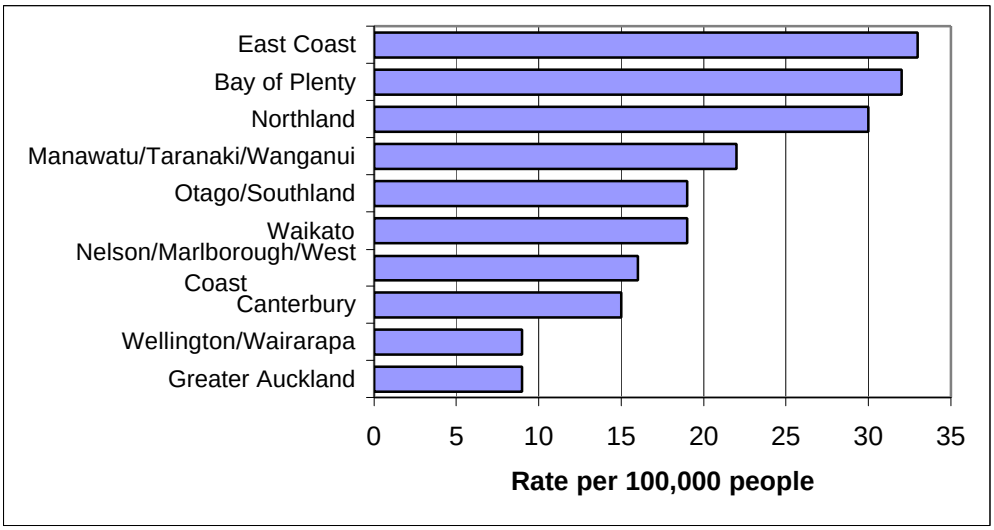


Figure 4. Hospitalisation rate for horse-related injuries by region



Farms (15%) and places of recreation and sport (15%) were the most predominant locations at which injuries occurred. Injuries were also sustained on streets and

highways (3.5%) and at home (5%). The location of more than half of all horse-related injuries was unspecified (55%).

The majority of injuries (85%) were sustained while riding; 25% were sustained during non-riding activities (including tacking up or grooming). An analysis of NZHIS free-text data shows that a significant number of riding injuries were the result of a fall, while injuries on the ground were often the result of being crushed between the horse and an object or being stomped or trampled.

Discussion

This research has identified that young females aged 10–19 years sustain the highest number of horse-related injuries and fatalities. An investigation of health-harming behaviours amongst New Zealand youth found that many young people engage in high levels of risk-taking behaviours such as not wearing a helmet in recreational activities.[6]

To find causation in relation to the findings for ethnicity a variety of issues would need to be explored such as the significant number of Maori living in rural areas where riding behaviour may differ extensively from general sport and recreational use of horses. A comparison of horse numbers and injury numbers on a regional basis provided little insight into causation.

Research into participation time and the purpose for riding may identify areas at which interventions could be targeted. Where riders are involved in work-related activities helmet wearing and protective measures might be better advocated as an occupational health and safety issue.

A large number of injuries were the result of a fall from the horse. A recent Australian study also found that 77% of injuries were the result of falls in urban and rural areas.[7] A pictorial examination of falls from horses showed why a significant number of injuries were sustained either to the head (27%) and arms (28%), as most riders who fall from a horse are projected head forwards and downwards.[3] Roe and colleagues[8] state that when seated on a horse the rider's head can be up to 4 m above the ground and evidence indicates that a fall from as little as 60 cm can cause permanent brain damage.

A study by Chitnavis and colleagues, which compared injuries sustained in an earlier study in 1971 with those sustained during 1991, found a near fivefold ($p < 0.001$) decrease in head injuries.[9] The authors suggest that significant decreases in serious head injuries can be mainly explained by the increased use of improved helmets. Further support comes from a recent study, which indicates a lower level of head trauma among those falling from a horse while wearing helmets.[10] This indicates the continued need to promote the wearing of standard approved safety helmets.

An increase in injuries to the upper limbs was found by Moss and colleagues, who suggested that while protective equipment has concentrated on the head and body to date, this should now be extended to the arms, particularly the wrists. The acceptability of wrist guards has been examined in other sports.[11] However, as wrist guards are likely to hamper the delicate wrist movements needed by the rider to direct the horse, other authors suggest that interventions should concentrate on the instruction of falling techniques.[10]

An Australian study examined the frequently reported locations for horse-riding injuries as fields/paddock (29%) and public roads (16%).[7] New Zealand data has shown that injuries sustained on the roads are much lower (3.5%). However, because of the high number of locations that were not specified (55%), this number could be much higher. Better practice in the collection and recording of data at hospitals and emergency departments could provide a fuller picture of the locations in which injuries occur. These locations could then be targeted for prevention strategies.

Past studies have suggested that up to one third of horse-related injuries are received while on the ground around horses.[12] A recent Queensland study has identified 16% of injuries to have happened when the patient was not mounted on the horse,[13] while the data analysed in this research indicated that in New Zealand 25% of injuries were sustained during non-riding activities. Education on horse behaviour for those spending time around horses, whether riding or working is important. A recent Australian investigation found that in all but 15 cases out of 1034 the horse receiving a 'fright' was the factor precipitating the injury event.[7] Unanticipated horse behaviour was a factor in 61% of the child cases (under 15 years old) and 39% of the adult cases (over 15 years old) reported in this research.

All activities around horses, whether while riding or on the ground, have their risks. Even a quiet horse can be 'spooked', starting a series of events that can lead to an injury.[14] The key to safety is in protection and awareness. The Hughston Sports Medicine Foundation suggests that an equestrian may have a serious injury once every 350 hours of riding.[15] However, others suggest that the rate of injury is considerably lower and may be as low as 0.06 per 1000 riding hours.[16] An evaluation of equestrian activities and the participation time of each rider is problematic as activities range from irregular sport and recreational use of horses to riding exclusively for work and transportation.

Unfamiliarity with horses and horse behaviour is also a major problem in the trekking environment.

Bentley and colleagues' study of injuries to overseas tourists in New Zealand suggested that horse riding should be seen as a high 'actual' risk activity and should have high standards of safety for participants.[5] They suggested a need for standards and regulatory codes, which address level of training, qualifications and experience required for guides, appropriate client–guide ratios, equipment specifications and the use of personal protective clothing.

Bentley and colleagues also suggested that the provision of footwear and clothing appropriate for the activity should be made mandatory in adventure tourism. In the case of horse riding this would include the provision of a standard approved helmet, which is fitted correctly, and the provision of boots or shoes with smooth soles.

Data from the United States indicate that over one third of horse-related injuries seen at emergency departments occurred during riding lessons.[17] To date no research has been done in New Zealand in this area but interventions such as a code of practice for riding establishments could have a significant impact on injury rates.

Queensland recently produced a code of practice for trekking and riding establishments, which examines enforcement and also explores ways to manage identifiable risk.[14] The Code covers instruction, environment and welfare, tack,

evaluation of level skills, horse behaviour, safety equipment, road safety, accidents and incidents. This document could be examined and adapted for New Zealand riding establishments for the safety of their clients. Horse riding can be an extremely rewarding and healthy sport as long as riders adhere to safety measures.

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A comparative study of drug utilisation at different levels of the primary healthcare system in Kaski district, Western Nepal

Ravi Shankar, Pawan Kumar, Manu Rana, Arun Dubey and Nagesh Shenoy

Abstract

Aims Studies that compare prescribing patterns at different levels of the primary healthcare system are lacking in Western Nepal. The present study was undertaken to obtain information on age, sex distribution, and morbidity profiles of patients, prescribing patterns and defined daily dose of commonly used drugs.

Methods The study was carried out over a three-month period (1 June 2000 to 31 August 2000) at four centres in the Kaski district, Western Nepal. Chi-square test was used to compare differences in morbidity profiles and prescribing patterns ($p < 0.01$).

Results There were significant differences in the average number of drugs per prescription across different levels. The morbidity profiles were also different. Vitamins were more commonly prescribed at the primary health centre level. Antibiotics were prescribed in 67% of encounters at the level of primary health centre, but the prescribing decreased at the levels of health post and sub-health post.

Conclusions The average number of drugs per prescription and the average cost were higher at the primary health centre level and this may be due to the increased prescribing frequency of vitamins and tonics. Comparisons of prescribing patterns at different levels of healthcare, and between government and private healthcare institutions, are urgently required.

Medical audit is concerned with the observance of standards of medical treatment at all levels of the healthcare delivery system.[1] Drug utilisation studies are a part of medical audit and seek to monitor, evaluate and modify, if necessary, the prescribing habits of practitioners. The goal is to make medical care more rational and cost effective.

The Nepalese primary healthcare system operates at different levels. The primary health centre (PHC), health post (HP) and the sub-health post (SHP) are the three components of the primary healthcare system. For the majority of the rural population, the SHP serves as the first level of contact with the healthcare delivery system. SHPs have been established in the majority of village development committees (VDCs) in Nepal and it is proposed that they be established in the remaining VDCs. The VDC is the basic unit of governance in Nepal. Trained birth attendants and female community health volunteers are mobilised for various outreach programmes from the SHP.[2] Patients from the SHP are referred to the HP and then to the PHC. The next levels of referral are the district hospital, the zonal hospital and finally the tertiary healthcare centres in Kathmandu. Health workers with different levels of experience and training man the SHPs, HPs and PHCs in Nepal. The SHPs are manned by certified medical assistants (CMAs), the HPs are manned by health

assistants (HAs), while MB BS doctors are supposed to be posted in the PHCs. If they are not present, as is often the case, HAs man the PHCs. The qualifications and levels of training of the health personnel are detailed in the discussion section of this paper.

The anatomical therapeutic chemical (ATC) classification system divides drugs into different groups according to the organ or system on which they act and their chemical, pharmacological and therapeutic properties.[3,4] Each drug is assigned a particular combination of letters and numbers. The defined daily dose (DDD) is the assumed average maintenance dose per day for a drug used for its main indication in adults.[3] DDD was developed to overcome objections against traditional units of measurement of drug consumption and to ensure comparability between drug utilisation studies carried out at different locations and different time periods.

Information on prescribing patterns at different levels of the primary healthcare system is lacking in Western Nepal. Also, there have been no studies comparing the prescribing patterns and morbidity profiles at the SHP, HP and PHC, the three levels of the primary healthcare system in Nepal. Use of the DDD concept to measure drug consumption at different levels of the primary healthcare system has not been attempted. Hence, the present study was carried out in two SHPs, one HP and one PHC in the Kaski district of Western Nepal. The objectives of the study were to:

1. collect information on demographic variables and the morbidity profile of patients attending the SHPs, HP and PHC during the study period;
2. obtain information on the prescribing patterns, average number of drugs per prescription and average cost per prescription; and
3. calculate the DDD/1000 inhabitants/day (DID) of the commonly prescribed drugs.

Methods

The study was carried out at three levels of the Nepalese primary healthcare system in the Kaski district of Western Nepal. The centres chosen for the study were the Bedabari PHC, the Batulechaur HP and the Riban and Armala SHPs. Each SHP serves a population of around 3000; the HP serves a population of around 30 000; and the PHC serves around 100 000. The study was carried out over a three-month period (1 June 2000 to 31 August 2000) at the chosen centres.

Specially designed prescription forms in duplicate were supplied to the prescribers at the study centres. The original was handed over to the patient while the duplicate prescription was retained by the prescribers. The investigators collected the duplicate prescriptions at a time period of 15 days.

