THE NEW ZEALAND
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This Issue in the Journal

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Corinne Ooi, Ian Campbell, James Kollias, Primali de Silva

This paper provides an overview of women with breast cancer in New Zealand. It compares results of patients who presented with a breast symptom to their doctor and women who had breast cancer detected through the screening program. It shows that New Zealand women are generally treated appropriately according to accepted international guidelines.

The reasons for cancellation of urological surgery: a retrospective analysis

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Cancellations of elective surgery is costly and a wasted opportunity. Measurement of causes of cancellations improve efficiently reduces cancellations.

Screening for sexually transmitted infections in pregnancy at Middlemore Hospital, 2009

Alec J Ekeroma, Leena Pandit, Cecilia Bartley, John M D Thompson

Sexually transmitted infections can cause complications in pregnancy and it is a best practice recommendation to screen for this in pregnancy. Our study found that in 2009, only 64% of all 6795 women having babies in Middlemore Hospital had screening. Of the women screened, 10% had an infection and it was highest in Maori, Pacific and young women. Our study stresses the importance of improving and monitoring screening rates and practice.

Unintended pregnancy and therapeutic abortion in the postpartum period. Is an opportunity to intervene being missed?

Karen Joseph, Anna Whitehead

After giving birth a woman's fertility can return within a few weeks even if she is breastfeeding. If she does not wish another pregnancy immediately then a range of contraceptive options can prevent this. Due to the unique way that maternity care is funded in New Zealand (the lead maternity carer or LMC system) women can, and should be, offered contraceptive advice and prescription by their LMC (usually a midwife) free of charge. Despite having this provision in the LMC contract there are a number of women who are not being provided with adequate contraception after they give birth; and subsequently conceiving an unwanted pregnancy and seeking an abortion while their previous child is still less than six months old. There are a number of reasons for this, and it is hoped that by identifying them it may be possible to reduce the rate of unintended pregnancy in this group of women.

SIDS prevention: 3000 lives saved but we can do better ((viewpoint article))

Edwin A Mitchell, Peter S Blair

Mortality from sudden infant death syndrome (SIDS) has decreased substantially from the late 1980s. This has been attributed to the change in infant sleep position initially from prone to side and then to predominantly supine. We calculate that this has saved over 3000 lives. However, we argue that we could save more infant lives, if more focus was given to the risks observed from parents sleeping in the same bed as their babies.

The effect of ethnic prioritisation on ethnic health analysis: a research note ((viewpoint article))

Robert Didham, Paul Callister

Ethnicity is an important variable in studies of health inequalities in New Zealand. Yet there are on-going concerns about the nature, quality and use of ethnic data. In 2004, Statistics New Zealand recommended that researchers and policy makers no longer use the system of ethnic prioritisation, a system originally designed to assign people with multiple ethnic responses to one ethnic category. The prioritisation system treated Maori responses as top priority, which means that information for people of both Maori and Pacific (or European) ethnicities remained correctly included in Maori data but was lost to the information on Pacific (or European) communities. While across a range of disciplines researchers have shifted to using either total ethnic counts or single and combination counts, many health researchers continue to use ethnic prioritisation. Census data show that when using prioritisation there are significant losses to Pacific, Asian and European groups, especially for young people. Losses are especially high for New Zealand born people in all age groups. Health researchers need to consider very carefully the costs and benefits of using prioritised data. Based on the census data we suggest the costs, in terms of loss of information and possible biases in findings, outweigh any benefits.

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Sleeve gastrectomy

The review article on sleeve gastrectomy by Lemanu and colleagues in this issue of the *NZMJ* is very timely. Sleeve gastrectomy is a form of bariatric surgery for treatment of severely obese patients; it is a procedure that is rapidly increasing in popularity. Indeed, for several New Zealand bariatric surgeons it has become the procedure of choice.

The theoretical ideal weight loss operation would result in all patients having excellent weight-loss that is durable long term. The operation would have no morbidity or mortality. No long-term complications would occur. There would be an excellent resolution of obesity-related comorbidities and improvement in quality of life. Food intolerance would be minimal. Currently there is no ideal weight loss operation. However, current operations are moving in the right direction.

During the history of bariatric surgery going back over the last 50 years, tens of different operations have been performed.[2] Many of these operations have become obsolete as newer and better operations have been developed. Due to this constant evolution, bariatric surgery today is minimally invasive, safe and efficacious.

The most commonly performed bariatric surgical operations today are the laparoscopic adjustable gastric band, laparoscopic Roux-en-Y gastric bypass and laparoscopic sleeve gastrectomy. Of these operations, the laparoscopic gastric bypass is considered by many surgeons to be the gold standard. It has been in existence for 40 years and has stood the test of time while other procedures have failed. It results in a good weight loss of 71% excess body weight loss at 3 years.[3] The weight loss is durable with follow-up data to 15 years.[4]

The resolution of obesity-related comorbidities is impressive. However, there is a long learning curve and the operation is difficult to perform, particularly using a laparoscopic technique. Well-performed surgery results in low morbidity and low mortality 0.2%.[5] Long-term complications of gastric ulcers and internal hernias can occur although these are uncommon 5–10%. Vitamin deficiencies can occur.

The laparoscopic adjustable gastric band is the safest bariatric surgical procedure with an operative mortality of 1/2000. It is relatively simple to perform and is reversible. On average, weight loss is 55% of excess body weight at 3 years.[3] The disadvantages include the need for frequent follow-up with band adjustments, variable weight loss and more food intolerance compared to the other two operations.[6] The risk of band or port complications requiring revisional surgery is cumulative every year at approximately 3% per year.[7]

The laparoscopic adjustable gastric band remains popular in Australia and also in North America. The popularity for this procedure in Europe was once high but is now decreasing. In March 2012 at the 10th International Obesity Surgery Expert Meeting in Austria, attending bariatric surgeons were poled as to the procedures performed in their practice. Sixty-four percent of procedures were gastric bypass, 21% were sleeve gastrectomy and only 11% of procedures were gastric band.

The laparoscopic sleeve gastrectomy as indicated in the review article results in good weight loss and resolution of comorbidities. Patients have minimal food tolerance and this has been confirmed to be a clear advantage when compared to the gastric band. The very low ongoing complication rate is a particular benefit.

The Achilles heal of the sleeve gastrectomy is sleeve leakage. This complication can be extremely difficult to manage, become life-threatening and can result in the patient have a prolonged hospital stay. The New Zealand public will not accept sleeve leak rates of 5–10% and hence it is important that the sleeve leak rate is as low as possible.

An International Sleeve Gastrectomy Expert Panel Consensus statement was published this year.[8] From over 12,000 Sleeve Gastrectomy procedures that the experts had performed the overall leak rate was 1%. This confirms that well-performed surgery with good staple-line management can produce acceptable leak rates.

Bariatric surgery has an important role to play in the fight against New Zealand's obesity epidemic. The laparoscopic sleeve gastrectomy is emerging as a very useful bariatric operation and its popularity may continue to increase with time.

Competing interests: SK is a bariatric surgeon.

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References:

1. Lemanu D, Srinivasa S, Singh P, et al. Laparoscopic sleeve gastrectomy: its place in bariatric surgery for the severely obese patient. N Z Med J. 2012;125(1359). http://journal.nzma.org.nz/journal/125-1359/5276
2. Baker MT. The history and evolution of bariatric surgical procedures. Surg Clin North Am. 2011;91(6):1181–1201.
3. Garb J, Welch G, Zagarins S et al. Bariatric surgery for the treatment of morbid obesity: A meta-analysis of weight loss outcomes for laparoscopic adjustable gastric band and laparoscopic gastric bypass. Obese Surg 2009;19:1447–1455.
4. Sjostrom L, Narbro K, Sjostrom D et al. Effects of bariatric surgery on mortality in Swedish Obese Subjects. NEJM 2007;357:741–52.
5. The LABS consortium. Perioperative safety in the longitudinal assessment of bariatric surgery. N Eng J Med 2009;361:445–54.
6. Overs S, Freeman R, Zarshenas N et al. Food tolerance and Gastrointestinal quality of life following three bariatric procedures: Adjustable Gastric Banding, Roux-en-Y Gastric Bypass and Sleeve gastrectomy. Obes Surg 2012:536–545.
7. Himpens J, Cadiere G, Bazi M et al. Long-term outcomes of Laparoscopic Adjustable Gastric Banding. Arch Surg 2011;146(7):802–807.
8. Rosenthal R. International Sleeve Gastrectomy Expert Panel consensus statement: Best Practice Guidelines based on experience of >12,000 cases. Surg Obes Relat Dis 2012;8:8–19.

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National Breast Cancer Audit: overview of invasive breast cancer in New Zealand

Corinne W L Ooi, Ian D Campbell, James Kollias, Primali de Silva

Abstract

Introduction The National Breast Cancer Audit collects data on the care of early breast cancer patients in Australia and New Zealand. An overview of invasive breast cancer in New Zealand is presented with emphasis on comparing the screened population with symptomatic referrals.

Methods All New Zealand data in the National Breast Cancer Audit with a diagnosis date of 2008 have been included in the report. Data was analysed with an aim to compare the presenting features and management of screen detected invasive cancer with symptomatic referrals in New Zealand.

Results There were 2371 cases of breast cancer, 52% of which were symptomatic referrals, 37% of which were BreastScreen Aotearoa referrals. Higher breast conservation rates were reported in the screening population. 3% of patients had involved margins after surgery. Almost two-thirds (62%) of BreastScreen patients underwent a sentinel node biopsy without further axillary surgery. 72% of screening patients and 86% of symptomatic patients who were high risk did not receive post mastectomy radiotherapy. A larger proportion of symptomatic patients received chemotherapy. Endocrine therapy was prescribed to 81% of hormone receptor positive patients.

Conclusion Patients with early invasive breast cancer in New Zealand were managed appropriately according to audit performance indicators and clinical guidelines. The numbers of high risk patients not receiving post mastectomy radiotherapy and the lack of endocrine treatment in some patients with hormone receptor positive tumours may warrant further investigation.

The National Breast Cancer Audit (NBCA) was initiated in 1998 and collects data on the surgical care of early breast cancer patients in Australia and New Zealand. The audit is managed by the Australian Safety and Efficacy Register of New Interventional Procedures-Surgical (ASERNIP-S) Program, being part of the Research, Audit and Academic Surgery Division of the Royal Australasian College of Surgeons (RACS). This is a secure online data entry system and participation in the NBCA is a requirement for full membership of the newly formed Breast Surgeons' Society of Australia and New Zealand (BreastSurgANZ).

Participating surgeons are able to obtain reports about their practice standards and compare it with minimum thresholds for defined key performance indicators (KPI). Since the launch of the online data entry system in May 2004, the percentage of NBCA data submitted by New Zealand surgeons has increased from 20% to 27%.[1]

Breast Screen Aotearoa (BSA) is a national breast screening program that offers free screening mammograms to all New Zealand women aged 45 to 69 years with no symptoms of breast cancer. BSA organises breast screening services throughout New Zealand and it is part of the National Screening Unit of the Ministry of Health.

To ensure that BSA program is working well, BSA services are required to comply with the National Policy and Quality Standards set by BSA. The Independent Monitoring Group reports to the National Screening Unit every 6 months on how well each BSA service is meeting the quality standards. Regular audits of BSA services are also conducted to ensure this.[2] It is a requirement of surgeon accreditation to BSA that the surgeon submits all their breast cancer cases to the NBCA.

This audit is supported by BSA in order to obtain audit data for women in New Zealand with screen detected cancers. This paper is based on the first such report and compares the presenting features and management of screen detected cancers with symptomatic for New Zealand women. This paper aims to examine invasive cancers only and a separate paper looks at Ductal Carcinoma In Situ.

Method

A Structured Query Language (SQL) query was written to extract New Zealand data with a diagnosis date of 2008 from the NBCA online database on 01 April 2010. In addition to this, data was included from Auckland Breast Cancer Register for cases diagnosed between July and December 2008. This was distributed across the BSA and non BSA groups. This dataset was scheduled to be uploaded into the NBCA database through the institutional upload program later in 2010.

Percentage case volumes for New Zealand data have been reported by referral source under the following headings : background information (such as referral source, public versus private treatment, age of patients), invasive tumour characteristics (histological type, size and grade distribution), breast surgery treatment (breast conserving surgery or mastectomy with or without breast reconstruction), axillary surgery treatment, margins of excision for breast surgery, rates and types of re-operation, hormone receptor status, endocrine therapy, rates of chemotherapy and radiotherapy prescription.

The number of cases reported from Breast Screen Aotearoa (BSA) and other referral sources for each category were compared using Chi-squared test using the Statistical Package for Social Sciences software (SIPSS Inc., Chicago, IL, USA). A statistical significance level of $P<0.05$ was used.

Results

There were 9718 cases reported to the NBCA in 2008 and 2371 of there cases were from New Zealand. Out of the 259 surgeons who contributed to the audit in 2008, 70 were from New Zealand. As approximately 2600 cases of breast cancer are diagnosed in NZ each year, this figure indicates that approximately 90% of NZ women with newly diagnosed breast cancer are being entered on the audit. The remaining 10% may include advanced breast cancer which is not collected by the NBCA, as well as a small number of cases treated by New Zealand surgeons not participating in the audit.

The majority of breast cancer cases from New Zealand were referred as symptomatic from a GP (52%) and Breast Screen Aotearoa was the second most common referral source (37%). Patients referred from other sources include patients with screen detected cancers outside of BSA such as private screening. A very small number were referred from Breast Screen Australia.

See Table 1 for Referral source for New Zealand episodes.

Table 1. Referral source for New Zealand episodes

Referral source	Percentage
Breast Screen Aotearoa (BSA) (N=874)	36.86%
Not BSA (N=1427) – Symptomatic from GP (N=1235) – Breast Screen Australia (N=5) – Other (N=187)	 52.09% 0.21% 7.89%
Not known (N=70)	2.95%
Total (N=2371)	100%

The majority (88%) of New Zealand breast cancer episodes were invasive. 78.49% of cases referred from BSA were invasive cases compared to 93.06% of non-BSA referrals. Almost all (97.37%) patients in the BSA group were within the screening age of 45–69 years.

The peak incidence (39.7% of 874) of patients in the BSA group were in the 51 to 60 year old age group. In the not BSA group, 52% of patients were in the 45 to 70 year age group with 22% of patients under 45 years of age and 26% of patients over the age of 70 years. All BSA patients were female and only 1% of non BSA patients were male. As expected, our policy is to invite all women to BSA, therefore there were no men in the BSA group.

Almost two-thirds (63%) of New Zealand patients received surgical care as a public patient with 70% of the BSA group looked after as public compared to 58% in the not BSA group.

The 12% of ductal carcinoma in situ cases reported by the NBCA, are excluded from the following results, which concentrate on invasive cancer only.

Invasive tumour characteristics—Most (80%) of the invasive tumours were Ductal Carcinoma Not Otherwise Specified (Table 2 Invasive Tumour Characteristics). Percentages of Invasive Lobular (15%, p=0.012) and Tubular (3%, p=0.001) were higher in the BSA group than in the not BSA group (11%, 1%). The percentage of patients with smaller tumours (15mm) was significantly higher in the BSA group (55%) than in the not BSA group (23%) (p=0.00).(Table 3 Size of invasive tumour).

There was a higher percentage of Grade 1 invasive tumours in the BSA group (37%) than in the non BSA group (19%) (Refer to Figure 1). Conversely, the percentage of Grade 3 tumours was higher in the non BSA group (39%) than in the BSA group (18%). There was no significant difference for the Grade 2 invasive tumours between BSA and not BSA groups.

Table 2. Type of invasive tumour by referral source†

Tumour type	BSA (N=669)	Not BSA (N=1308)	P value
Ductal Carcinoma Not Otherwise Specified (NOS)	77.43%	80.81%	0.077
Invasive Lobular	14.50%	10.63%	0.012
Special Types	0.00%	0.23%	0.215
Other Invasive of Mixed Type	1.79%	1.91%	0.855
Other Neoplasm	1.20%	2.37%	0.076
Tubular	3.43%	1.22%	0.001
Medullary	0.15%	0.46%	0.273
Mucinous	1.20%	1.53%	0.553
Basal-like	0.30%	0.84%	0.158

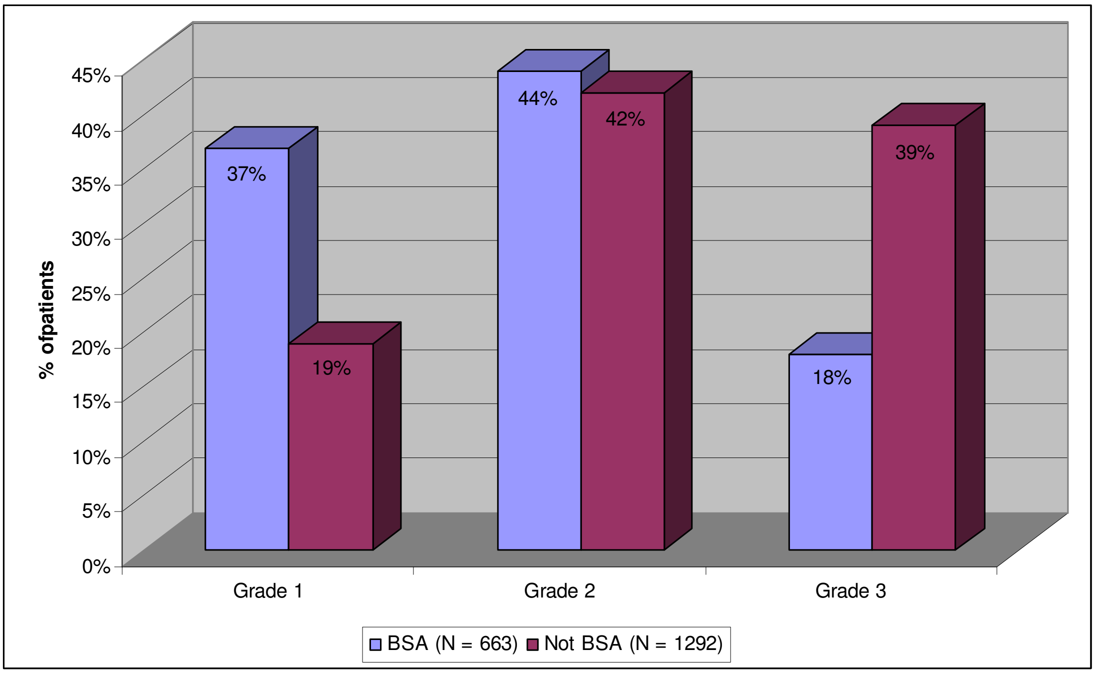
† Tumour types were not known for 17 BSA and 20 not BSA patients.

Table 3. Size of invasive tumour in mm by referral source†

Referral source	<10 mm	10-14 mm	15-19 mm	20-29 mm	30-39 mm	>40 mm
BSA (N=678)	27.14%	27.88%	20.21%	16.36%	4.28%	4.13%
Not BSA (N=1305)	10.12%	13.26%	19.00%	27.96%	13.48%	16.18%
P value	0.000	0.000	0.215	0.000	0.000	0.000

† Invasive tumour size was not known for 8BSA and 23 not BSA patients

Figure 1. Histological grade of invasive tumour by referral source†



† Histological grade of the invasive tumour were not known for 23 BSA and 36 not BSA patients.

For almost two-thirds of New Zealand patients (64% of 1475 cases), lymphatic vascular invasion (LVI) was absent (539 cases were excluded due to missing LVI information). The percentage of patients with lymphatic vascular invasion was lower in the BSA group (23% of 491 cases) than in the not BSA group (42% of 984 cases) (p=0.00).

A minority (4%) of invasive cancers in New Zealand were bilateral synchronous and there was no difference in the percentage of bilateral synchronous cancers between the patients from BSA (3.36%) and not BSA (3.75%) groups.

Majority of New Zealand patients were post-menopausal (1234 of 1960 or 63%). The percentage of premenopausal women was lower in the BSA group (18%) than in the not BSA group (35%) (p=0.00).

The proportion of peri-menopausal women in the BSA group was 10.7% and not BSA was 5.97% (p=0.00). Similarly, the proportion of post-menopausal women in BSA (71.03%) was higher than the not BSA group (58.73%) (p=0.00).

Most of the New Zealand patients (80% of 1975, 39 cases excluded due to missing information) had oestrogen receptor positive tumours, while 68% (out of 1965 cases, where 49 cases were excluded due to missing information) had progesterone receptor positive tumours.

The percentage of patients with oestrogen and progesterone receptor positive tumours were higher in the BSA group (89%, 78%) than in the not BSA group (76% 64%) (p=0.00). Human Epidermal Growth Factor Receptor (HER) 2 negativity was common in New Zealand patients with 86% (out of 637 cases) of BSA patients with HER 2 negative tumours compared to 81% (out of 1210 cases) of not BSA group (p=0.007, 167 cases were excluded due to missing HER2 data).

Breast surgery treatment—Breast conserving surgery (BCS) was more commonly undertaken for BSA patients (62%) compared not BSA patients (38%, p=0.00). More than half of not BSA patients had mastectomy (57%) as their first surgical treatment compared to 34% of BSA patients (p= 0.00).There were a small number of patients who had an open biopsy as their first operation (3% in BSA and 2 % in not BSA group). The re-operation rate for patients after BCS was 19% in BSA patients and 22% for not BSA patients.

Refer to Table 4 for further breast surgery after BCS. About 10% of patients in both groups required a re-excision, with a similar percentage requiring complete mastectomy.

Table 4. Further breast surgery after BCS for invasive cancer by referral source

Referral source	Any further surgery	No further breast surgery
BSA (N=451)	19.29%	80.71%
Not BSA (N=542)	21.06%	78.04%
P value	0.302	0.302

The majority of New Zealand patients (84%) did not have breast reconstruction after mastectomy. Only 19% of BSA and 14% of not BSA patients had reconstruction after mastectomy for invasive cancer.

Margins—Most of the New Zealand patients (87%) had ≥2mm margin after surgery for invasive cancer. This margin is determined after all surgery is performed, and it includes either the circumferential or radial margin.

The percentage of patients with involved margin after surgery was low (3%) and was not significantly different between the BSA and not BSA groups. (Table 5 Margins for invasive cancer by referral source). Although data on circumferential versus vertical margins is collected, this was not analysed in the report.