The information in the prescription was entered into a prescription indicator form (PIF) for analysis. The age and sex of the patient were noted. The names, dose, frequency and duration of the drugs prescribed were entered into the PIF. The total number of drugs prescribed, and the number of parenteral preparations and topical preparations were determined at the PHC, HP and SHP level. Data from the two SHPs were combined for further analysis.

The number of drugs prescribed from the Nepal essential drug list[5] and the WHO model list of essential drugs[6] was calculated. The WHO standard drug-use indicators were used to evaluate drug-use practices in the different health centres.[7] The mean ± SD number of drugs prescribed per encounter and the mean ± SD cost per prescription were calculated. The percentage of drugs prescribed by generic name was determined.

The six most commonly prescribed drugs at the three levels of primary healthcare delivery were noted. The DDD/1000 inhabitants/day (DID) of these drugs were calculated. Differences in the morbidity profiles and prescribing patterns between the different centres were analysed using the chi-square test. A p value <0.01 was taken as statistically significant. The institutional review board of the Manipal College of Medical Sciences, Pokhara, Nepal, approved the study.

Results

The study sample included 775 patients from the Bedabari PHC, 485 patients from the Batulechaur HP and 501 patients from the two SHPs of Riban and Armala. The total number of drugs prescribed was 2454 at the PHC, 518 at the HP, and 606 drugs at the SHP.

Individuals below the age of 20 years constituted 256 out of the 775 patients (33%) at the Bedabari PHC. At the HP and SHP level individuals below the age of 20 years constituted 47.6% and 45.9% of the total patients, respectively. Individuals aged 60 years or above constituted 5.3% of patients at the PHC level, 10.5% of patients at the HP level, and 10.4% of patients at the SHP level.

The number of drugs per prescription showed a significant difference across different levels of the primary healthcare system. Table 1 shows the incidence of polypharmacy. More drugs were prescribed at the PHC level and the number of drugs per prescription progressively decreased at the HP and SHP level. A significant number of prescriptions contained four or more drugs at the PHC level.

Table 1. Incidence of polypharmacy[*] at different levels of the primary healthcare system (PHC = primary health centre; HP = health post; SHP = sub-health post)

No of drugs per prescription	Number of patients		
	PHC (775 patients)	**HP** (485 patients)	**SHP** (501 patients)
0	18	83	74
1	167	242	243
2	147	147	165
3	200	13	17
4	156	0	2
5 or more	87	0	0
Total	775	485	501

*χ^2 = 678.2, df = 10, p <0.01

Table 2. Morbidity profiles of patients at different levels of the primary healthcare system (PHC = primary health centre; HP = health post; SHP = sub-health post)

Disease condition	Number of cases (%)		
	PHC (775 patients)	**HP** (485 patients)	**SHP** (501 patients)
Acute respiratory infection[*]	63 (8.1)	77 (15.9)	63 (12.6)
Skin disease	58 (7.5)	21 (4.3)	18 (3.6)
Wounds and wound infection[†]	43 (5.5)	80 (16.5)	89 (17.8)
Diarrhoea/dysentery	42 (5.4)	18 (3.7)	31 (6.2)
Dental caries[‡]	41 (5.3)	32 (6.6)	6 (1.2)
Anaemia	39 (5.0)	7 (1.4)	2 (4.0)
Fever for investigation	28 (3.6)	25 (5.1)	21 (4.2)
Worm infestation[§]	29 (3.7)	35 (7.2)	52 (10.4)

*χ^2 = 18, df = 2, p <0.01; [†]χ^2 = 56.2, df = 2, p <0.01; [‡]χ^2 = 18, df = 2, p <0.01; [§]χ^2 = 21.2, df = 2, p <0.01

The morbidity profile of patients is shown in Table 2. Acute respiratory infection was significantly more common at the HP level (χ^2 = 17.9, df = 2, p <0.01). Cases of dental caries were fewer at the SHP level. Frequency of wounds and wound infection (χ^2 =56.2, df = 2, p <0.01), and of worm infestation (χ^2 = 21.2, df = 2, p <0.01), also differed at different levels of the primary healthcare system.

The frequency of prescribing of individual drugs is shown in Table 3. The prescribing frequency of the ten most commonly prescribed drugs was analysed. Vitamins were most commonly prescribed at the PHC level (χ^2 = 45.3, df = 2, p <0.01). Paracetamol (χ^2 = 181.5, df = 2, p <0.01), co-trimoxazole (χ^2 = 152.8, df = 2, p <0.01) and mebendazole (χ^2 = 192.5, df = 2, p <0.01) were more frequently prescribed at the SHP level. Amoxicillin was more frequently prescribed at the HP level but the difference was not statistically significant.

Table 3. Frequency of prescribing of individual drugs at different levels of the primary healthcare system (PHC = primary health centre; HP = health post; SHP = sub-health post)

	Number of drugs (% of total drugs prescribed at a particular level of primary health care)		
Drugs	**PHC** (n = 2454)	**HP** (n = 518)	**SHP** (n = 606)
Vitamins*	301 (12.3)	29 (5.6)	28 (4.6)
Paracetamol†	215 (8.8)	134 (25.9)	154 (25.4)
Procaine penicillin	142 (5.8)	12 (2.3)	4 (0.7)
Amoxicillin	133 (5.4)	39 (7.5)	22 (3.6)
Pheniramine maleate	117 (4.8)	1 (0.2)	13 (2.1)
Metronidazole	115 (4.7)	26 (5.0)	41 (6.8)
Antacids	112 (4.6)	13 (2.5)	38 (6.3)
Ibuprofen	106 (4.3)	0	4 (0.7)
Co-trimoxazole‡	87 (3.5)	63 (12.2)	102 (16.8)
Mebendazole§	5 (0.2)	36 (6.9)	56 (9.2)

*χ^2 = 45.3, df = 2, p <0.01; †χ^2 = 181.5, df = 2, p <0.01; ‡χ^2 = 152.8, df = 2, p <0.01; §χ^2 = 192.5, df = 2, p <0.01; n = number of drugs prescribed at the particular level of primary healthcare

The mean ± SD cost of drugs per prescription was 30.6 ± 25.8 Nepalese rupees (0.39 ± 0.33 US$) at the PHC level, 18.8 ± 15.7 Nepalese rupees (0.24 ± 0.2 US$) at the HP level, and 16.8 ± 14.3 Nepalese rupees (0.21 ± 0.18 US$) at the SHP level. At the PHC level, 74% of the drugs were prescribed from the essential drug list of Nepal[5] and 67.3% were prescribed from the WHO list of essential drugs.[6] The corresponding figures at the HP level were 72.6% and 81.3%. At the SHP level the percentages prescribed from the Nepalese[5] and the WHO essential drug lists[6] were 70.9 and 77.5 respectively.

Antibiotics were prescribed in 67.2% of encounters at the PHC level, 52.6% at the HP level, and 52.7% at the SHP level (χ^2 = 115.6, df = 2, p <0.01). Injections were prescribed in 20.2% of encounters at the PHC level, 3.1% of encounters at the HP level and 3% of encounters at the SHP level (χ^2 = 135.7, df = 2, p <0.01).

At the PHC level 28.8% of drugs were prescribed by brand name. At the HP and SHP level the corresponding percentages were 31.1% and 58.4%. The total numbers of prescriptions for individual drugs at the three levels of the primary healthcare system were calculated to determine the six most commonly prescribed drugs. Table 4 shows the DID of the six most commonly prescribed drugs.

Table 4: Defined daily dose per thousand inhabitants per day (DID) of the six most commonly prescribed drugs at different levels of the primary healthcare system (PHC = primary health centre; HP = health post; SHP = sub-health post)

Drugs	ATC Code	DID		
		PHC	HP	SHP
Paracetamol	N02BE01	0.4	0.1	0.29
Co-trimoxazole	J01EE01	0.9	0.03	2
Amoxicillin	J01CA04	0.38	0.12	0.15
Mebendazole	P02CA01	0.4	0.28	0.17
Metronidazole	P01AB01	0.28	0.3	0.25
Antacids	A02AD01	0.04	0.08	0.06

At the Bedabari PHC during the study period, the health assistant (HA) filled in 96% of the prescriptions. The HA was on leave for a period of five days during the period of study and during this period the staff nurse was in charge. She treated the patients and filled in the prescriptions. At the HP level, the HA filled in the prescriptions. He had a certified medical assistant (CMA) and an auxiliary nurse midwife (ANM) to assist him but they did not fill any prescriptions. At the SHPs the CMAs filled the prescriptions. In the health facilities in Nepal, in general, only the most senior member of staff sees the patients and fills the prescriptions. The other members of staff assist the senior staff member but do not fill the prescriptions on their own.

Discussion

In Nepal, public expenditure in the health sector has increased from 3.2% in the financial year 1993/94 to 5.7% in the financial year 1999/2000. In view of the immense human cost of disease in Nepal, primary healthcare receives the highest allocation in national health spending and about three quarters of the total health budget.[8]

The training of the health personnel manning the different levels of the primary healthcare system differs. SHPs are manned by a certified medical assistant (CMA). CMAs undergo a one-year course after schooling followed by a three-month internship. HPs are manned by health assistants (HAs) who complete a two-year course after schooling followed by six months of internship. Medical officers are posted to man the PHCs but if they are not present, as is often the case, HAs take their place.

The Bedabari PHC was manned by an HA, a staff nurse, an ANM, a family planning assistant, two maternal and child health workers, a pharmacist, an accountant, an administrative assistant and two peons (attendants). The staff nurse is in charge of the PHC when the HA is absent. The staff nurse had completed a three-year course of BSc Nursing while the ANM had completed a 15-month course.

The Batulechaur HP was manned by an HA, a CMA, a maternal and child health worker, a pharmacist, an accountant and a peon. In the absence of the HA, the CMA runs the HP.

SHPs are staffed by a CMA, an ANM, a maternal and child health worker and a peon. In the absence of the CMA, the ANM is in charge of the SHP.

The procedure for taking leave for the most senior member of the health facility is that they must communicate their intention in writing to the district public health office at least one week in advance. The office will send a suitably qualified person to man the health facility during the period of absence; alternatively, the next most senior member of staff in the facility may be put in charge.

The health facilities conduct outpatient departments (OPDs) from 10am to 2pm from Sunday to Thursday. On Fridays the OPD functions from 10am to 1pm. Inpatient beds are available at the Bedabari PHC but are not being used and the patients are referred to the Western Regional Hospital in Pokhara.

The average number of drugs per prescription is an important index in drug utilisation studies. A high value may call for educational intervention in prescribing practices. In a study in Bangalore district, South India,[9] the average number of drugs was 1.99 at the primary level, 2.16 at the tertiary level and 2.41 at the general practice level. Bapna et al found that a prescription on average contained 2.71 drugs.[10] The increased number of drugs prescribed at the PHC level in our study is a matter of concern. A greater percentage of tonics, vitamins and parenteral preparations were prescribed and this may partly account for the increase in the average number of drugs per prescription. The increased number needs to be justified in view of the increased risk of drug interactions, errors of prescribing and non-compliance seen with polypharmacy.

In Nepal in the last 15 years SHPs have been established in most village development committees. Lack of medicines and staff inadequacies were major reasons for dissatisfaction with the healthcare services.[11] If standard procedures like the ATC-DDD methodology[3,4] are employed by all researchers in drug utilisation, there can be meaningful comparison of the results. Gaitonde suggested an important role for pharmacologists in the monitoring of prescribing patterns at different levels of healthcare delivery.[12]

Acute respiratory infection, wounds, dental caries, skin disease and worm infestation were the five most commonly observed illnesses in our study. These are diseases of poverty that are common in developing countries with poor standards of socioeconomic development. In a study in Taiwan the most common illnesses were acute respiratory infection, skeletal and joint disease, hypertension, and acid peptic disease.[13]

Sulfonamides were the most commonly prescribed antibiotics at the HP and SHP level but not at the PHC level. Our findings are similar to those observed by Srishyla et al and Bapna et al.[9,10] In contrast to the previous results[9] there were differences in the prescribing patterns of drugs at different levels. Differences in the morbidity profiles may partly explain the differences in prescribing patterns. Analgesics and vitamins were prescribed in amounts similar to those in a study in Saudi Arabia.[14]

The average cost per prescription varied from 0.39 US$ at the PHC level to 0.21 US$ at the SHP level. In a previous study in India[15] the mean ± SD cost per prescription was 0.18 ± 0.17 US$. Direct comparison of the results is difficult because of the increase in cost of drugs since the Indian study was carried out. The cost was higher at the PHC level and this could be due to the increased prescribing of antibiotics, parenteral preparations and vitamins.

Variations were seen in the DID of the six most commonly prescribed drugs. In contrast to a Spanish study,[16] cephalosporins were not commonly used in our study. In another previous study[17] penicillins and macrolides were the most commonly prescribed antibiotics, but macrolides were not commonly used in our study. Our DID for antibiotics was lower than that observed in the previous two studies.[16,17] Culture and sensitivity testing is not carried out at the primary healthcare level. Older antibiotics were commonly used; these were generally cheaper.

We have compared prescribing patterns at one PHC, one HP and two SHPs in Kaski district, Western Nepal. At the PHC level two individuals completed the prescriptions while at the HP and the SHP level only one individual completed the prescriptions. The levels of training and experience of these individuals were different. The low number of health facilities included in the study raises the possibility that the different individuals involved were responsible for the noted differences in prescribing. In order to conclude that the differences in prescribing may be due to the different levels of training of the staff involved and their site of practice, a larger study involving more health facilities would need to be undertaken.

Comparisons of morbidity and prescribing patterns at the primary, secondary and tertiary healthcare levels in Nepal are required. Comparisons are also required between the prescribing patterns of government and private healthcare institutions. These studies are being planned in association with the Department of Community Medicine of the Manipal College of Medical Sciences and the western regional health directorate, His Majesty's Government of Nepal.

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Pre-hospital antibiotic treatment of meningococcal disease: scope for improvement

Tania Riddell and Chris Bullen

Abstract

Aim To determine the extent to which Auckland general practitioners (GPs) follow Ministry of Health guidelines recommending the administration of pre-hospital antibiotic treatment to suspected cases of meningococcal disease.

Methods Retrospective audit of notified cases of meningococcal disease referred by Auckland GPs from 1 May 2001 to 30 April 2002.

Results Of 142 meningococcal disease cases that were referred to hospital by GPs, 111 (78%) were 'eligible' or met Ministry of Health guideline criteria for pre-hospital antibiotic treatment. Of these, only 33 (30%) were given parenteral antibiotics. Those with a rash were twice as likely as those without a rash to receive antibiotics (RR 2.1; 95% CI 1.7–2.7). There was no difference in antibiotic administration by age, sex, ethnicity, or where there was an estimated delay of greater than 30 minutes to assessment in hospital.

Conclusions The findings of this audit reinforce the need for GPs to have a higher index of suspicion and lower threshold for treatment for suspected cases of meningococcal disease and to give antibiotics more often than they do at present.

New Zealand is in its twelfth year of a serogroup B meningococcal disease epidemic. In 2002, the epidemic showed no sign of abating and trials aimed at controlling it by using a strain-specific vaccine began. However, it could be another two years before national mass vaccination begins. Even with a vaccine, pre-hospital antibiotic treatment of suspected cases of meningococcal disease is essential. The case fatality rate for patients seen by a doctor and given antibiotic treatment prior to hospitalisation is significantly lower than for patients who do not see a doctor and do not receive parenteral antibiotics.[1–3] In New Zealand, pre-hospital antibiotic treatment is given to only about one quarter of suspected meningococcal disease cases.[4] This study aimed to determine the extent to which Auckland GPs follow Ministry of Health guidelines that advise them to administer parenteral antibiotics to:

- all suspected cases of meningococcal disease in whom there is any haemorrhagic rash; or
- all other suspected cases in whom the delay in reaching hospital is likely to be greater than 30 minutes.

Methods

Retrospective audit of all cases of meningococcal disease in Auckland for the 12-month period 1 May 2001 to 30 April 2002.

Cases were identified through EpiSurv – the national database for notifiable diseases.

Figure 1 gives the case definition for meningococcal disease.

Figure 1. Definition of case of meningococcal disease

The case definition given in the Ministry of Health Communicable Disease Control Manual[6] states: 'Meningococcal disease presents as meningitis or meningococcal septicaemia. The disease presents as acute fever, nausea, vomiting and headache, that may progress rapidly to shock and death. Petechial rash is seen in about 50 per cent.' Cases with a clinically compatible illness are classified as confirmed or probable as follows:

Confirmed case: A clinically compatible illness with at least one of the following:

1. isolation of *Neisseria meningitidis* from a sterile body site; or
2. a positive nucleic acid test using PCR on CSF, blood, serum, or aspirate; or
3. detection of gram-negative intracellular diplococci in CSF, aspirate, or skin biopsy; or
4. positive meningococcal antigen test on CSF.

Probable case:

1. a clinically compatible illness and isolation of *Neisseria meningitidis* from throat; or
2. a clinically compatible illness.

PCR = polymerase chain reaction; CSF = cerebrospinal fluid

All notified Auckland meningococcal disease cases (both confirmed and probable) were included in the study. The audit included those cases who were referred by a GP to hospital and subsequently diagnosed with meningococcal disease. Cases were classified as 'eligible' to have received pre-hospital parenteral antibiotics if they met with Ministry of Health guideline criteria.

Auckland Regional Public Health Service records were used to obtain case details. Permission to review records was obtained from supervising consultants and the Auckland Ethics Committee determined that ethics approval was not required.

A standard 'proforma' was used to extract the following information:

- whether the attending GP had administered parenteral antibiotics before patient admission to hospital; and
- what factors influenced the use of antibiotics (age, gender, ethnicity, presence of a rash, distance of general practice from hospital).

Practice nurses were contacted by telephone and asked if the travel time from their practice to the nearest appropriate hospital was greater than 30 minutes.

A rate ratio was calculated for the variables: age, sex, ethnicity, presence of a rash and general practice greater than 30 minutes away from the admitting hospital. Adjustment for possible confounding factors was carried out using the Mantel–Haenszel method. Cases for which the relevant data were unknown were excluded from analysis. Statistical analysis was carried out using EpiInfo 2000.[5]

Results

Over the 12-month study period, 214 cases were recorded on EpiSurv as having been admitted to Auckland hospitals with meningococcal disease. About two thirds of these cases (n = 142) were referred to hospital by a GP. One hundred and eleven (78%) cases were eligible for pre-hospital antibiotics according to Ministry of Health guideline criteria.

The median age of the GP-referred cases was six years (range 28 days to 67 years) with over half of cases (55%) under five years old. Eighty three cases (58%) were male. There were 58 (41%) Pacific Islands people, 40 (28%) Europeans, 36 (25%) Maori, and eight (6%) of 'Other' ethnic groups.

Of the 111 eligible cases, 33 (30%) were given parenteral antibiotics by their attending GP. Of the 79 cases (56% of all the cases referred) reported to have a rash, only 31 (39%) received antibiotic treatment. Thirty two (28%) of the eligible cases were referred from practices where the delay to assessment in hospital was estimated

to be greater than 30 minutes. Of these, only nine (28%) received pre-hospital antibiotic treatment.

Cases with a rash were twice as likely as those without a rash to have received pre-hospital antibiotic treatment (RR 2.1; 95% CI 1.7–2.7). In fact, of the 33 cases overall who were administered antibiotics, 31 (94%) had a rash. There was no difference in antibiotic administration by age, sex, ethnicity or distance of general practice from hospital.

Discussion

This study suggests there is scope for improvement to the pre-hospital management of suspected cases of meningococcal disease in Auckland. Despite regular advice urging the administration of parenteral antibiotics prior to hospital admission,[7–9] this study found that in Auckland only one third of eligible patients were given treatment by an attending GP. Furthermore, parenteral antibiotics were rarely given in the absence of a rash, even for those in whom the delay to assessment in hospital was likely to be greater than 30 minutes.

A number of reasons have been postulated to explain the failure to start early treatment for suspected meningococcal disease in the primary care setting. These include diagnostic uncertainty, concern about interference with hospital tests, the belief that patients will be treated promptly once in hospital, fears of administering unnecessary treatment or causing an anaphylactic reaction, and unproven benefit.[10]

Diagnostic uncertainty is common in general practice where many diseases are encountered at early stages when signs and symptoms are often non-specific.[11] The diagnosis of meningococcal disease is largely a clinical one as highlighted by the case definition (Figure 1). The petechial or purpuric rash of meningococcal septicaemia is a physical sign that can assist early suspicion of infection.[12] In this study, the presence of a rash was the most important factor that led to administration of antibiotic treatment prior to hospital admission. This supports the findings of other studies.[11–13] However, as only about half of the patients in this study were reported to have a rash, the tendency to focus on overt physical signs may be inappropriate. General practitioners who suspect meningococcal infection should not be deterred from starting antibiotic treatment,[11] particularly when there are early signs and symptoms of septic shock such as excessive tachycardia.

Interference with hospital tests and fear of rendering cultures sterile is misguided if the consequence of delayed treatment is death.[13] Treating a potentially fatal condition is more important than eliciting a precise diagnosis. Importantly, species-specific polymerase chain reaction (PCR) testing is now available and is a powerful diagnostic tool that is more sensitive than culture and less affected by antibiotics. PCR tests may prove positive three days after initiating treatment.[4]

General practitioners cannot assume that patients will be treated quickly once admitted to hospital. Patients suspected of having meningococcal disease may wait some considerable time in hospital before treatment is started.[14] Since parenteral antibiotics interrupt growth of meningococci, and the build up of endotoxins and cytokines in the plasma, the management of meningococcal disease cases is time critical. How quickly treatment is initiated is the key issue, not who initiates it.

The fear of administering inappropriate antibiotics should not discourage pre-hospital treatment. Minimal harm can be expected if an antibiotic is given and meningococcal disease is not confirmed.[13] It has been recommended in New Zealand that any patient with a known allergy to penicillin is urgently transferred to hospital without antibiotics.[15] However, it is known that only a minority of those with a history of penicillin allergy are subsequently confirmed as genuinely allergic.[16]

Finally, despite the use of pre-hospital antibiotic treatment in meningococcal disease being questioned,[17] it is generally agreed that meningococcal infection should be treated with parenteral antibiotics as soon as is possible.[10] The current consensus is that it is the most effective way of controlling life-threatening infection from meningococcal disease.[18] A reduction in case fatality rates from the administration of pre-hospital antibiotics has been observed in New Zealand[3] and elsewhere.[1,2,13]

There are a number of limitations to this study. First, information regarding preliminary diagnosis, as assessed by the attending GP, was unavailable. Second, some of the case notes were incomplete, which hindered determination of the estimated distance of general practice from hospital. Third, clinical condition of the patient at presentation was a potential confounding factor. We could not exclude the possibility that cases who presented to a GP with a rash were already well advanced in their illness and were therefore more likely to receive antibiotics before being transferred to hospital. Finally, differences by ethnicity, for example, may have remained undetected due to small numbers. Similarly, some cases in this study died, but we did not analyse outcome data because numbers were too small to make unbiased comment. A prospective study that is large enough to stratify by known confounders, and have adequate explanatory power to compare risk factors and outcome data, is needed.