Table 5. Margins of invasive cancer by referral source†

Margin size	BSA (N=475)	Not BSA (N=929)	P value
0 mm	2.11%	3.77%	0.001
>0 mm and ≤1 mm	6.11%	11.95%	0.674
>2 or equal 2 mm	91.79%	84.28%	0.010

† Margin size was not known for 17 BSA and 20 not BSA cases.

Axillary surgery—Regardless of the tumour size, a higher percentage of BSA patients had sentinel node biopsy as their only axillary surgery (62% compared with 36% of not BSA) and a higher percentage of not BSA patients had Level 2 or Level 3 axillary clearance as their only axillary surgery (42% compared with 17% of BSA).

As expected from clinical practice guidelines, a higher percentage of patients had Level 2 or Level 3 axillary surgery for tumours greater than 3cm in size (71% compared with 25% of those ≤3cm).

Adjuvant therapies—Postoperative radiotherapy followed breast conserving surgery in 98% of patients in the BSA group and 92% of patients in not BSA group. There were 1062 of 1930(55%) patients with invasive cancer who had a mastectomy. Of women undergoing mastectomy, radiotherapy was prescribed in 25% of BSA patients and 49% of not BSA patients.

The proportion of patients with high risk invasive cancer who had mastectomy were 22% (230/1062). High risk invasive cancer was defined as invasive tumour greater or equal to 50mm or invasive tumour with 4 or more positive lymph nodes.

Most high-risk women (72% in BSA, 86% in not BSA) received post mastectomy radiotherapy. The percentage of patients receiving radiotherapy in high risk mastectomy group is much higher than in the whole mastectomy group (25% BSA, 49% not BSA).

Approximately 54% of all patients less than 70 years old were prescribed chemotherapy with a larger proportion in the not BSA population (67%) compared to BSA patients (35%) (p=0.000). Of those that were prescribed chemotherapy, 7% of BSA patients and 23% of not BSA patients were oestrogen and progesterone receptor negative.

This was statistically different between the two groups (p=0.001). There were only a small percentage of New Zealand patients greater than 70 years old who had chemotherapy treatment (13%).

Endocrine treatment was prescribed for the majority of New Zealand patients with oestrogen positive tumours (81%). In the BSA group, 76% of patients were prescribed endocrine treatment compared to 85% of patients in the not BSA group. Overall, there were very few patients who had ovarian ablation.

Refer to Table 6: Hormonal treatment for oestrogen positive cancer. A small percentage (8%) of patients with oestrogen negative tumours were also prescribed endocrine treatment.

Over two-thirds (67% of 261 cases) of patients with HER 2 positive, greater than 1 cm or node positive tumours received Herceptin (transtuzumab) treatment.

Table 6. Hormonal treatment for oestrogen positive invasive cancer[†]

Hormonal treatment	BSA (75.6%)	Not BSA (84.9%)
Tamoxifen	43.6%	50%
Aromatase inhibitors	26.7%	28.5%
Tamoxifen & Aromatase inhibitors	4.6%	5.6%
Ovarian ablation	0.4%	0.1%
No hormonal treatment	24.4%	15.1%

[†] Endocrine treatment was not known for 24 BSA and 109 not BSA patients with oestrogen positive tumours.

Discussion

The total number of breast cancer cases reported in New Zealand by the New Zealand Cancer Registry in 2007 was 2565.[3] If this figure is similar to 2008 (which it is likely to be) this would indicate that surgeons performing breast cancer surgery are contributing over 90% of all NZ cases to the audit. This compares favourably to Australia whereby only about 45% of invasive breast cancer cases are entered into the NBCA.

The overall coverage or the percentage of women in the target age group for screening who have had a screening mammogram in the BSA program for the period of January to July 2009 is 58.9% in the 45–49 year age group and 65.2% for the 50–69 year age group.[4]

The percentage of invasive cancers that was screen detected for 2008 was 37% This is higher than the annual percentage that is reported by the NBCA Australasia database from 1999 to 2004 which has been constant at about 20%.[5]

The peak incidence of breast cancer in the BSA group occurred in the 51 to 60years age group. It is difficult to make comparisons of the age-related incidence of breast cancer as the data is not age standardised.

As expected, the majority of breast cancers that were screen detected were smaller (less than 20mm), of lower grade and had absence of lymphatic vascular invasion. This is consistent with the fact that screening tends to detect slower growing tumours, and accordingly, there is significantly more lobular and tubular cancers seen in the BSA group. At present, data is not available to define the number of screen detected cancers that were clinically palpable.

The minimal number of patients having an open biopsy indicates that the large majority of New Zealand patients are diagnosed pre-operatively. The rate of breast conserving surgery is comparable to Australasia at about 61% in the BSA group.

In the not BSA group, the rate of breast conserving surgery was lower at 38% with higher mastectomy rates. This is probably reflected by the larger tumours in the not BSA group. There are also other factors that may influence a higher mastectomy rate such as access to radiotherapy, rural hospital setting and it would also be interesting to examine if there was a surgeon bias. The NBCA report does not provide sufficient information to allow an assessment of these factors but may be addressed in future analyses.

The re-operation rate of about 19% in the period of this report is acceptable. There is wide range of re-operation rates reported in other studies ranging from 10% to as high as 30%. In a recently reported randomised controlled trial of Comparative Effectiveness of MRI in breast cancer (COMICE), the reported rate of re-operation was 19% and the addition of MRI to conventional triple assessment did not significantly reduce the re-operation rate.[6]

The majority of the New Zealand patients had no reconstruction after mastectomy. Access to oncoplastic surgeons who perform breast reconstructions may influence the number of patients having reconstructions. Efforts are also being made to educate rural surgeons to consider early referrals for patients who may be suitable for breast reconstruction after mastectomy.

The higher rate of sentinel node biopsy in BSA patients is likely to reflect smaller cancers diagnosed in this group of patients. This is now considered accepted practice which is supported by several international trials as well as the Sentinel Node Axillary Clearance (SNAC) trial conducted in Australia and New Zealand.[7] It has been shown to have a high sensitivity in predicting axillary lymph node status with a low false negative rate and has a significantly lower arm morbidity. The safety of performing a sentinel node biopsy in bigger tumours greater than 3 cm is yet to be proven and the SNAC 2 trial aims to examine this.

The majority of patients with tumours greater than 3 cm in this report have undergone at least a Level 2 or 3 axillary clearance consistent with the New Zealand Guidelines for Early Management of Breast Cancer.

Consistent with the NBCC Clinical Practice Guidelines for Management of Early Breast Cancer and the NZ Guidelines for Early Management of Breast Cancer that recommend patients who undergo BCS receive radiotherapy, 95% of all patients had postoperative radiotherapy after BCS.[8,9] This is well above the NBCA KPI that state that greater than 85% of invasive tumours treated with BCS should be referred for or prescribed radiotherapy.

Overall, 43% of patients had post mastectomy radiotherapy. The NBCA KPI also recommends radiotherapy for high risk mastectomy cases in which the tumour was larger than 50mm or there were 4 or more positive lymph nodes. The percentage of patients with high risk invasive cancer who received radiotherapy in the BSA group was significantly lower (p=0.047) than in the not BSA group.

The possible reasons why the NBCA KPI was not met in the high risk BSA patients are perhaps that these were older patients with more comorbidities, hormone receptor positive tumours and of lower grade.

Overall, 81% of New Zealand women with oestrogen positive invasive tumours had endocrine treatment. This figure is surprisingly low for receptor positive tumours. The possible explanations could be that the endocrine treatment may have been commenced after radiotherapy or by medical oncologists, and therefore not recorded in the database by the surgeon, or contraindications to therapy such as history of DVT or osteoporosis, or such low risk tumours that the clinicians/patient did not think that the side effects justified the benefits.

A small percentage of patients with oestrogen negative tumours were prescribed endocrine treatment. Presumably, these patients may have been progesterone receptor positive. Several studies have shown that there is some benefit of endocrine treatment in women who are oestrogen receptor negative but are progesterone receptor positive. However, it is clear that the benefit is less compared to women who are oestrogen receptor positive.[10,11]

A smaller proportion of patients in the BSA group had adjuvant chemotherapy reflecting the earlier stage, lower risk breast cancers being treated in the screen detected population. As expected, there was a higher proportion of patients receiving chemotherapy in the not BSA group, with a significant proportion of them being high risk as reflected by their negative hormone receptor status.

Overall, a high proportion of BSA patients met the standard guidelines and the NBCA KPI except for radiotherapy in high risk mastectomy cases. Most BSA surgeons need to be formally accredited by BSA to ensure patients receive high standard of care. The accreditation criteria include full participation in the RACS audit.

Conclusion

In general, New Zealand patients diagnosed with early invasive breast cancer were managed appropriately according to the New Zealand Guidelines for Early Management of Breast Cancer and the NBCA Key Performance Indicators. New Zealand surgeons should be congratulated with achieving a high level of participation in the NBCA audit.

Competing interests: None known.

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References:

1. Boult M, Cuncins-Hearn A, Tyson S, et al. National Breast Cancer Audit: Establishing a Web-Based Data System. Aust. N .Z. J. Surg. 2005;75:844–847
2. Breast Screen Aotearoa, Ministry of Health 2007, http://www.breastcancer.org.nz/screen.htm
3. http://www.moh.govt.nz/moh.nsf/indexmh/dataandstatistics-collections-nzcr
4. Breastscreen Aotearoa Independent Monitoring Report: Screening and assessment report of women attending BSA (Women screened July 2007 to June 2009) (draft 5, May 2010). Dr Andrew Page, School of Population Health, University of Queensland,
5. Personal Communication, Professor Richard Taylor, School of Public Health and Community Medicine, University of New South Wales, 2010
6. Cuncins-Hearn A, Boult M, Babidge W, et al. National Breast Cancer Audit: Overview of Invasive Breast Cancer Management, Aust N Z J Surg. 2006; 76: 745–750
7. Turnbull L, Brown S, Harvey I, et al. Comparative effectiveness of MRI in breast cancer (COMICE) trial: a randomised controlled trial. The Lancet Vol 375 February 13,2010: 563–571
8. Sentinel-lymph-node-based management or routine axillary clearance? One-year outcomes of sentinel node biopsy versus axillary clearance (SNAC): a randomized controlled surgical trial. Gill G; SNAC Trial Group of the Royal Australasian College of Surgeons (RACS) and NHMRC Clinical Trials Centre. Ann Surg Oncol. 2009 Feb;16(2):266–75. Epub 2008 Dec 3.
9. National Breast and Ovarian Cancer Centre. Clinical Practise Guidelines for the Management of Early Breast Cancer, 2nd edn. Australian Government. National Health and Medical Research Council (NHMRC) publication, 2001.
10. New Zealand Guidelines Group. 2009. Management of Early Breast Cancer – Evidence-based Best Practice Guidelines. Wellington: New Zealand Guidelines Group, http://www.nzgg.org.nz/guidelines/dsp_guideline_popup.cfm?guidelineID=157
11. Yu KD, Di GH, Wu J, et al. Breast cancer patients with estrogen receptor-negative/progesterone receptor-positive tumors: being younger and getting less benefit from adjuvant tamoxifen treatment. J Cancer Res Clin Oncol. 2008 Dec;134(12):1347–54. Epub 2008 May 17.
12. Bardou VJ, Arpino G, Elledge RM, et al. Progesterone receptor status significantly improves outcome prediction over estrogen receptor status alone for adjuvant endocrine therapy in two large breast cancer databases. J Clin Oncol. 2003 May 15;21(10):1973–9.