It is with great hope that we look to mass immunisation to terminate the current and prolonged serogroup B epidemic in New Zealand. In the interim, early and aggressive treatment of suspected cases of meningococcal disease by GPs in the community setting is essential. A higher index of suspicion and lower threshold for treatment are needed. Further effort to encourage early diagnosis and treatment is necessary.

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Anxious about electronic health records? No need to be

John Gillies and Alec Holt

Abstract

Every day the takeover of paper records by electronic versions seems more inevitable. Many of us who have used the paper version, despite its limitations, are anxious about new technology with its different challenges. In this paper we discuss aspects of both types of record and identify some of their weaknesses and strengths. Whilst there is little science to support one version over the other, the health industry is undoubtedly moving to adopt an electronic record. In writing this paper we aim to reassure clinicians that the electronic record is, on balance, likely to enhance the quality of their professional practice.

Government and health planners are currently working with district health boards to ensure that planning and solutions for electronic transfer of data are put in place as a high priority. This is a stepped process, with many of the deliverables already overdue. The health bodies of the Western world are moving in this direction, albeit slowly, at great cost and without any perceivable uniform plan. There are problems with definitions, and issues surrounding privacy and individual rights that seem, to many, to be insurmountable.

Why change?

It makes complete sense to evaluate our current situation by identifying strengths and weaknesses (Table 1), to ensure that any new concept has very significant benefits to the consumer, the clinician and the health planner. For the concept to be worthwhile the benefits must outweigh both financial and intrinsic costs.

Table 1. Functional comparison between the electronic health record and the paper-based version

Function	Paper-based record	Electronic record
Availability	One location	Multiple
Cost	At least US$500 per lifetime	Tiny individual cost
Security	Low	High
Consumer control	Low/nil	High – if desired
Data	Difficult to extract	Should be easy to extract
Durability	Low	High
Duplication of records	Yes	No – can all be linked
Duplication of tests	Yes	Rare
Audit trail	No	Yes
Practitioner ‘freedom’	Good	Restricted
Patient interaction	None	Full – if desired

The main disadvantages of the paper-based system relate to the fact that the paper version can be in only one place at any time, and often storage factors mean that it is not readily available to any clinician at short notice. The result is that clinicians tend to keep their own records – specific to their particular involvement in the patient. The cardiologist has a cardiological record for his hospital clinic, and this is completely separate from the general practitioner's record. Of course there are many parts of both of these records that are not of interest to the other clinician, and it is for this reason that any electronic record must be capable of being 'focused' upon various aspects, whilst still enabling access to the whole record – for the authorised person. It does not make any sense, for example, to store copies of radiological images in an electronic record itself, even though the authorised clinician will need to examine them from time to time. A secure link to the radiology laboratory storage is all that is needed. The clinician will gain access to his patient's radiological images by clicking the mouse button over the appropriate link from within the patient's record.

The power of the electronic record is its ability to store and retrieve information, and allow user queries to be flexible. It can retrieve information and sort it in a myriad of ways: availability, transfer, retrieval, linkage of disparate data sources and databases, storage, data views, abstraction, reporting, data quality and standards, decision support and audit facilities. In this way it differs from the paper version, which is usually chronological but in sections that often require further sorting to get the 'full picture'. Remember too that the paper version will often be incomplete, and this could result in danger to the patient. In the USA the cost of medical error is estimated to be as much as $200 billion per year.[1] This represents 20% of the health budget. Furthermore, deaths due to medical error are estimated by some at between 44 000 and 98 000 per year.[2,3] Whatever the exact figures, there is no doubt that medical error is a significant health problem in itself, and anything that can help reduce it should be supported. The electronic record can have built-in business rules that reduce the risk of medical danger, for example, inappropriate prescribing and duplicate laboratory testing. These rules currently extend to disease management systems where, for example, the diabetic patient can enter monitoring data that can be automatically analysed and, if a value falls outside agreed limits, warnings can be sent to the patient and clinician.

At present patients have little, if any, interaction with their paper records. In some countries, for example the United Kingdom, the health system claims to 'own' the records. In others there is limited patient access; but with the electronic record the patient can have complete control of the record, if desired. There are some issues relating to patient access, and many examples can be given, from the practitioner needing to record sensitive material such as a possible risk of child abuse, to annotating the record with possible differential diagnoses. Often clinicians will think of serious conditions such as cancer or HIV only to ensure that they are eliminated in the workup, but it is unlikely that the patient will understand this process. Clinicians will need somewhere to store this information, and perhaps in future it will not be in the patient's record.

The cost of a paper health record per patient is often seriously underestimated. The UK Audit Commission estimated in 1995 that 15% of hospital budgets were spent on records and record-related activities.[4] In determining its cost, one must consider the following aspects: stationery and printing, storage, retrieval and re-filing, transport to

and from the point of clinical interaction, duplication of parts of the record to populate other parts of the same patient's file, loss of part (or whole) of the record, clinician time awaiting arrival of the record, patient danger whilst awaiting arrival of the record, duplication of laboratory tests because of the need for manual filing of results, misfiling of laboratory results, and many more. We estimate that the record of one person who has only two admissions to hospital after birth will cost US$500 over their lifetime. Of course, many patients have much more interaction with secondary and tertiary care institutions, and their record costs increase substantially. There will be a significant setup cost for the electronic health record that cannot be avoided. Once up and running, however, the cost on a per record basis is likely to be trivial. Add to this the substantial 'human' benefits, and the proposition looks very cost effective.

An electronic record will hold numerical data and text. Neither of these is expensive in terms of computer memory and, with links to storage systems containing the relevant digital images, the whole 'file' is available without being either duplicated or unnecessarily full of data. Laboratory systems can automatically populate the electronic record, thereby virtually eliminating transcribing risk, or risk of loss. The risk of misfiling is also much lower than that associated with the paper version. This means that even the most 'complex' electronic record is not likely to tax even the current electronic storage systems, and the material is instantly available to authorised persons.

Critics have often cited security as a significant risk with the electronic version of the health record. They suggest that whilst a paper version can be (and often is) left unattended so that unauthorised persons can examine it, the electronic record could be inadvertently made available to vast numbers of people with as little as a single keystroke. Comments such as these come mainly from those who use email for transmitting information. Email is inherently insecure and would be quite inappropriate as a vehicle for transmitting health information, but these risks are almost eliminated by the use of secure network systems. Commercial banking systems use the same level of security, and whilst it is agreed that these systems are never totally secure, the level of security is high. The good thing is that it is not necessary for any user to purchase either expensive hardware or specific software to achieve both access to the record and a high level of security. Web browser technology with free downloadable software achieves both of these objectives. All one needs is a computer and access to the Internet.

At present many health workers do not have access to any health records, yet they are responsible on a day-to-day basis for patients' welfare. Examples include community health workers managing people in the patient's own home, with conditions such as diabetes, chronic lung diseases, renal, cardiac and hypertension problems.

Design issues

Before considering the principles of designing an electronic health record (EHR), we need to be sure that we are all talking about the same thing. There are several products currently available in which clinical data are stored electronically, including the electronic medical record (EMR), which is interchangeable with the electronic patient record (EPR), and the practice management system (PMS) where some clinical data are also recorded.

The EPR and the EMR describe hospital-based electronic resources, and usually have a local function within the institution, for example laboratory data, radiology and discharge reports.

The PMS is essentially designed to handle the business aspects of clinical practice, especially for private general practices. It has facilities for billing, stock management, appointments and patient demographic details. It usually has only limited clinical facilities, and no ability for the patient to interact with the clinician. Some have diagnostic coding facilities, and there is some capability for analysis.

An EHR must be designed to enhance the useful and important aspects of all the electronic systems currently in existence and this enhancement must be demonstrable before one could consider any changes to be worthwhile.

The Good European Health Record was an initial attempt at prescribing the features of the EHR. This has been renamed the Good Electronic Health Record (GEHR).[5] The GEHR has never in fact been built, but remains as a standard for the EHR. There have been refinements to the recommended design; some aspects have been identified as 'currently impossible' and others as unreasonable, but it remains the gold standard.

The challenging elements of the GEHR mainly involve security issues. There needs to be protection for all of those interacting with the record. The consumer, most of all, must know that their record is available only to authorised users, and that any publication, either paper or electronic, must be only with their informed consent. This matter will be discussed in more detail below.

Unauthorised examination of their record is always of concern to the consumer, and whilst the 'audit trail' feature of the EHR will enable one to identify exactly who has looked at their record, this will be after the fact and discovery may take place only after the damage has been done. It is obviously important, therefore, to make unauthorised entry as technically difficult as possible, and the punishment for such an offence severe.

The banking/financial sector is another area where the consumer is sensitive about unauthorised access. There has been wide acceptance of the Internet banking concept, and banks themselves are confident that their security levels are 'adequate'. The EHR should have similar levels of security, and those levels should increase as more sophisticated systems become available. On a more pragmatic note, financial information about a consumer is probably more interesting to the potential hacker in the vast majority of cases, so it is likely that security will be 'tested' in the financial sector first.

Publication of clinical material – consumers' rights

An EHR could be invaluable to the health planner. Real data can be available to enable the planner to apply specific funding and resources focused upon regions or consumers of proven greatest need. Presently these very limited resources are applied on a 'best guess' basis and often not even the outcome is measured.

Obviously the planner should have no access to clinical material, or be able to identify any individual consumer, unless that consumer has given appropriate consent. Cross-sectional data can be examined in such a way that the individual cannot be identified,

and yet the planner can see focused data. The consumer needs to be educated and reassured about this utilisation of their data in this way.

Of course this information is already being used with consumer consent in clinical trials but these involve only a small segment of society. Efforts need to be expended to inform the public about this issue.

Implementation issues

We have already mentioned some issues that must be dealt with in any implementation process, such as security and consent, but there are many others within the broad heading of 'management of change'.

Assuming that it is agreed that an EHR should be provided, all those involved in the current systems will be affected. It is likely that any decision will be made at a government level, and this should follow consultation with experts, user groups, the public and health planners. Whilst several bodies have been established in NZ to guide the implementation process, we are concerned that they are not yet fully representative and this may be a reason that progress seems to be slower than planned.

Compliance by clinicians will be a potentially difficult process. Not only will they be resistant to change, unless they are convinced of the potential value of a new system, but as advocates for their patients they will be able to generate significant public outcry if they perceive the process not to be worthwhile.

If possible the new EHR should include as many of the current (legacy) systems in use as possible, and extra work including learning how to use a new system should be minimised. If extra work is required, the person involved must see an immediate benefit to themselves, or at least an obvious general benefit. If none is clearly identified, and those wishing the implementation to go ahead are convinced of a benefit, those persons being asked to do more work must be rewarded, financially or otherwise.

The whole process of implementation is vitally important to the success of any EHR project. It must be choreographed by experts, and will be an expensive but unavoidable part of the project.

The management of change is a vast topic and will be the subject of another paper.

The future

Despite the issues surrounding its design and implementation, it is likely that there will be significant moves towards the introduction of some kind of EHR system within the next few years. The success of the venture will depend upon how the issues are addressed, but the enhancements to the health system in general could be immense.

The concept of the consumer 'owning' their record brings them into the 'therapeutic team' and implies a personal responsibility for one's health. It is an exciting concept to have a record that lasts throughout life, holding all relevant material. Add to this the technical, social and medical benefits of having one's record available wherever and whenever the record is needed.

The EHR is the future of health, and may well play a very significant part in the resurrection of the public health system.

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Hiccup in patients with advanced cancer successfully treated with gabapentin: report of three cases

Giampiero Porzio, Federica Aielli, Filomena Narducci, Giustino Varrassi, Enrico Ricevuto, Corrado Ficorella and Paolo Marchetti

Chronic hiccup is an infrequent but distressing symptom in patients with advanced cancer. A series of drugs (chlorpromazine, haloperidol, nifedipine, metoclopramide, baclofen) have been proposed to treat hiccup without definitive results. Some authors have suggested a possible role of gabapentin in the treatment of idiopathic chronic hiccup in patients not affected by neoplasms.[1,2] We report three cases of hiccup in patients with advanced cancer successfully treated with gabapentin observed at the Supportive Care and Rehabilitation Unit of the Medical Oncology Department, University of L'Aquila, Italy.

Case 1

A 62-year-old man with a history of colon cancer metastasised to the liver was admitted for chronic hiccup, nausea and fatigue. He was previously treated by his family physician with metoclopramide and dexamethasone without effect. At admission the patient was suffering and distressed due to continuous hiccup and sleep deprivation. Chlorpromazine (25 mg iv bid) was started with relief of hiccup but with postural hypotension and severe drowsiness. After two days hiccup recurred; chlopromazine was stopped and gabapentin (300 mg tid) was introduced. We registered a prompt relief of hiccup with only sporadic episodes successfully treated with empiric methods. Sleep was restored. No side effects related to gabapentin were noted. After six days the patient developed jaundice and died by progression of disease. No recurrence of hiccup was observed.

Case 2

A 43-year-old man affected by pancreatic cancer was referred for pain, nausea and chronic hiccup.

Hiccup and nausea were treated with metoclopramide (1 mg/kg) and haloperidol (5 mg sc continous infusion) with good results. After one week hiccup recurred accompanied by anxiety, nervousness and sleep deprivation.

Gabapentin (300 mg tid) was added to the treatment with a prompt resolution of the symptom. Hiccup recurred after ten days with lower intensity; gabapentin was increased to 400 mg tid with remission of the symptom. After fourteen days the patient died by progression of disease without recurrence of hiccup.

Case 3

A 51-year-old man affected by small-cell lung cancer metastasised to the brain and liver was referred for pain, dyspnoea, anorexia and hiccup. Since the pain was classified as somatic and neuropathic, a therapy with oral morphine and gabapentin (300 mg tid) was started. We registered a prompt resolution of hiccup. Sporadic

episodes of hiccup were successfully treated with oral metoclopramide. After twenty days the patient died by progression of the disease.

Discussion

Chronic hiccup is defined as hiccup lasting 48 hours continuously or in recurring attacks and is a very distressing symptom for patients with advanced cancer.[3] The literature is based largely on case reports and no definitive clinical evidence is available to define the standard treatment. To date, chlorpromazine, haloperidol, nifedipine, metoclopramide and baclofen are the drugs most commonly employed in clinical practice. In particular, baclofen seems to be the drug most commonly employed to treat hiccup, but with frequent side effects (sedation, insomnia, dizziness, weakness, ataxia, confusion).[4,5] Moreover, it should be used with caution in elderly patients.

Gabapentin is an anticonvulsant commonly administered to patients with advanced cancer for the treatment of neuropathic pain.[6]

It is not metabolised by the liver and not bound to plasma proteins. These characteristics make the drug particularly attractive for patients with advanced cancer who often exhibit a low level of plasma proteins and/or hepatic failure due to metastatic spread.

The mechanism of action is probably related to the increase of endogenous GABA release and, thus, to the modulation of the excitability of the diaphragm and the other inspiratory muscles.[1]

Gabapentin is well tolerated and negative interactions with other drugs should not be expected.

In our experience, gabapentin was effective either alone or in combination with other drugs to treat chronic hiccup; no side effects related to gabapentin were observed.

Trials with a larger number of patients are mandatory to establish the role of gabapentin for treatment of hiccup in patients with advanced cancer.

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Splenic rupture occurring as a complication of subacute bacterial endocarditis

Brad Summers, Joseph Kaminski and Martin Chandler

Splenic rupture was first reported as a complication of bacterial endocarditis in 1919.[1] The possibility of splenic rupture should be evaluated in patients with prior or active endocarditis presenting with signs and symptoms of hypovolaemic shock. We describe a case of splenic rupture occurring as a complication of subacute bacterial endocarditis.

Case report

A 42-year-old male presented with erythema, oedema, and bilateral leg pain three weeks after aortic valve replacement for subacute bacterial endocarditis (*Streptococcus viridans*). History was significant for intravenous drug use and aortic valve stenosis/insufficiency. Examination was significant for a mechanical S_2 heart sound with 3/6 systolic murmur and a blanching petechial rash with pitting oedema of both legs. There was no abdominal pain or distension, palpable splenomegaly, or other stigmata of endocarditis. The white cell count was 8300/mm^3 without bands; the haematocrit was 30.0%. The international normalised ratio (INR) on warfarin 5 mg/day was 3.2. A transoesophageal echocardiogram revealed thin stranding on the prosthetic valve suggestive of early vegetation, possibly causing embolisation to the legs resulting in his symptoms at presentation to the hospital. However, Doppler ultrasound of the legs failed to demonstrate deep venous thrombosis.

He was admitted for two weeks' intravenous antibiotics, although blood cultures subsequently showed no growth. He was continued on the same dose of warfarin. The hospital course was uneventful until the tenth morning, when he complained of back and abdominal pain and a feeling of bloating. Examination found him to be diaphoretic, hypotensive, tachypneic, hypothermic, tachycardic, and hypoxaemic, but no abdominal tenderness was elicted or splenomegaly appreciated. Two haematocrit values were 20.1 and 18.2% and the INR 2.4. Nasogastric aspiration and stool haemoccult testing were negative for blood.

Several hours after resuscitative efforts began, progressive abdominal distension prompted paracentesis and a peritoneal lavage, both returning dark, bloody fluid. Interpretation of abdominal computed tomography (CT) was that the spleen was small but normal, and a large amount of intraperitoneal blood attributed to a ruptured viscus was present. Throughout resuscitative efforts, the patient was given packed red cells, platelets, fresh blood plasma, fluids, cryoprecipitate, vitamin K, and vasoconstricting agents to stabilise his vital signs and correct his coagulopathic state prior to undergoing exploratory laparotomy, but he developed disseminated intravascular coagulation and mutli-organ failure. Resuscitation was discontinued after 20 hours by family request.

On autopsy, there was approximately 4 l of blood in the peritoneal cavity. The spleen weighed 1100 g with multiple capsular disruptions extending into the parenchyma

(Figure 1). Infarcts were visualised underneath intact portions of the splenic capsule. Serial macroscopic sections revealed multiple infarctions and cystic areas with evidence of recent haemorrhage (Figure 2). Microscopic sections contained multiple areas of infarction with haemorrhage but no other abnormality. Splenic rupture was attributed to the development of endocarditis-related infarcts that subsequently haemorrhaged. Retrospectively, the CT images of the spleen demonstrated subtle irregularities that could have represented small areas of rupture with haemorrhage.

Figure 1. The spleen possesses multiple capsular disruptions (white arrows) extending into the parenchyma. Whitish areas with the appearance of infarcts are visualised underneath intact portions of capsule (black arrows).

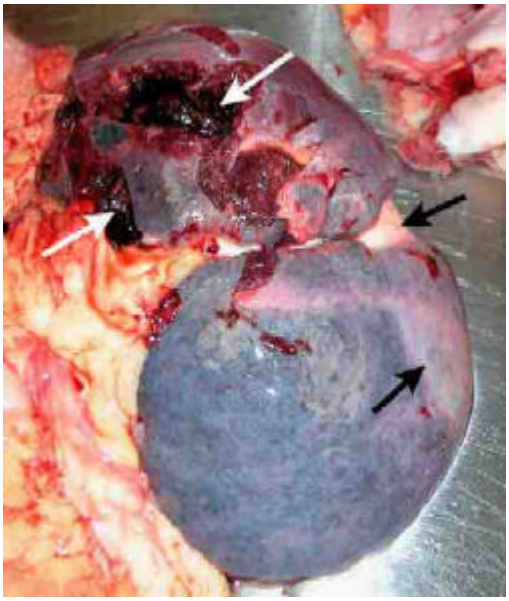
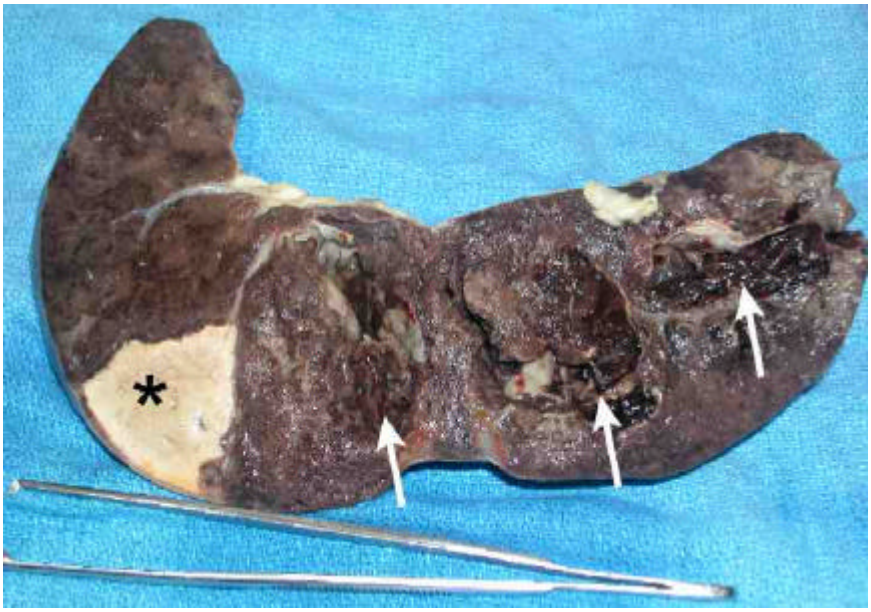


Figure 2. Macroscopic section reveals an infarct (asterisk), as well as cystic areas that contained haematomas (white arrows)



Discussion

Physiological trauma (eg, severe retching) can sometimes injure the spleen, but this mechanism was discounted in light of the autopsy findings. There was no history of recent, blunt abdominothoracic trauma, a frequent cause of splenic rupture.

Anticoagulation with warfarin undoubtedly complicated resuscitative efforts. Splenic rupture has been reported in patients being anticoagulated with warfarin or heparin,[2–4] and this complication has been reported in patients undergoing thrombolytic therapy.[4]

A recent review[5] and retrospective case series[6] assessing endocarditis-related complications did not mention splenic rupture, but clinicians should have a high degree of suspicion in patients with a history of bacterial endocarditis presenting in shock and with evidence of intraperitoneal haemorrhage. Timely diagnosis and surgical management are crucial to reduce the mortality and morbidity of this complication.