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The reasons for cancellation of urological surgery: a retrospective analysis

Robert N Lopez, Sharryn Jowitt, Stephen Mark

Abstract

Aim To identify preventable reasons for surgery being cancelled and to identify steps which may minimise their occurrence.

Method All cancellations of surgery in the Department of Urology, Christchurch Hospital between the dates 31 March 2008 and 11 March 2011 were retrospectively identified from minutes of the Department's weekly audit meetings. These were then assigned reasons for cancellation according to those devised by the Veterans Health Administration system1.

Results From 4303 total operations performed, 180 cancellations occurred over the almost-3-year study period. This equated to a cancellation rate of 4.2%.34 cases (18.9%) were due to patient factors, 66 cases (36.7%) due to work-up factors, 70 (38.9%) due to facility factors, 9 cases (5%) due to surgeon factors.

Conclusion A significant proportion of the 4.2% patients cancelled were preventable. Optimisation of the preadmission process as well as elucidation of the reasons for theatre over-runs were identified as key to reducing the rate of cancellation. Measurement of cancellations in the audit meeting contributes to a low cancellation rate.

Cancellation of surgery is an inconvenience which has a significant ripple effect. Aside from the obvious waste of theatre time, the impact on patients extends beyond that of the patient whose surgery has been cancelled.

In an era where the demand on medical services is disproportionate to the available resources, cancellation of surgery is a costly affair which is often avoidable.

This study retrospectively analysed the reasons for cancellation of surgery under the aegis of the Urology Department of Christchurch Hospital in New Zealand.

The aim of the study was to identify preventable reasons for cancellation of surgery as well as steps which may minimise their occurrence.

Method

The study period was between 31 March 2008 and 11 March 2011. Information on the cancelled operations was obtained from the minutes of the Department's weekly audit meetings. This meeting formally documents all cancellations, details their cause and the patient demographic details. The audit coordinator (SJ) classifies the cancellation cause and enters the data on a Microsoft Excel spreadsheet prospectively.

A cancellation was deemed to be the unplanned non-occurrence of scheduled surgery in the week of the operation date. Operations that were deferred ahead of time were not included.

In the Urology Department, patients are placed on the surgical waiting list either from the outpatient clinic or from the inpatient ward.

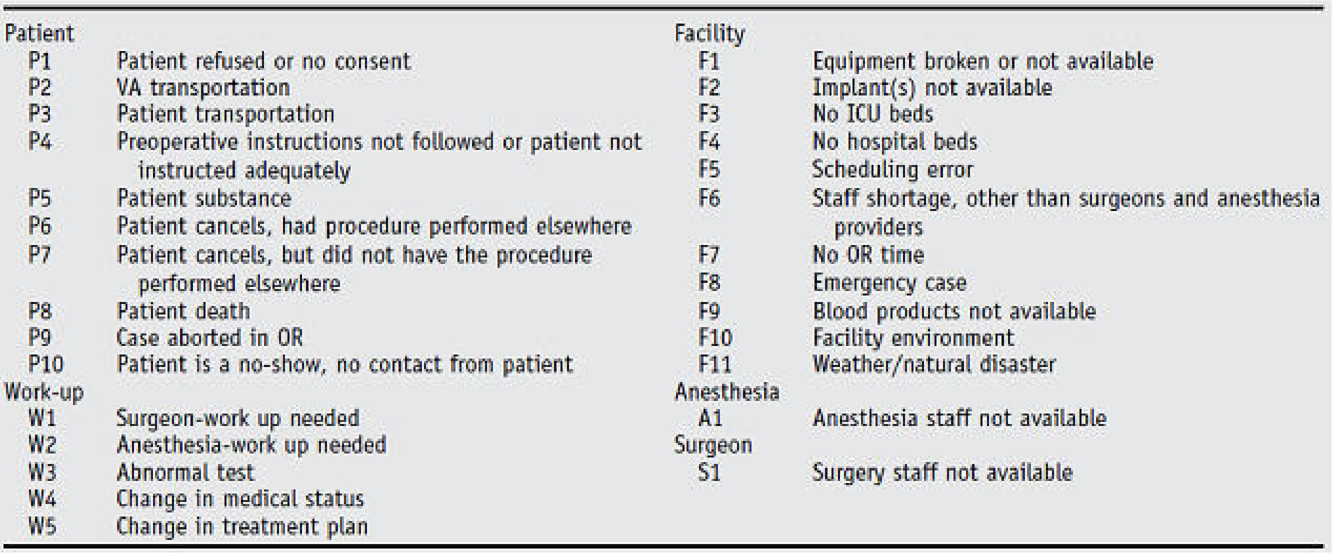
The decision on whether patients are offered a preadmission clinic appointment is made by the surgical team based on the magnitude of surgery and on the patient's medical comorbidity. Preadmission clinic slots are not available for every patient due to resource constraints. The aim is for an appointment at this clinic to be within 4 weeks of surgery.

A specialist urology preadmission nurse coordinates in the clinic with a goal of minimising cancellations and facilitating early discharge. At the clinic, patients are seen by a consultant anaesthetist, the nurse specialist and by a member of the surgical team. The anaesthetist who sees the patient in the preadmission clinic is usually not the anaesthetist who is due to undertake the operative procedure. Patients undergoing elective surgery are routinely admitted on the day of surgery

Elective surgery was undertaken in a morning session (0830-1230), an afternoon session (1330-1730) or an all-day session (0830-1630). Elective surgery is not usually allowed to run over these times due to staffing resources. Acute surgery took place whenever necessary although efforts were made to defer operations to working-hours where not medically contra-indicated.

The reasons for cancellation were divided into 5 groups as outlined in Table 1. These were derived from a previously published system that allows for review of the reasons as well as highlights potential modifications that may minimise their occurrence[1].

Table 1. Standardised cancellation reasons and codes by category



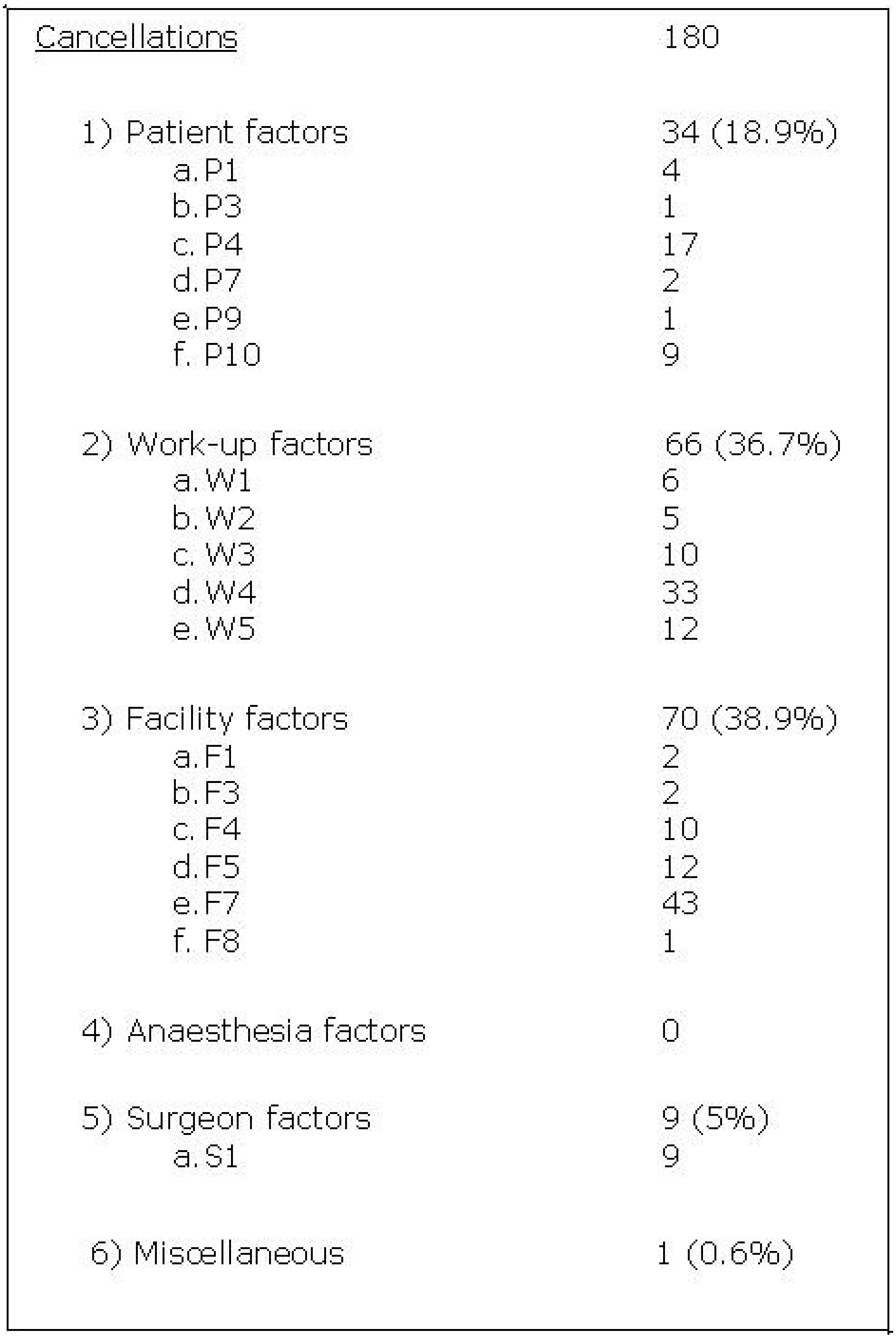
Patient		Facility	
P1	Patient refused or no consent	F1	Equipment broken or not available
P2	VA transportation	F2	Implant(s) not available
P3	Patient transportation	F3	No ICU beds
P4	Preoperative instructions not followed or patient not instructed adequately	F4	No hospital beds
		F5	Scheduling error
P5	Patient substance	F6	Staff shortage, other than surgeons and anesthesia providers
P6	Patient cancels, had procedure performed elsewhere		
P7	Patient cancels, but did not have the procedure performed elsewhere	F7	No OR time
		F8	Emergency case
P8	Patient death	F9	Blood products not available
P9	Case aborted in OR	F10	Facility environment
P10	Patient is a no-show, no contact from patient	F11	Weather/natural disaster
Work-up		Anesthesia	
W1	Surgeon-work up needed	A1	Anesthesia staff not available
W2	Anesthesia-work up needed	Surgeon	
W3	Abnormal test	S1	Surgery staff not available
W4	Change in medical status		
W5	Change in treatment plan		

Source: Reprinted courtesy of: Argo JL, Vick CC, Graham LA, Itani KM, Bishop MJ, Hawn MT. Elective surgical case cancellation in the Veterans Health Administration system: identifying areas for improvement. *The American Journal of Surgery* 2009;198(5):600–6.

Results

Over the almost 3-year period studied, 4303 operations were performed by the Urology department and 180 (4.2%) operations were cancelled. Both figures include elective and emergency surgery. A breakdown of the reasons for cancellation is presented in Table 2.