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Burroughs Wellcome in the High Court

This extract is taken from an article published in the New Zealand Medical Journal 1903, Volume 3 (10), pp298–99

We offer Messrs. Burroughs, Wellcome, and Co. our congratulations on the result of the action lately tried in the High Court of justice.

In the course of this action – brought by Burroughs, Wellcome, and Co. to restrain Thompson and Capper, a firm of retail chemists having large establishments in Manchester, Liverpool, and other north-country towns, from passing off goods not of Burroughs, Wellcome, and Co.'s manufacture when "tabloids" or "tabloid" products were prescribed – several points of moment to the medical profession were brought out.

The case, which will be an historical one so far as medicine and pharmacy are concerned, lasted seven days. During its course a number of the most distinguished members of the medical profession, and wholesale and retail chemists from England, Scotland, and Ireland, appeared for the plaintiffs, and definitely proved that in the profession and trade it was generally recognised that "tabloid" meant the preparations of Burroughs, Wellcome, and Co.

The direct question of substitution, which is a very grave one, especially where drugs are concerned, was complicated by the defendants raising as a secondary issue the validity of the plaintiffs' trade-mark "Tabloid." Basing their attack mainly on the fact that Burroughs, Wellcome, and Co. have refrained from familarising the public with their medicinal preparations, and have advertised them solely to the medical profession and drug trade, the defendants endeavoured to prove that the word "tabloid" had no special reference to Burroughs, Wellcome, and Co.'s products.

As to the acts of substitution, definite evidence was submitted in no less than twelve cases where in response to prescriptions and verbal requests other goods were passed off when Burroughs, Wellcome, and Co.'s preparations were asked for. In three cases not only was the firm's trade-mark "Tabloids" used on the prescriptions or orders, but the full name, "Burroughs, Wellcome, and Co.," or the initials "B. W. & Co.," had been added. Even this precaution had failed to secure the supply of Burroughs, Wellcome, and Co.'s preparations. The defendants' manager was the first witness for the defence. His admission under cross-examination settled the question as to substitution.

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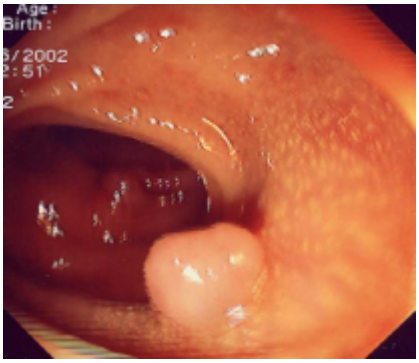
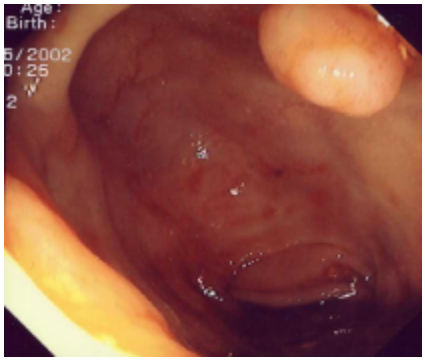
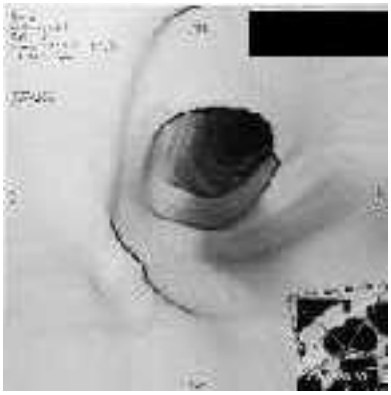
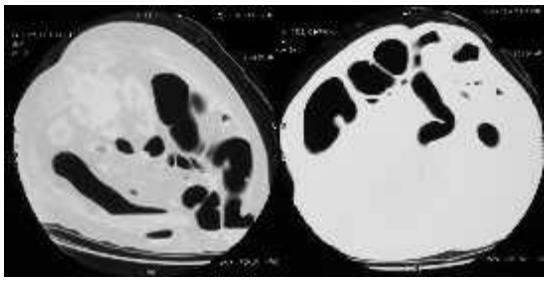
Colonoscopic and virtual colonoscopic images of colonic polyps

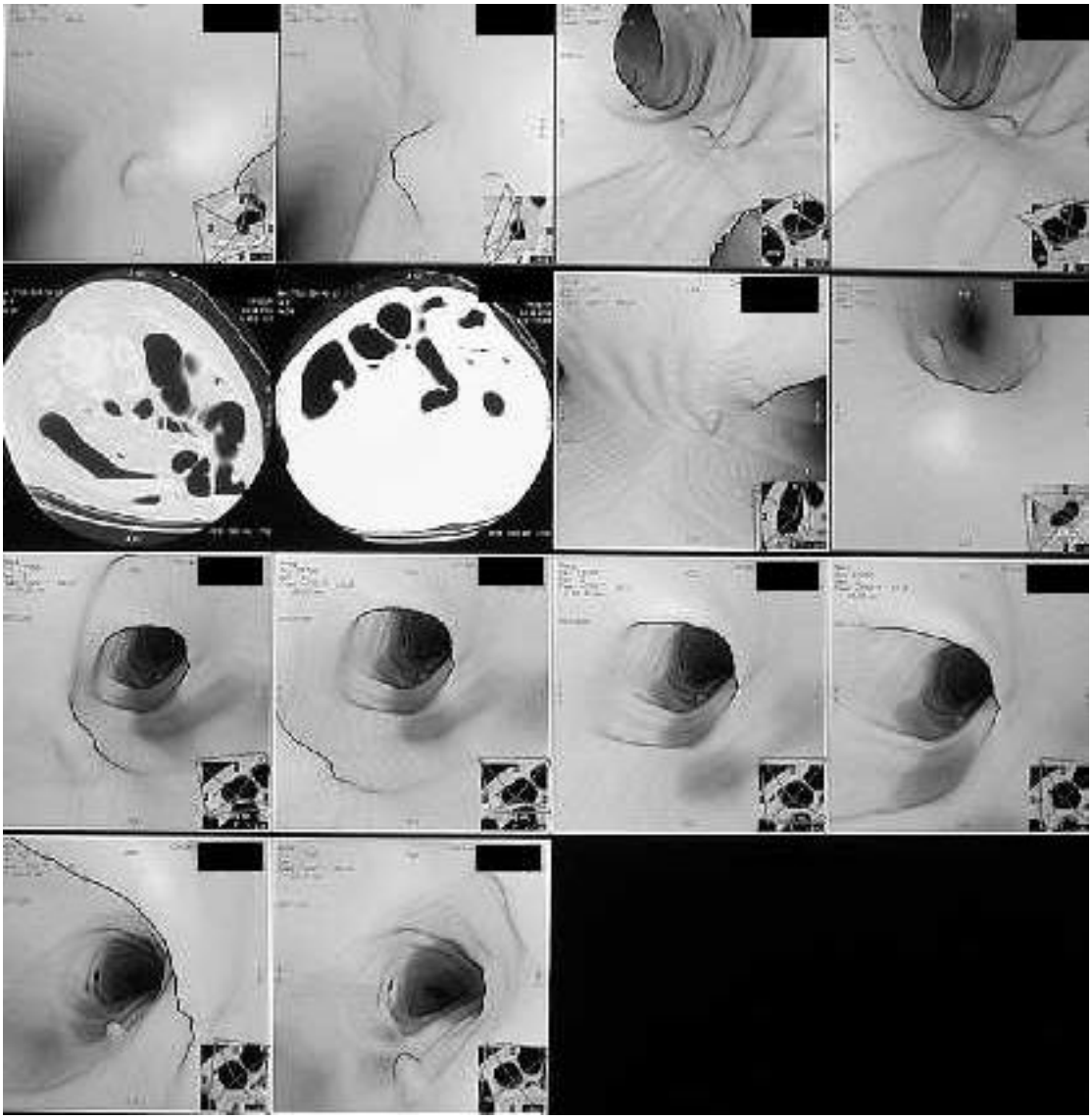
Virtual colonoscopy uses a spiral computed tomography to generate 3-D images of the interior of the colon. A recent study had a false-negative rate of 1%, and was most effective for lesions 6 mm or more in diameter.[1] If a polyp is identified, however, conventional colonoscopy may still be needed to remove it.











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Hottest for 2000 years

The Earth is warmer now than it has been at any time in the past 2000 years, the most comprehensive study of climatic history has revealed.

The newly published findings are a blow to sceptics who maintain that global warming is part of the natural climatic cycle rather than a consequence of human industrial activity.

Professor Philip Jones, a director of the University of East Anglia's climatic research unit and one of the authors of the research, said: 'You can't explain this rapid warming of the late 20th century in any other way. It's a response to a build-up of greenhouse gases in the atmosphere.'

'What we found was that at no point during those two millennia had it been any warmer than it is now. From 1980 onwards is clearly the warmest period of the last 2000 years,' said Prof Jones.

The study reinforces recent conclusions published by the UN's intergovernmental panel on climate change (IPCC). Scientists on the panel looked at temperature data from up to 1000 years ago and found that the late 20th century was the warmest period on record.

Guardian Weekly, 4–10 September 2003

German government under attack for anti-smoking advertisements

German Cancer Aid, the leading German cancer charity, has asked the German health ministry to stop its anti-smoking advertising campaign ('smoke free') immediately.

The campaign, funded by the tobacco industry, is intended to prevent young people taking up smoking. But a spokesperson for the charity claims that the series of attractive advertisements glamorises smoking rather than deterring people from taking it up.

The advertisements show attractive young people smoking, accompanied by big slogans such as 'Smoking soothes' and 'Smokers have contacts' and with statements in smaller type such as 'Right, but with carcinogenic substances such as arsenic, radon, or tar.'

The criticism was supported by delegates at the recent world conference on tobacco and health held in Helsinki.

BMJ 2003;327:360

National Health System, USA!?

Denouncing the present US healthcare system as irrational, wasteful, and unfair, a group of 8000 US doctors has called for the adoption of a single-payer national healthcare system in the USA.

The group calls for the elimination of all for-profit hospitals and private insurance plans and the creation of a system paid for entirely with government funds that would cover every American.

The plan was drawn up by the Physician's Working Group for Single-Payer National Health Insurance. The group contends the plan would be so much more efficient than the current US system that it would save enough to pay for health insurance for the 41 million Americans who now lack coverage.

At a press conference in Washington, DC, Marcia Angell, former editor of the *New England Journal of Medicine* and one of the authors of the proposal, said the US system was 'riddled with waste and profiteering' that a national system would eliminate.

Lancet 2003;362:621

Inhibiting metastasis?

A sialic acid-rich carbohydrate known as sialyl Lewis X juts out from many cells, especially cancer cells, and binds to molecules known as selectins that are found on the surfaces of platelets and endothelial cells. This binding enables cancer cells to spread, or metastasize, beyond their point of origin. Ten years of experimental data from numerous groups worldwide have shown that patients whose cancer cells express sialyl Lewis X – about 25% to 35% of patients with breast, colon, thyroid, and gastric cancers – have a much poorer prognosis for survival.

Esko and his co-workers at the University of California, San Diego, established that specific two-sugar units, known as disaccharides, serve as primers for cells to start making sialyl Lewis X. By modifying these disaccharides with various chemical groups and adding the modified primers to cell cultures as decoys, the researchers found that they could shunt at least some of a cancer cell's carbohydrate-forming reactions away from the pathway that makes sialyl Lewis X on proteins.