Table 2 Patient cancellations by code



Cancellations	180
1) Patient factors	34 (18.9%)
a. P1	4
b. P3	1
c. P4	17
d. P7	2
e. P9	1
f. P10	9
2) Work-up factors	66 (36.7%)
a. W1	6
b. W2	5
c. W3	10
d. W4	33
e. W5	12
3) Facility factors	70 (38.9%)
a. F1	2
b. F3	2
c. F4	10
d. F5	12
e. F7	43
f. F8	1
4) Anaesthesia factors	0
5) Surgeon factors	9 (5%)
a. S1	9
6) Miscellaneous	1 (0.6%)

Patient factors included 17 cases in which patients either did not adhere to, or were given wrong, instructions e.g. regarding dietary restrictions.

Cancellations due to work-up factors (failed preadmission) included 7 patients who remained on anticoagulants or 15 patients whose INR remained high despite them stopping their anticoagulants as advised.

33 patients had a change in their medical status between being booked and their date for surgery. In 12 of these cases the proposed surgery was no longer indicated (10 of them being in patients whose ureteric calculi had passed spontaneously). 21 other patients had their surgery cancelled because of an acute medical illness between the dates of their clinic visit and planned operation. The majority of these illnesses were cardiac or respiratory in nature.

From a facility point of view, the non-availability of beds (in 12 cases) was due either to hospital gridlock from winter medical admissions or to the non-availability of pre-requested ICU beds.

The largest sub-group of cancellations (43) was due to operating theatre over-runs. We were unable to determine in each case if this was due to prolonged anaesthetic time, prolonged surgical time, more complicated surgery than was anticipated or an over-booked theatre list.

12 patients were cancelled because of an error in scheduling. These were attributable to poor communication or a lack of confirmation between the Urology department administration and the patients involved.

Discussion

The aim of this study was to identify preventable causes for surgery being cancelled. 4.2% of all operations carried out by the Department were cancelled during the study period. This is equivalent to approximately 60 lost operating lists.

Data available in the literature suggests that this figure is low for a tertiary, teaching hospital.[1–4] Other studies have reported cancellation rates ranging from 5-13%. We believe this low cancellation rate can be attributed to regular documentation of cancellations at our weekly audit meeting and a departmental goal to prevent such events.

When the cancelled cases were assigned reasons according to the ones used in the Veterans Health Administration system, 34 (18.9%) cases were cancelled because of patient factors, 66 (36.7%) because of work-up factors, 70 (38.9%) because of facility factors, 9 (5%) because of surgeon factors and 1 (0.6%) for a miscellaneous reason. In their retrospective analysis of 329,784 cases spread over 9 specialities, patient factors was the most common reason for elective surgical cancellations (35%) and anaesthesia factors was the least common (1%).[1] These percentages were similar to our own.

A preadmission clinic visit has been shown to reduce operative cancellations.[3,5,6] We aim to maximise the number of patients accessing this service in our facility. A standardised preadmission protocol is being developed which may eliminate many of the problems we identified.

Although it is accepted that the practicalities of offering all patients a preadmission clinic appointment are intricate, a process that includes an assessment at clinic where indicated but otherwise consists of (at least) verbal communication between hospital-staff and patient prior to surgery is feasible.

A nurse-based preadmission model has been shown to be efficient, in particular for ruling out patients who do not need a pre-op anaesthetic assessment[5]. Streamlining patients thus may mean better utilisation of limited medical and anaesthetic resources

Other measures to reduce the rate of surgical cancellations may include an INR check on the day prior to surgery for all patients on warfarin, preoperative anaesthetic assessments done by the anaesthetist assigned to the operation list and a diligent system of requesting and then checking the results of preoperative investigations.

Surgical over-runs were the commonest reason for cancellations although we have not identified the specific causes for this in the present study. We plan to add 4 sub-headings to any future audit to determine if an over-run is patient related (more complex surgery than anticipated), surgeon related, anaesthetist related or due to an overbooked list. This will assist in further management of this group.

Acute illnesses that rendered an elective patient more at risk from surgery accounted for a large group of cancellations. Currently patients who fall ill between preadmission and surgery are not obligated to inform the hospital of this. A request for immediate notification if a patient has an acute illness preoperatively would seem logical. This could be initiated by the specialist nurse at the preadmission clinic.

The main difficulty encountered in this study is one that universally applies to any retrospective analysis – a lack of accurate information. Indeed in some instances, even if all the data was available, reasons for cancellation could feasibly be multi-factorial. There may also have been bias in assigning a reason to operations that were cancelled.

A further possible weakness is the fact that information regarding cancellations was gleaned from the minutes of the department’s audit meetings. Although unlikely, it is possible that some cancellations were not taken into account due to inaccurate documentation.

Conclusion

4.2% of all patients booked had their surgery cancelled over the study period. A proportion of these were avoidable.

We aim to reduce this rate by more effectively utilising the preadmission clinic, requesting patient information on inter-current illnesses between preadmission and surgery and defining more clearly the reasons for theatre over-runs in any future, prospective audit.

Competing interests: None known.

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References:

1. Argo JL, Vick CC, Graham LA, et al. Elective surgical case cancellation in the Veterans Health Administration system: identifying areas for improvement The American Journal of Surgery 2009;198:600–6.

2. Henderson BA, Naveiras M, Butler N, et al. Incidence and causes of ocular surgery cancellations in an ambulatory surgical center. Journal of Cataract and Refractive Surgery 2006;32:95–102.
3. Ferschl MB, Tung A, Sweitzer B, et al. Preoperative clinic visit reduce operating room cancellations and delays Anesthesiology 2005;103(4):855–9.
4. Chamisa I Why is surgery cancelled? A retrospective evaluation South African Journal of Surgery 2008;46(3):79–81.
5. Vaghadia H, Fowler C. Can nurses screen all outpatients? Performance of a nurse based model Can J Anesth 1999;46 (12):1117–1121.
6. van Kiel WA, Moons KGM, Rutten CG, et al. The effect of outpatient preoperative evaluation of hospital inpatients on cancellation of surgery and length of hospital stay Anesth Analg 2002;94(3):644–9.

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Screening for sexually transmitted infections in pregnancy at Middlemore Hospital, 2009

Alec J Ekeroma, Leena Pandit, Cecilia Bartley, Bettina Ikenasio-Thorpe,
John M D Thompson

Abstract

Aims To determine the screening rate for, and the prevalence rate of, sexually transmitted infections (STIs) in pregnancy at Middlemore Hospital.

Method A list of all 6795 women who had a baby at Middlemore Hospital in 2009 was provided by the hospital's information systems. Details of the women including their swab results were then obtained from the Healthware and Web-Éclair databases. Comparison of screening and STI rates by categorical variables (Lead Maternity Carer (LMC), age group and ethnicity) was carried out using Chi-square statistics. Univariable and multivariable odds ratios were estimated using unconditional logistic regression.

Results Only 4635 (64.3%) of women were screened in pregnancy for an STI. There was a significant difference in rates of testing by LMCs, with independent maternity providers less likely to carry out a swab than the District Health Board (DHB) providers (71.3% vs 54.0%, p<0.0001). A higher proportion of Māori and Pacific women were screened compared to other groups and younger women were screened more compared to older women. Of those women screened, 8.2% had chlamydia, 2.2% had trichomonas and 0.2% had gonorrhoea. There were higher rates of chlamydia and trichomonas seen in both Māori and Pacific women in comparison to European and Asian women. There was a pattern of decreasing STI rate with an increase in maternal age.

Conclusion Screening for STIs in pregnancy in Middlemore Hospital is low and does not meet the requirements of the Ministry of Health which requires all women to be screened. The STI prevalence rate is high especially in young Pacific and Māori women. Education of both women and maternity providers is important in prevention and detection of STIs in pregnancy.

A sexually transmitted infection (STI) in pregnancy can lead to preterm labour, premature rupture of membranes, stillbirths, small for gestational age births, amnionitis, intrapartum fever, postpartum endometritis, as well as vertical transmission causing neonatal conjunctivitis, neonatal pneumonitis and perinatal mortality.[1-4]

Chlamydial infection of the urogenital tract is the commonest STI and a significant health problem in New Zealand due to its high prevalence rate of up to 12%[5], the relative lack of symptoms, and infected women may acquire complications that may persist throughout their lifetime. There have been calls for routine testing in pregnancy since Lawton et al[6] found a chlamydial prevalence rate of 4.8% in the Wellington area and Rose et al[7] found an STI rate of 10% in women presenting for termination of pregnancy. Instead of a screening programme, the Ministry of Health (MOH) encouraged STI screening in pregnancy especially for Māori and Pacific women and those under 25 years of age.[8]

Middlemore Hospital (MMH) of the Counties Manukau District Health Board (CMDHB) delivered 6795 babies in 2009 and about 57% of the women are of Māori or Pacific ethnicity. Of the Māori and Pacific women, approximately 50% and 80% respectively, reside in NZDep2006 9 and 10 areas.[9] About 55% of all women had CMDHB staff as their lead care provider whilst private providers, who were exclusively self-employed midwives, cared for the remaining 45%. The CMDHB guidelines[10] recommends that "all women under the age of 25 should be offered testing when they access healthcare, in particular when attending for sexual health related issues such as pregnancy."

There is a paucity of STI prevalence studies in pregnancy in New Zealand and it is uncertain whether maternity providers are adhering to the MOH and local facility guidelines.

The aim of this study is to determine the screening rate for STIs in pregnancy and to determine the STI rate in pregnancy in an area that has the highest number of Māori, Pacific and young people in the country.

Materials and Methods

A list of all 6795 women who had a delivery at MMH in 2009 was provided by Middlemore Hospital's information support personnel. The list, which was generated from the Patient Information Management System (PIMS), had the details of the woman's National Health Index (NHI) number, age, ethnicity and LMC. These details were cross-checked with the data on the Healthware database using the NHIs as the identifiers. The women's NHIs were then again used to individually search for their swab results on the Web-Éclair database. There may have been a small number of results that were not entered into the computer system at the patient's request.

All data was entered into a Microsoft Excel 2003 spreadsheet. Comparison of swab rates and STI rates by categorical variables (LMC, age group and ethnicity) was carried out using Chi-square statistics. Univariable and multivariable odds ratios were estimated using unconditional logistic regression. All analyses were carried out in SAS 9.1 for windows and statistical significance was defined at the 5% level.

An antenatal STI screen was defined as endocervical and vaginal swabs taken at any stage of the pregnancy and may include urethral swabs. Urine and blood tests for chlamydia have a poor sensitivity and specificity and were not considered appropriate for STI screening.

Approval from the Northern-X Regional Ethics Committee was obtained.

Results

Screening rate—Of the 6795 births in MMH in 2009, 4635 women (64.3%) had screening for an STI during pregnancy. European women had the lowest rate of screening with 1381 (49.6%) screened whereas 1380 (66.3%) of Māori (OR 2.00) and 2919 (70.4%) of Pacific (OR 2.41) women were screened (Table 1). Not all women had the full set of STI screening swabs.

Of the 4635 women tested, 3917 (82%) had chlamydia swabs, 3938 (85%) had trichomonas and 1529 (33%) had swabs for gonorrhoea. 52 women had a urine test for chlamydia and 7 of them were positive.

Table 1. Swab rates and STI infection rates by ethnicity

Ethnicity	Vaginal swab rate	Odds ratio	Chlamydia*	Univariable Odds ratio	Multivariable^ Odds ratio	Trichomonas*	Univariable Odds ratio	Multivariable^ Odds ratio
	n (% tested)							
European	1381 (49.6)	Reference	679 (4.7%)	Reference	Reference	683 (0.4%)	Reference	Reference
Māori	1380 (66.3)	2.00 (1.72–2.33)	907 (10.3%)	2.31 (1.53–3.50)	1.61 (1.05–2.46)	915 (3.0%)	6.89 (2.08,22.82)	5.95 (1.79–19.85)
Pacific	2919 (70.4)	2.41 (2.11–2.75)	2046 (10.7%)	2.41 (1.65–3.52)	2.15 (1.45–3.19)	2049 (3.1%)	7.19 (2.25–22.97)	6.71 (2.09–21.55)
Asian	377 (58.4)	1.42 (1.13–1.79)	215 (1.9%)	0.38 (0.13–1.10)	0.52 (0.18–1.49)	219 (0.5%)	1.05 (0.11–10.10)	1.08 (0.11–10.49)
Other	106 (67.9)	2.15 (1.41–3.28)	70 (0.1%)	0.60 (0.14–2.54)	0.66 (0.15–2.85)	72 (0.0%)	undefined	undefined

* Number of tests carried out and the percentage of these tests that were positive; ^ Mutivariable analyses control for LMC, ethnicity and maternal age group; "Other" includes all ethnicities who were not Asian, European, Pacific or Māori.

Table 2. Swab rates and STI infection rates by maternal age

Age groups	Vaginal swab rate	Odds ratio	Chlamydia*	Univariable Odds ratio	Multivariable^ Odds ratio	Trichomonas*	Univariable Odds ratio	Multivariable^ Odds ratio
	n (% tested)							
<20	670 (74.5%)	2.21 (1.79–2.72)	497 (21.7%)	21.69 (10.46–44.98)	22.65 (10.40–49.36)	499 (3.6%)	3.39 (1.40–8.18)	2.84 (1.17–6.89)
20-24	1705 (71.2%)	1.87 (1.60–2.19)	1209 (12.7%)	11.32 (5.52–23.02)	12.51 (5.81–26.92)	1212 (2.5%)	2.30 (1.00–5.26)	2.05 (0.89–4.72)
25-29	1816 (62.7%)	1.27 (1.09,1.48)	1128 (5.5%)	4.54 (2.16–9.55)	5.69 (2.58–12.54)	1133 (2.6%)	2.38 (1.04–5.46)	2.55 (1.10–5.88)
30-34	1470 (59.5%)	1.11 (0.95–1.30)	867 (3.0%)	2.42 (1.09–5.37)	2.96 (1.27–6.88)	868 (1.2%)	1.06 (0.40–2.79)	1.12 (0.42–2.98)
35+	1124 (56.9%)	Reference	633 (1.3%)	Reference	Reference	641 (1.1%)	Reference	Reference
Linear test for trend	p<0.0001		p<0.0001			p=0.007		

* Number of tests carried out and the percentage of these tests that were positive; ^ Mutivariable analyses control for LMC, ethnicity and maternal age group.

STI screening by age group showed a pattern with less screening with advancing age. 670 (74.5%) of women less than 20 years of age were screened compared with 1124 (56.9%) of women 35 years of age and older ($p<0.0001$).

Private maternity providers were less likely to perform screening compared to CMDHB providers (54.0% vs 71.3%, $p<0.0001$).

Infection rate—Chlamydia was the commonest STI in pregnancy. Of the 4635 women who had screening, 357 (8.2%) were positive for chlamydia, 94 (2.2%) for trichomonas, and 10 (0.2%) for gonorrhoea.

STI in pregnancy was lowest in women of Asian (1.9%) and European (4.7%) ethnicity and highest in Māori 93 (10.3%) and Pacific 219 (10.7%) women (Table 1). The multivariable odds ratio showed Pacific women had a 2.15-fold increased risk and Māori a 1.61-fold increased risk of an STI compared to European women. *Trichomonas* infection was also higher in Māori (3.0%) and Pacific (3.1%) women compared to European (0.4%) and Other (0.0%).

Chlamydial infection was highest in younger women compared to older women. 497 (21.7%) of women less than 20 years of age had chlamydial infection compared to 633 (1.3%) women 35 years and older with positive swabs. Women under 20 years of age had a 23-fold increased chance of having a chlamydial infection compared to a 35-year-old woman (Table 2). There was a decreasing rate of both chlamydia and trichomonas as age decreased, the increasing risk with younger maternal age remained significant in multivariable analyses but was not of the same magnitude as for trichomonas.

Where chlamydia or trichomonas was present, there was a 6.73 (95%CI=4.23–10.68)-fold increased chance that the other STI was present.

Rate of chlamydial infection was lower in women cared for by a private provider (2.1%) compared to a CMDHB provider (6.1%).

Discussion

The MOH 2008 Chlamydia Management Guidelines[8] advise routine testing in pregnancy “as there is a 20-50% risk of neonatal transmission in women with untreated chlamydial infection”. The words *screening* or *programme* were not used following a report to the National Screening Unit[5] despite calls for routine screening after two research papers found high chlamydial rates in women presenting for terminations of pregnancy[7] and in pregnancy.[6]

Studies in STI prevalence rates in pregnancy have been lacking although a few studies have identified high risk groups in the less than 20 years of age, Māori and Pacific women.[11-16] There has equally been a lack of studies to determine whether care providers were compliant with the MOH guidelines and offering women STI testing in pregnancy.

Our study has shown that only 64% of women had STI screening in pregnancy and not all of them had the recommended set of three swabs to exclude chlamydial, trichomonal and gonorrhoeal infection. Of serious concern is the low screening rate for gonorrhoea with only 23% of all the 6795 women screened. Swabs for chlamydia and gonococcus are taken from the endocervix so it is uncertain as to why the screening rate for the former was 2.5 times higher than the latter unless providers had decided not to screen for gonorrhoea in 49% of women who had chlamydial swabs.

It was encouraging to note that women under 20 years of age had more STI screening (75%, 2.2-fold) compared to women 35 years and older (60%). Maternity providers were obviously aware that younger women were more at risk. However, the shortfall in testing is of concern with 1 in 4 young women not being tested. Extrapolating from the chlamydial infection rate in our study for women under 20 years of age, approximately 36 women with chlamydia would have been missed and untreated.

Pacific, Other and Māori women had higher screening rates compared to European and Asian women, which may mean that the clinical practice of maternity providers had taken into account the importance of screening women from ethnicities with a high risk of an STI. There is a concern however that 30% of Pacific women and 34% of Māori women were not tested which was a significant number of untested women. Taking into account the chlamydial infection rate in our study for Pacific and Māori women, there would have been approximately 143 women in 2009 with chlamydia that was untreated.

Chlamydia is a treatable infection and the resultant morbidity of untreated chlamydia is totally preventable. The screening rate for STI in pregnancy fell short of the MOH guidelines and although it was higher than the screening rate of 37.5% in Wellington,[6] this should be expected as the MOH guidelines[8] were published in 2008.

Of interest was the finding that private providers performed fewer tests compared to CMDHB providers and this difference was statistically significantly. A study is needed to determine the factors behind this variation in practice between private and public providers. It may be that a higher number of the women booked with private providers were not interested in being tested (different population characteristics) compared to women cared for by the public system. It has been shown that women found testing acceptable.[15] It may also be that the private providers had decided that most of their clientele were low risk and therefore did not need to be tested.

The latter is probably a safer assumption as the rate of chlamydial infection in women cared for by the private providers (2.1%) was lower than those cared for by the public system (6.1%). This can be explained by the fact that more Pacific and Māori women, or women at high risk of having an STI in pregnancy, are cared for by the public system, with lower risk women choosing private carers (CMDHB data).

Chlamydia was the commonest STI in pregnancy with a prevalence of 8.2%, which confirmed findings from New Zealand studies[5], that chlamydia remains a significant disease burden. The infection rate was higher than that found in the Wellington study[6] which can be explained by the higher proportion of Māori and Pacific women and women less than 20 years of age resident in the CMDHB area compared to the Wellington area.[17]

The trichomonas rate was also higher in both Māori and Pacific women in comparison to European women, stressing the importance of testing for all STIs especially in the high risk groups. The presence of one STI increases the chances of another one being present.

The question of whether to universally screen in pregnancy remains a contentious one. The British National Health Service recommended targeted testing of at risk groups and the NICE guidelines recommended offering screening to women 25 years and younger.[18] The guidelines were careful to state that the long-term complications of not testing in pregnancy were not considered. The Centre for Disease Control and Prevention in the USA in 2010 recommended routine testing for chlamydia in pregnancy.[19]

The strength of our study was the large number of women in an area with high socio-economic deprivation and the weakness was the inability to estimate the number of women who may have opted out of sharing their laboratory results.

Due to the significant under-testing found in our study, we recommend that the MOH enforce adherence to STI testing guidelines especially for Māori, Pacific and those less than 25 years of age.

Variations in testing uptake and rates should be urgently addressed through awareness programmes and professional guidelines in collaboration with DHBs.

Competing interests: None.

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References:

1. Tiller CM. Chlamydia during pregnancy: implications and impact on perinatal and neonatal outcomes. J Obstet Gynecol Neonatal Nurs. 2002;31:93–8.
2. McGregor JA, French JI. Chlamydia trachomatis infection during pregnancy. American journal of obstetrics and gynecology. 1991;164:1782–9.
3. Rastogi S, Das B, Salhan S, Mittal A. Effect of treatment for *Chlamydia trachomatis* during pregnancy. International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics. 2003;80:129–37.
4. Gencay M, Koskiniemi M, Saikku P, Puolakkainen M, et al. *Chlamydia trachomatis* Seropositivity During Pregnancy Is Associated with Perinatal Complications. Clin Infect Dis. 1995;21:424–6.
5. Sherwood J. Chlamydia Screening in New Zealand: Report for the National Screening Unit. Wellington: Ministry of Health; 2006.