Although Esko's results are still preliminary, pharmaceutical interest in tinkering with the ways in which cancer cells use sugars is once again heating up.

Science 2003;30:159–60

Coronary artery stenting vs angioplasty

Coronary stenting was introduced in 1989 to treat the acute complications of percutaneous transluminal coronary angioplasty (PTCA) but is now routinely used for most angioplasties. The elective stent era began with the publication in 1994 of two randomised clinical trials showing a reduced rate of restenosis with coronary stenting compared with ordinary PTCA. Subsequently, the use of stents has increased exponentially; some consensus panels endorsed this clinical enthusiasm for coronary stenting even before a large body of high-quality evidence was available.

In this paper a total of 29 trials involving 9918 patients were identified and analysed. The authors concluded that in the controlled environment of randomised clinical trials, routine coronary stenting is safe but probably not associated with important reductions in rates of mortality, acute myocardial infarction, or coronary artery bypass

surgery compared with standard PTCA with provisional stenting. Coronary stenting is associated with substantial reductions in angiographic restenosis rates and the subsequent need for repeated PTCA, although this benefit may be overestimated because of trial designs. The incremental benefit of routine stenting for reducing repeated angioplasty diminishes as the crossover rate of stenting with conventional PTCA increases.

Ann Intern Med 2003;138:777–786

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Direct-to-consumer advertising is more profitable if it is misleading

In his editorial about direct-to-consumer advertising, Saunders asked 'Does DTCA compromise or improve patient health?' (http://www.nzma.org.nz/journal/116-1180/557/).[1] The answer is that there is evidence of increased costs and damage to decision making but no evidence of health benefits.[2,3] One of the main problems is that DTCA is more profitable if it is misleading.

For example, the current fluticasone (Flixotide) DTCA creates a misleading impression of effectiveness by using subjective improvement rates without a comparison group.[4] The advertisement does not explain that Flixotide is more expensive than appropriate doses of the alternatives. It contains no warnings against unnecessary high doses. It fails to disclose the uncertainty regarding whether or not Flixotide's higher bioavailability may lead to more long-term adverse effects.[5]

Another example is the DTCA claiming that tolterodine (Detrusitol) is an 'effective treatment'. This claim is not supported by the findings of a high-quality systematic review from New Zealand, which shows that apart from causing dry mouth the effects of anticholinergic drugs, including tolterodine, are of questionable clinical significance.[6,7]

It would be foolish for drug companies to deliberately produce misleading DTCA during the government review. Consequently, it is likely that GlaxoSmithKline and Pharmacia are genuinely unaware that their advertising is misleading. Clearly the sales-promotion culture within drug companies is contrary to producing the balanced educational information that the public needs for good healthcare decisions. The only effective option is to ban DTCA.

Peter R Mansfield
Director, Healthy Skepticism
Willunga, SA, Australia

Barbara Mintzes
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University of British Columbia, Vancouver, Canada

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DTCA not real advertising issue

PHARMAC's letter of 12 September (http://www.nzma.org.nz/journal/116-1181/592/)[1] deserves a brief response.

My recent article acknowledged that DTCA was of concern to PHARMAC but said that it is able to manage the financial risks.[2] PHARMAC's subsequent letter to the NZMJ provides more detail but failed to disprove that statement.

The fact that the pharmacy budget of $528 million for the year 2002 was under spent by $24 million, and the fact that PHARMAC, between 1993 and 2002, held the annual average increase to below 3%, compared with Australia's 14% for the same period, is evidence the organisation has very effective control over expenditure.

DTCA is no more than a management issue for PHARMAC and is not worth the amount of attention it is being given by the Government.

Whether there are drugs that are more expensive but no better than cheaper alternatives will not always be a clear-cut matter. But where this is true, it is hard to understand why PHARMAC would ever subsidise the more expensive option. This would seem to be a very unwise practice.

The real advertising issue is the lack of promotion of healthy living, including products or services that will improve the health of New Zealanders. The LTSA has saved lives and eased pressures on the health vote through its road-safety programme. I am less conscious of similar government-funded campaigns for healthy living, and medicines and treatments to reduce ailments such as heart disease.

PHARMAC said I had a conflict of interest 'including funding he receives from the pharmaceutical industry'. I do not and cannot recollect ever acting for a pharmaceutical company. I assume that PHARMAC must have confused me with a partner of mine who has acted for the industry. The four consultants here operate totally independently, in a manner similar to barristers in chambers. Clients are particular to the consultant, not the company.

Unlike the good professors and PHARMAC, the taxpayer does not fund me. The relevant clients with this exercise have been the Advertising Standards Authority for my original report,[3] and in the case of the NZMJ article the Association of New Zealand Advertisers. The views expressed in the article, however, are mine alone.

Barrie Saunders
Saunders Unsworth, Wellington

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More on prostate cancer screening

Dr Robin Smart's recent letter to the NZMJ (http://www.nzma.org.nz/journal/116-1181/593/)[1] criticises several aspects of our report of a survey of New Zealand general practitioners' views of screening for prostate cancer,[2] and also comments on important issues in relation to the conflicting views about the benefits of screening for and treating prostate cancer. I will attempt to respond to these criticisms and comments in the order in which they appear in his letter.

Apart from our paper in the NZMJ, the results of the survey have been reported to the New Zealand Guidelines Group and to several meetings of health professionals. There has been no attempt to use the public media to disseminate the results or conclusions of the survey and I do not understand what Dr Smart means by his reference to 'use of the public media' concerning the early diagnosis and management of prostate cancer.

The aim of our study was to determine whether the rapid increase in the reported incidence of prostate cancer was consistent with GPs screening for prostate cancer with the prostate specific antigen (PSA) test. It is not possible for a survey of the views of a random sample of 575 GPs to prove this hypothesis, but I believe that the results provide a reasonable level of support for this theory. Dr Smart says that the response rate of 66.3% for our survey was low. Although we would like to have achieved a response rate of 70% or better, many researchers who are experienced in this type of research would except that this response rate is sufficient to justify generalisation of the results to the total population of GPs. The survey was about screening for prostate cancer and not solely about PSA testing so that the systematic selection bias suggested by Dr Smart, whilst possible, seems unlikely.

Dr Smart is wrong when he states that the use of the term 'screening' is inappropriate. It is also unclear what he means by his preferred term of 'early diagnosis'. There are various definitions of screening but an essential feature of screening for any disease is that it attempts to identify asymptomatic individuals who have a high probability of having the disease at a stage when it is amenable to treatment.[3] Early diagnosis is a term that has been used to include both population screening programmes and opportunistic screening.[4] The essential difference between these two forms of screening is the lack of a quality control process in opportunistic screening.[3] The important criterion that the individual participants are asymptomatic is the same in both forms of screening. Concern about prostate cancer is not a symptom of prostate cancer. The survey of GPs was about screening for prostate cancer in men with no symptoms of the disease and this was made clear in both the introduction to the survey and the case vignettes.

The distinction between screening and case finding in men with symptoms is a fundamental issue in the assessment of the value of tests such as the PSA test because of the lead-time and length biases that occur in a screening programme. There is also the important ethical difference between screening, which encourages healthy, asymptomatic individuals to undergo tests, and a doctor using the best available tests and treatment, despite defects in medical knowledge, to help a patient who already has a disease.

Statements concerning published reviews of prostate cancer screening and its lack of proven benefit are not merely 'an opinion of the authors', but are clearly referenced statements of fact. All published systematic reviews, including the review by Bunting,[5] have concluded that there is no evidence that prostate cancer screening will significantly reduce mortality.[6] It is unclear why Dr Smart choses 1997 to define an 'early PSA era'. A rapid escalation in the reported incidence of prostate cancer due to PSA screening occurred in the USA between 1988 and 1992.[7] In the absence of a definitive randomised controlled trial, lead-time bias is only one of many factors that need to be considered in evaluating whether or not screening is likely to be of benefit.

In the randomised trial comparing radical prostatectomy with watchful waiting reported by Holmberg, the primary end point for the study was mortality from prostate cancer.[8] Secondary endpoints were metastasis-free survival and the risk of local tumour progression. Using mortality figures as the most useful measure of outcome does not reveal the 'narrowness of our view' but reports the same measure used in Holmberg's study. Overall mortality rather than disease-specific mortality is a more realistic measure of the outcome of most interest to the patient. Although the study excluded poorly differentiated tumours, only 5.2% of the study subjects had screen-detected prostate cancer so that the lead-time bias present in any screening programme was not considered. Clearly, the morbidity resulting from prostate cancer and its effect on the quality of life are important factors that need to be considered when evaluating the costs and benefits of treatment. However, these need to be compared with the morbidity caused by the treatment as well as other measures of the quality of life in men not receiving treatment. Dr Smart fails to do this in the figures he quotes and these issues were not reported or considered in the paper by Holmberg.

Screening can be effective only if the disease is discovered at a stage when cure is possible. This is possible in prostate cancer if the disease is localised to the prostate. In a report summarising some of the results of the first screening round of the two large-scale prostate cancer screening trials in the USA and Europe, 70% of screen-detected cancers were clinically localised and of these approximately 6% were Gleason score 8–10, 76% were Gleason score 5–7, and 15% were Gleason score 2–4.[9] As stated in our paper the best estimate for the 10-year, untreated survival of prostate cancer with a Gleason score of 2–7 is in the region of 90%. The studies quoted by Dr Smart largely support this and there are other studies that have all been summarised in several systematic reviews.[6] The Australian Health Technology Review found a 90–92% disease-specific, 10-year survival for Gleason score 2–7 tumours.[10] It is clear from these figures that discussion of the survival rates for untreated Gleason score 8–10 tumours is largely irrelevant to the consideration of prostate cancer screening and I am unsure why Dr Smart includes these figures.

Trials of treatment provide little useful information unless there is an appropriate comparison for the outcomes of treatment. If prostate cancer with a Gleason score of 2–7 has a 90% 10-year survival when untreated, the 10-year survival figures after treatment must be better than 90% if treatment is to be of any benefit. Other than the study by Holmberg[8] there are no randomised controlled trials of the treatment of prostate cancer. There is no evidence that the treatment of screen-detected, localised prostate cancers with a Gleason score of 2–7, either by radical prostatectomy or radiotherapy, is of any benefit. The studies quoted by Dr Smart do not have any control groups, and do not suggest any benefit from treatment. I know of no evidence

to support his statement that ‘there is clear evidence that early curative treatment prevents prostate cancer deaths’.

In the latter part of his letter Dr Smart discusses several issues that were not considered or mentioned in our report of the survey of GPs’ views of prostate cancer screening. It is understandable that he prefers to treat men with localised and well-differentiated prostate cancers who have a better than 90% 10-year survival in comparison with men presenting with symptoms caused by local spread or metastases. However, there is a significant morbidity associated with radical prostatectomy and an ethical requirement that there is a benefit from screening that clearly outweighs any potential risks or harmful effects. The argument against prostate cancer screening can be summarised as follows:

- The prostate specific antigen (PSA) test is a relatively inefficient screening test with high false-positive and false-negative rates. The best estimates for the sensitivity and specificity of the PSA test are 74–84% and 90–94%, respectively, with the true figures likely to be close to the lower limits of these estimates.[6] This results in both a high false-positive and high false-negative rate and approximately three out of every four men with a positive PSA test will have a negative prostate biopsy result.
- For those men identified as having prostate cancer a large but unknown number will have a cancer that is unlikely to cause them any problem during their lifetime. This overdetection rate may be as high as 50% with a lead time of more than 10 years, depending on the age and screening interval.[11]
- The majority of cancers detected by screening are well differentiated or moderately well differentiated (Gleason scores 2–7). These tumours have an untreated 10-year survival rate of at least 90%, and this is likely to be considerably longer with the addition of the lead time present in screen-detected cancers.
- There is no evidence that the treatment of localised prostate cancers with Gleason scores 2–7 has any benefit for overall or disease-specific mortality. Although it is possible that some men will have a potentially lethal cancer cured there is no way of identifying who these men are and the cost will be the unnecessary treatment and morbidity of a large number of other men.