6. Lawton B, Rose S, Bromhead C, et al. Rates of *Chlamydia trachomatis* testing and chlamydial infection in pregnant women. N Z Med J. 2004;117(1194):1–7. http://journal.nzma.org.nz/journal/117-1194/889/content.pdf
7. Rose S, Lawton B, Brown S, et al. High rates of chlamydia in patients referred for termination of pregnancy: treatment, contact tracing, and implications for screening. N Z Med J. 2005;118(1211). http://journal.nzma.org.nz/journal/118-1211/1348/content.pdf
8. Ministry of Health. Chlamydia Management Guidelines, Wellington; 2008.
9. Perinatal and Maternal Mortality Review Committee. Fifth Annual Report of the Perinatal and Maternal Mortality Review Committee: Reporting mortality 2009. Wellington; 2011.
10. CMDHB. Best Practice Guide for the Diagnosis and Treatment of Sexually Transmitted Infections in Counties Manukau: Counties Manukau District Health Board; 2007.
11. Baker M, Ortega-Benito J, Garret N, et al. Prevalence and risk factors for *Chlamydia trachomatis* infection in female New Zealand university students. N Z Med J. 2005;118(1220). http://journal.nzma.org.nz/journal/118-1220/1607/content.pdf
12. Johnston A, Fernando D, MacBride-Stewart G. Sexually transmitted infections in New Zealand in 2003. N Z Med J. 2005;118(1211). http://journal.nzma.org.nz/journal/118-1211/1347/content.pdf
13. McFarland LM. Rates of *Chlamydia* testing and chlamydial infection in pregnant Pacific women: A case study investigating *Chlamydia* prevalence, presentation and risk factors in Pacific pregnancies Auckland: Pacific Womens Health Research & Development Unit; 2010.
14. Corwin P, Abel G, Wells J, et al. *Chlamydia trachomatis* prevalence and sexual behaviour in Christchurch high school students. N Z Med J. 2002;115(1158). http://journal.nzma.org.nz/journal/115-1158/107/content.pdf
15. Sparrow M, Lewis H, Brown P, et al. Chlamydia screening in Wellington Family Planning Association (FPA) clinics: a demonstration project. N Z Med J. 2007;120(1252). http://journal.nzma.org.nz/journal/120-1252/2490/content.pdf
16. Perkins N. The chlamydia problem in New Zealand. N Z Med J. 2004;117(1194). http://journal.nzma.org.nz/journal/117-1194/887/content.pdf
17. Statistics New Zealand. District Health Board Area summary tables Wellington; 2006.
18. NICE. Antenatal care: Routine care for the healthy pregnant woman. Guideline 62 London; 2008.
19. Centers for Disease Control and Prevention. Sexually Transmitted Diseases Treatment Guidelines, 2010. MMWR 2010;59.

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Unintended pregnancy and therapeutic abortion in the postpartum period. Is an opportunity to intervene being missed?

Karen Joseph, Anna Whitehead

Abstract

Aims To explore the reasons why women have an abortion soon after delivering an infant and what could reduce unintended pregnancy and abortion in this group of women.

Methods Data were collected from anonymous self-complete questionnaires from women who presented to a first trimester Termination of Pregnancy service and who had delivered a live-born infant within the preceding 6 months; and also from the healthcare professionals who are responsible for maternity care to identify the reasons behind the unintended pregnancies, and around Lead Maternity Caregivers' (LMCs') usual practice of postnatal contraceptive provisions, and any barriers to its provision.

Results 22 women were recruited into the study and completed the questionnaire. The majority of women (19) reported that they had discussed contraception with the LMC. However only 4 women were given a prescription for the pill and 2 women were given a prescription for condoms (which was not filled). Almost all women had previously accessed contraception from another provider.

59 LMCs responded. All LMCs reported that they discuss contraception with women, However the majority reported that they discuss contraception with all women at discharge (50) and/or postnatally (49). Only 23 LMCs reported discussing contraception antenatally or at booking.

Conclusions Opportunities to intervene are being missed. These include: discussing contraception with all women at booking and/or antenatally; for LMCs to offer prescriptions for contraception to all women and to encourage them to access the supplies, for LMCs to be trained so they feel confident to advise and supply all contraceptive options. Improvements for women could also be made by providing postnatal women with free consultations to her choice of provider, during pregnancy to organise postnatal contraception.

With perfect use of contraception in the postnatal period the rate of unintended pregnancy can be reduced to less than 1%.[1,2] During pregnancy and the postnatal period women have regular contact with healthcare providers who are trained in the provision of contraceptive advice, and are likely to be receptive to this advice.[3] Rates far higher than this however are seen in practice,[4,5] suggesting that less than adequate contraceptive practices may be being used.

There are over 2000 abortions performed in Waikato District Health Board (DHB) clinics each year. A number of these women have recently given birth and cite the inability to cope with another baby within a year of the last one, as a reason for requesting the abortion.

In order to introduce an effective intervention to address the current situation, the barriers to successful contraceptive use and reasons behind them need to be identified.

A study has not been carried out previously in this specific group of women. The aims of this study are to identify barriers and facilitators; and to make recommendations on intervention strategies to overcome them as the current provisions appear to be failing a number of women. By identifying the barriers to achieving adequate contraception it is hoped that recommendations can be made on interventions to facilitate this.

Methods

Study population—The study population consisted of:

- 22 women attending Waikato Hospital (Hamilton, New Zealand) for a first trimester termination of pregnancy between January and December 2009 who had delivered a live-born infant within the preceding 6 months.
- 100 randomly selected LMCs (Lead Maternity Carers) in the Waikato region.

Data collection—

- Following approval by the Northern Regional Ethics Committee, data collection was undertaken through the first trimester termination of pregnancy clinic at Waikato Hospital.

  In this clinic women with unintended pregnancies of less than 13 weeks gestation are seen by Certifying Consultants - doctors appointed by the Abortion Supervisory Committee.

  From 1 January 2009 to 31 December 2009 all women attending the First Trimester Termination of Pregnancy Clinics at Waikato Hospital, who had given birth to a live infant less than 6 months before the date of their scheduled abortion, were invited to take part in the study by the Certifying Consultant.

  Women were excluded if they were unable to give informed consent to the study or if the multidisciplinary team assessed her to be at risk of harm from taking part in the study.

  Women who gave informed consent to the study undertook a self-complete questionnaire on the day of their termination of pregnancy.

  The questionnaire obtained information on: The preceding pregnancy, and the woman's recollection of contraceptive counselling and prescription provision following it; the barriers which the woman identified as contributing to her unintended pregnancy; and interventions which she feels would have helped prevent it.

  The questionnaires asked for demographic data and then used four closed multi-choice questions and three open questions allowing free text answers. Ethnicity was determined by self selection using the abortion supervisory commission categories or allowing free text if 'other' was chosen. Data is presented in Tables 1–5.

- Anonymous self-complete questionnaires were also mailed to 100 LMCs, randomly selected from those who have listed a contact address with the Waikato District Health Board; using a random number generator.

  Questionnaires asked LMCs about: their contraceptive prescribing practices; barriers that LMCs identify in its provision, and in women's uptake; and suggestions as to how these could be overcome. Demographic data was collected and six closed multi-choice questions were asked followed by the same three open questions as asked to the women. Data is shown in Tables 6–11.

Analysis—Quantitative data is presented in numerical format.

Participants' free-text comments were analysed by thematic analysis: Themes in the data were identified independently by both researchers and themes were collated and presented in Table 12.

Results

Women attending for termination of pregnancy (ToP)

Twenty-six women who were identified as eligible agreed to enrol in the study. Four women enrolled but subsequently felt they did not have time to complete the questionnaire; 22 women then completed the questionnaire.

Demographic data is presented in Table 1

Table 1. Demographics of the study population

Variable	Values	
Age	Mean	22.9 years
	Range	17–35 years
Ethnicity		Number (N)
	Māori	8
	European	6
	Pacific Islander	2
	NZE/Māori	2
	Asian	1
	MELAA	1
	N/A	2
Breastfeeding		N
	nil	1
	<6weeks	4
	6 weeks–6 months	7
	current	6
	N/A	4
Age of baby at time of ToP		N
	4 months	4
	5 months	9
	6 months	6
	N/A	3
Community Service Card holder		N
	yes	13
	no	1
	N/A	8
Rural location		N
	yes	6
	no	12
	N/A	4

N/A = data not available; ToP = termination of pregnancy; NZE = NZ European; MELAA = Middle Eastern/Latin American/African.

All 22 of the women reported that their lead maternity carer for the preceding pregnancy was a midwife.

Almost all the women (20/22) remember discussing contraception with someone during their pregnancy, many with multiple professionals.

Only six women reported being provided with a prescription for contraception four of these prescriptions were for the PoP and were filled, and two were for condoms which were not then taken to a pharmacy—leaving the majority of the women with no contraceptive provision.

All of the women reported previously accessing contraception; with eighteen reporting multiple previous methods used and from a variety of sources. No women identified lack knowledge about contraception as being a barrier to their accessing contraception. There was however quite a low reported previous access to the emergency contraceptive pill (ECP). The most common reason cited as a barrier to accessing contraception was cost.

Table 2. (Q) Do you remember talking about contraception (birth control) *while pregnant or after you had your youngest baby* with:

Variable	N
LMC	19
GP	5
Family Planning	1
Antenatal class	2
Plunket Nurse	2
Mother	1
No-one	2

Table 3. (Q) Have you ever accessed contraception (birth control) before? If yes, what have you accessed?

Variable	N
Condoms	16
Pills	14
Depo-provera	8
IUCD	6
Emergency contraceptive pill	5
More than one	18

IUCD= Intrauterine contraceptive device

Table 4. (Q) If yes, where have you accessed contraception (birth control) from?

Variable	N
GP	13
Family Planning	12
Pharmacy	3
School	2
Supermarket	1

Table 5. (Q) What, if any, barriers/problems have you met to accessing contraception (birth control)?

Variable	N
Transport	6
Knowledge	0
Whakamaa	2
Side-effects	2
"Forgot"	1
Live in rural area	2
Time	1

When asked for the ‘main reasons for conceiving so soon after having their last baby; what and who could have prevented this from happening’ the women identified a number of factors which have been analysed by theme and listed in table 15 and include: financial and time constraints; problems accessing healthcare; lack of information or knowledge; and a strong theme of ‘self blame’ for the pregnancy.

Lead Maternity Carers (LMCs)

Fifty-nine LMCs responded to the questionnaire. All but one of the LMCs who responded were midwives—at present there are no General Practitioners undertaking LMC work in the region.

Almost all of the LMCs who responded to the questionnaire identified as NZ European ethnicity.

All LMCs reported discussing contraception with every one of their women, however this is often left until after the baby is born, or even until the 6-week discharge.

The vast majority of the prescriptions given are reported to be for progesterone only pills or for condoms, with only 2 reporting prescribing the emergency contraceptive pill.

Twenty-four of the 59 LMCs reported holding a postgraduate qualification in contraception, or having attended any specialist training courses.

Table 6. (Q) Do you identify as:

Variable	N
Independent midwife	55
Caseload midwife	3
GP	0
Specialist	1
NZ European	50
Māori	4
Other	7

Respondents gave more than one ethnicity.

Table 7. (Q) Approximately what percentage of your women do you discuss contraception with:

Time		No.		No.		No.		No.		No.		No.
At booking?	0%	29	10%	14	25%	1	50%	1	75%		100%	5
Antenatally	0%	6	10%	7	25%	6	50%	8	75%	7	100%	23
Postnatally	0%	–	10%	1	25%	3	50%	1	75%	2	100%	49
At discharge	0%	–	10%	–	25%	–	50%	2	75%	1	100%	50
In total	0%	–	10%	–	25%	–	50%	–	75%	–	100%	59

Table 8. (Q) Approximately what percentage of your women do you provide with contraceptive supplies or a prescription?

Percentage of women	N
0%	–
10%	1
25%	1
50%	9
75%	35
100%	13

Table 9. (Q) What do you routinely supply/ prescribe?

Contraceptive	N
Progestogen-only pill	53
Depo-provera	19
ECP	2
Condom	57
Other	
Mirena	17
Tubal ligation	1
LAM	1
"NFP"	3
COCP	3
Diaphragm	1

LAM= Lactational amenorrhoea method; NFP=Natural Family Planning, COCP=Combined Oral contraceptive pill.