I agree with Dr Smart that we should learn to use the tools we have as best we can, but with our present state of knowledge using the PSA test for screening for prostate cancer is likely to cause more harm than good.

John Durham
General Practitioner
Porirua

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Donald Joseph Dobson

Donald Joseph Dobson died on 23 July 2003 at the age of 79.

Joe was a big man in every way. Larger than life, with tremendous energy and an enormous capacity for work. He was born and educated in Christchurch and was Head Prefect at Christ's College in 1942.

After being turned down for entry to Duntroon Military College because of a shoulder problem he turned to medicine, first at Canterbury College and then at the University of Otago. He obtained a university blue for rowing and continued in this sport in Christchurch subsequently.

At Christchurch Hospital from 1948 to 1950, Joe threw himself into his clinical work with great enthusiasm. He had no time to sit and play bridge. He was at full speed all the time.

He went to London hoping to take the Membership but his atrocious handwriting defeated the examiners.

Returning to Christchurch in 1955, he joined Tom Hayes in practice in Ferry Road. When Tom left, Terry O'Brien joined him and later Gerald Staniland became part of the team. Joe continued in this practice until his retirement. These were the days of high-volume general practice and this suited Joe. He loved the bustle of general practice – he never rested. His patients loved him and he had the respect of all his colleagues.

Joe took a full part in professional affairs as President of the Canterbury Division of the NZMA and played a leading role in the evolution of the College of General Practitioners, of which he became Chairman.

In 1967 and 1968 he served as a civilian medical officer with a team from New Zealand in Vietnam. He twice represented New Zealand at conferences of the World Medical Association.

He played a full part in support of his family's activities in PTAs, school boards, Girl Guides and as President of the Canterbury Winter Sports Club.

A kind and caring doctor, a loving husband and father and someone who was good to be with, he will be sorely missed.

This obituary is based on information provided by Joe's roommate at Selwyn College, Tom Milliken

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Charles Peter Howden

Peter Howden was born in Auckland in 1911 and died on 6 July 2003, at the age of 91.

His medical family connections included a grandfather, his father, an uncle and two cousins. His father, Charles Ernest Howden, was a general medical practitioner at Waiuku, South Auckland, and Peter lived there except while his father served overseas in World War I when his mother took the family to her parental home at Peel Forest, South Canterbury.

Peter was educated at Waiuku Primary School and Kings College where he was a School Prefect, Head of School House, in the First Cricket XI from the 3rd Form, in the First XV and the Auckland Schools' Golf Champion. While at the Otago Medical School he gained a university blue in cricket and represented Otago.

During World War II he served as a captain in North Africa, Sicily and Italy, and recalled giving a hundred blood transfusions on the first day of the Battle of El Alamein.

He married Win in 1944 and took over his father's practice the following year. From then on, for many years he was dedicated to continuous call with "the whole family involved in the practice. It was not unusual to be warming up shocked car accident victims round the fire, making cups of tea or sterilising instruments on the stove." He had a special interest in obstetrics, which he practised at the local Franklin Memorial Hospital and later at the Pukekohe Obstetric Hospital.

He was deeply attached to the family home, 'The Hill', with its two-acre garden, and at his memorial service the girls recalled building the concrete walls, the begonias in the glasshouse, Peter's constant hand-weeding of the grass tennis court and his keen interest in taking and processing photographs. Holidays were often spent at Ha Hei and Rotorua and, when weekend rosters were finally established, the family greatly enjoyed Parekura Bay near Russell.

His love of golf is reflected in his having become a foundation member of the Waiuku Golf Club at the age of 10 and playing, more consistently in retirement, until he needed a spotter to follow the ball's flight.

After practising for nearly 40 years in Waiuku, Peter retired in 1984 and, after Win's death in 1996, remained at 'The Hill', with the help of his family and a dedicated group of caregivers, until a few days from his death.

He is survived by his sister June, his daughters Prue, Diana and Judy, and eight grandchildren.

We are grateful to Rae West for this obituary

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The Cardiac Society of Australia and New Zealand/Merck Sharp and Dohme Research Fellowship 2004

The Cardiac Society of Australia and New Zealand – New Zealand Branch, and Merck Sharp and Dohme are pleased to announce the successful applicant for the 2004 Cardiac Society/MSD research fellowship is Dr Cara Wasywich, currently research fellow in Cardiovascular Medicine at the University of Auckland.

This prestigious fellowship was made possible by a generous donation from the New Zealand Branch of Merck Sharp and Dohme. The fellowship is administered by the New Zealand Regional Executive Committee of the Cardiac Society of Australia and New Zealand and designed primarily to support cardiovascular research projects within New Zealand. Priority is given to registrars in Cardiac Medicine or Surgery to complete an MD thesis in New Zealand or for specific research projects. Successful Research Fellows are Associate Members of the Cardiac Society and their research is supervised by a full member of the Cardiac Society of Australia and New Zealand.

Dr Wasywich intends that her research will focus specifically on the assessment and management of the more severe forms of heart failure. She is specifically interested in the correlations between invasive haemodynamics, neuro-hormones and echocardiography in the assessment and management of congestive heart failure. This work will form the basis of an MD thesis. It is hoped and expected that her work will advance knowledge in the area of heart failure management, an area of considerable interest to her and her supervisors at both Auckland and Green Lane Hospitals.

Specific enquiries about the Cardiac Society/MSD Research Fellowship in New Zealand can be directed to either the current honorary Secretary/Treasurer, New Zealand Branch, Dr Phil Matsis C/- Cardiology Department, Wellington Hospital, Wellington; or Dr Hugh McAlister, New Zealand Councillor, C/- Cardiology Department, Waikato Hospital, Hamilton, New Zealand.

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Medicines Classification Committee

The New Zealand Medical Association is seeking expressions of interest from members to serve on MedSafe's Medicines Classification Committee. The daily fee is between $190 and $215 (up from $140). This work may interest retired or semi-retired members.

The MCC is a statutory advisory committee that makes recommendations to the Minister of Health in respect of the classification of medicines as prescription medicines, restricted medicines or pharmacy-only medicines.

Please contact Nina Wilson (email: nina@nzma.org.nz) if interested.

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Erratum

Proceedings of the Annual Scientific Meeting of the Continuing Education Committee Anaesthetists in New Zealand (New Zealand Society of Anaesthetists and Australian & New Zealand College of Anaesthetists), Wednesday 18 to Friday 20 September 2002. NZ Med J 2003;116(1180). URL: http://www.nzma.org.nz/journal/116-1180/568/

The final abstract of these proceedings, 'A graphical trend display leads to more rapid detection of changes' by R Kennedy and A Merry, was also co-authored by N Mann of Greenlane Hospital, Auckland.

Please refer to the above URL to view the corrected copy of the article.

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Practical child psychiatry: the clinician's guide

Bryan Lask, Sharon Taylor, Kenneth Nunn (eds). Published by the BMJ Publishing Group, 2003. ISBN 0-7279-1593-2. Contains 400 pages. Price GBP35.00

This is a great little book, which achieves its dual aims of being concise, practical and accessible and being intended for use by the 'busy clinician'. The wisdom and experience of the authors shine through and while openly declaring its role is not to provide 'a detailed critique of the literature nor a detailed review of the latest research findings' the backing from such sources is apparent in much of the excellent direct advice provided. Anyone looking for polemics will be disappointed!

It is an 'easy read', but written at two levels, depending on which of the three sections one is using. The first two are introductory and include a short overview and assessment section followed by a large synoptic 'clinical picture' section (over 200 pages), which is admirable in its breadth, especially regarding consultation liaison topics.Of necessity, each chapter is brief (5–15 pages) and includes developmental variation in clinical presentation across ages where appropriate, for example, in the chapter on fears and anxieties.

However, those wanting to use this publication as a springboard into specific further reading may find the brevity of the references or 'further reading' lists frustrating. For example, there are just three suggested further reading texts in the chapter on psychosis, all of them books. But you were warned! Nevertheless, I can easily picture clinical heads of services thrusting this book into the hands of all new appointees and advising them to read the first two sections over the weekend before starting work.

The third 'treatment' section is quite different. Indeed, virtually all the 20 clinical picture topics treatments are cross-referenced to it and there is something for more experienced clinicians to ponder. The chapters on parental and family treatment, psychotherapy and cognitive behavioural treatment are excellent overviews. The last on psychopharmacology outlines very sound principles and has three detailed tables covering: suggested condition treatment algorithms; side-effect syndromes tabulated against all medication groupings; and specific prescribing details for 51 'psychotropic medications in childhood' (40 pages). Here, time (always a hazard for books) and the effects of different countries' health-funding policies start to bite. Eight of the hit-list medications are unavailable in New Zealand. Another nine are unsubsidised and therefore generally not affordable, two have cost premiums and two (paroxetine and venlafaxine) have recently had manufacturer's warnings put out against use in patients under 18 years of age. These NZ restrictions have a significant impact on the medication treatment algorithms presented. In practice, the list of 51 medications becomes just 20 for our regional inpatient unit. An earlier suggestion to use thioridazine for agitation has not been expunged although concerns about its use (QTc prolongation) are indicated later.

These provisos aside this remains a great little book, which is warmly recommended.

Bill Watkins
Senior Lecturer, Child and Adolescent Psychiatry
Christchurch School of Medicine and Health Sciences

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MRI from picture to proton

Martin J Graves, Donald W McRobbie, Elizabeth A Moore, Martin R Prince. Published by BMJ Publishing Group Limited, 2002. ISBN 0-5215-2319-2. Contains 372 pages. Price GBP34.95

Magnetic resonance imaging (MRI) has become an essential investigation for many patients, particularly those with musculoskeletal, spinal or neurological abnormalities. As with many new technologies, its indications are expanding as technological improvements enhance its ability to facilitate diagnosis. In order to properly interpret these increasingly sophisticated MR images, a grasp of the physical principles is important.

This book offers a good overview of the physics and mathematics involved in the obtaining and processing of MR images. It is well illustrated, particularly with its line diagrams, which facilitate understanding of some of the more complex physical principles. The clinical images are of good quality and further augment comprehension. The book takes a difficult topic and presents it in a manner that facilitates understanding yet provides considerable details for those wanting a more sophisticated understanding of MRI. There are particularly good chapters on MR angiography and blood oxygenation level dependent imaging (functional MRI).

This book would appeal to radiologists, radiographers and scientists with a strong interest in MRI. It is likely to be too comprehensive for many clinicians, who may prefer a practical knowledge of MRI rather than sophisticated understanding of the physical principles. At NZ$100 it represents good value and the authors should be commended for achieving the aims of writing an entertaining and interesting book, which deals with an inherently complex subject.

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