Table 10. (Q) At what time would you usually give these supplies/prescription?

Variable	N
Before birth	–
At the first postnatal visit	–
At 3 weeks postnatal	22
At discharge	38
Other "woman led", "when asked for" "if they have already restarted sexual relationships"	

Table 11. Q. Do you routinely refer women to other contraceptive providers?

Variable	N
Family planning	52
GP	42
School Clinic	1
Other	
Natural fertility service	1
Public hospital	4

In analysing the qualitative data in addition to supporting many of the same barriers and suggestions that the women provided two strong themes emerged from the qualitative data from the LMC questionnaires: *Lack of LMC Knowledge* and *LMC attitudes.*

Table 12. Themes identified from qualitative data.

Women	LMCs
Cost/Money	Financial (woman)
Would prefer to go to GP/FPC rather than see LMC	Difficulty accessing appointments at GP or FPC
Too busy/time-poor/childcare issues	Women's motivation
Waiting lists (for IUCD or sterilisation)	Waiting times (For Mirena or sterilisation)
Self Blame/My Fault	The woman's fault….
Midwife did not offer me contraception	"Woman directed"/I wait for her to ask
Rural areas with poorer services	Rural areas do not have services
Partner refused to use condoms	Male partner demanding sex/refusing condoms
Forgot/missed pills	Lack of/limited public funding for Mirena IUS and sterilisation
Not realising could conceive so soon/while breastfeeding	Lack of knowledge/incorrect beliefs (woman)
Need more information on options	Lack of LMC knowledge/confidence with contraceptive provision or prescription

Questions asked with free text allowed for response: Women:
What would help you accessing contraception? And why?
What do you think was the main reason/reasons that you became pregnant again so soon after having your last baby?
What do you think could, or should, have been done to prevent this happening?
And who would have been best to do that? And why?

Questions asked with free text allowed for response: LMCs:
What, if any barriers do you meet in providing women with contraceptive advice/provisions?
What do you think would help overcome these?
What, if any, barriers do you identify that women experience in accessing postnatal contraception?
What do you think would help overcome these?

Discussion

The current maternity care provisions in New Zealand are that pregnant women are required to choose one Lead Maternity Carer (LMC) who coordinates their maternity care. Lead Maternity Carers are contracted through the Ministry of Health to provide a complete maternity service. The majority of women choose a midwife as their LMC, and will have their care provided free through the LMC system.

Each woman signs a contract with her LMC which stipulates the care that she should expect. One of these provisions is advice regarding contraception.[6]

Only 19 of the women reported recalling their LMC discussing contraception with them during or after their preceding pregnancy. All of the LMCs reported discussing contraception with all of their women, however the majority leave this until after the baby is born, when the woman is likely to be less able to make arrangements for contraception while caring for her infant; or even until the 6-week discharge appointment—by which time a number of women in this study had already conceived.

The majority of prescriptions and counselling by LMCs was towards methods which require significant 'user compliance' such as the progestogen only pill (PoP) or condoms, the success of which relies heavily upon the correct usage – at a busy time in a woman's life this is likely to be lower. Recent international guidance [8] is advising a move toward longer acting and 'intercourse independent' methods. Only six of the women reported being provided with a prescription, and this was for either a PoP or condoms and only the four prescriptions for the PoP were filled.

The most common barrier identified by the women to accessing contraception was financial. Under current maternity funding women can only access a funded consultation for postnatal contraception from their Lead Maternity Carer, and many women in the study group expressed preference to seek consultation elsewhere. The majority of the LMCs also report regularly referring their women on to other providers such as the Family Planning Clinic or a General Practitioner for further contraceptive advice or prescription.

As more than half the women reported being in a low income group they may not be able to afford a consultation with an alternative provider at a time when they may have other financial pressures. There was also a discrepancy in the ethnicities of the women and LMCs: with the majority of LMCs being European while the majority of the women identify as non-European. Women may prefer to choose a health provider who she feels is more culturally appropriate for her.

Both the women and the LMCs identified: time pressure on new mums, waiting lists at healthcare facilities and the centralisation of healthcare resources in urban areas as a barrier to women accessing these facilities.

While women did not directly identify lack of knowledge as a reason for the unintended pregnancy their responses do suggest a need for further education as their pregnancy was often explained by forgotten or missed pills, inability to negotiate condom use, being unaware that they could conceive while breastfeeding and not being aware of all the options option to them.

The majority of the women report breast feeding until at least six weeks postpartum and even up until the time of the ToP, indicating that this has not provided adequate contraception to prevent the unintended pregnancy.

Ability to give contraceptive advice is a required competency for registration with the New Zealand Midwifery Council[7] Less than half of the LMCs admitted to having attended any postgraduate training in contraception or Family Planning – and many of those added a footnote that this was quite a while ago.

While some of the LMCs showed high levels of understanding and knowledge through their answers others freely admitted their ignorance.

> "Because I do not feel very confident with my knowledge base…or prescribing pills or inj(ection)"
>
> "I do not feel I should be prescribing pills, only condoms"
>
> "Need more updates"
>
> "I feel out of my depth prescribing"
>
> "lack of knowledge & understanding to be able to prescribe safely"
>
> "Not comfortable prescribing more than minipill or condoms"
>
> "I only prescribe mini pill or condom"

Through the answers there was also evidence of what has been described by educationalists as unconscious incompetence (i.e. "you don't know that you don't know something"),[9]—with evidence of inappropriate prescribing practices including prescribing diaphragms and the use of 'natural family planning' –which would be considered contraindicated during the puerperium;[1,8] and also a lack of knowledge regarding the rapid return of fertility following birth.

In addition there was evidence of somewhat derogatory attitudes towards the task of educating the women, or addressing the issue of preventing unintended pregnancy.

> "Women's laziness to attend appointments or get script filled"
>
> "Can't get their act together to do some self care"
>
> "Cant be bothered"
>
> "Next baby = WINZ will pay, no incentive to stop"
>
> "Women who sometimes have a blazé (sic) approach to contraceptive"
>
> "I think women are their own worst enemies—they are conditioned not to take responsibility"
>
> "Too busy, too poor, too unmotivated"

A strong theme throughout the women's answers was that of self blame – with the women taking the culpability for the pregnancy—apparently unaware of the responsibility which should be held by their care givers.

For example: four women state that the provision of contraceptive counselling, as stated within the LMC contract and stipulated within midwifery training could have prevented their pregnancies:

> "I think it would be good if midwifes (sic) made sure their clients were on contraception before they sign off" "Whether you asked for it or not" as they are the "Last person to see women before fertile". And in asking to "Hav(e) contraception come around to your door and people explaining each one to you to make it easier for you".

A weakness of this study is the small numbers recruited and by only capturing the information of women actively recruited during a busy clinic it is not possible to quantify the number of women affected each year, as women who were eligible may have been unintentionally omitted.

The response rate from the LMCs was also low. Also of note, the women recruited were not necessarily cared for by the LMCs who responded and in order to preserve anonymity this could not be tracked.

In addition to the women who have abortions there can also be expected to be a significant number of women who conceive an unintended pregnancy in the postnatal period and continue the pregnancy, who are also not represented in this study.

Women with unintended pregnancies are less likely to access early pregnancy care and more likely to be exposed to teratogens during pregnancy. Unintended pregnancies are more likely to result in a preterm birth, infant of low birth weight or a perinatal death. In addition short inter-pregnancy interval are at increased risk of adverse outcomes: intervals of less than 6 months have been associated with increased risk of preterm birth, perinatal death, maternal death, third trimester bleeding, premature rupture of membranes and puerperal endometritis.[11,12]

Children that are the result of an unintended pregnancy are more likely to suffer abuse or neglect and to have weaker relationships with their parents and to have delayed early childhood development. Mothers of unintended pregnancies are more likely to suffer from depression and to experience domestic violence.[13]

Thus interventions to reduce both ‘unwanted’ and ‘mistimed’ pregnancies [10] can be expected to have positive effects on the woman, her family and her subsequent children.

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References:

1. Guillebaud J. Contraception : your questions answered. 4th ed. Edinburgh: Churchill Livingstone; 2004.
2. Evans A. Postpartum contraception. Women's Health Medicine. 2005;2(5):23–26.
3. Cwiak C, Gellasch T, Zieman M. Peripartum contraceptive attitudes and practices. Contraception. 2004;70(5):383–6.
4. Rojnik B, Kosmelj K, Andolsek-Jeras L. Initiation of contraception postpartum. Contraception. 1995;51(2):75–81.
5. Thurman AR, Hammond N, Brown HE, Roddy ME. Preventing repeat teen pregnancy: postpartum depot medroxyprogesterone acetate, oral contraceptive pills, or the patch? J Pediatr Adolesc Gynecol. 2007;20(2):61–5.
6. Primary Maternity Services Notice. Wellington: Section 88 of the New Zealand Public Health and Disability Act 2007. http://www.moh.govt.nz/moh.nsf/pagesmh/5845/$File/s88-primary-maternity-services-notice-gazetted-2007.pdf
7. Midwifery Council: 2007 [cited Competencies for Entry to the register of Midwives. Available from: www.midwiferycouncil.org.nz/main/Competencies/
8. FFPRHC guidance: Postnatal Sexual and Reproductive Health (September 2009) Available from: http://www.ffprhc.org.uk/pdfs/CEUGuidancePostnatal09.pdf
9. Howell WS. The empathic communicator. Prospect Heights, IL: Waveland Press, 1986.
10. Brown SS, Eisenberg L, eds. The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families. Washington, DC: National Academy Press;1995.)
11. Zilberman B. [Influence of short interpregnancy interval on pregnancy outcomes]. Harefuah. 2007;146(1):42–7, 78.
12. Conde-Agudelo A, Belizan JM. Maternal morbidity and mortality associated with interpregnancy interval: cross sectional study. BMJ. 2000;321(7271):1255–9.
13. Fagan EB, Rodman E, Sorensen EA, Landis S, Colvin GF. A survey of mothers’ comfort discussing contraception with infant providers at well-child visits. South Med J. 2009;102(3):260–264.

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Laparoscopic sleeve gastrectomy: its place in bariatric surgery for the severely obese patient

Daniel P Lemanu, Sanket Srinivasa, Primal P Singh, Andrew G Hill,
Andrew D MacCormick

Abstract

Aim Laparoscopic sleeve gastrectomy (LSG) was initially used as a staging procedure for high-risk patients undergoing bariatric surgery. However, it is now being increasingly favoured as a single-stage procedure. This article discusses the use of LSG as a single-stage procedure for the treatment of obesity and related comorbidities.

Methods A literature review was conducted using specific search terms in multiple medical databases.

Results Early and mid-term weight loss results show that LSG is comparable to more established bariatric procedures. It also produces satisfactory resolution of obesity related comorbidities such as type two diabetes mellitus (T2DM). There are minimal published outcome data to assess its long-term effectiveness and safety. This is particularly true in super-obese patients with current data suggesting less satisfactory acheivement of a normal BMI in this group of patients.

Conclusion LSG is safe and produces satisfactory weight loss and comorbidity resolution in the early and mid-term period. However, further data are required to assess its long-term effectiveness as well as its effectiveness in super-obese patients.

Laparoscopic sleeve gastrectomy (LSG) is one of many bariatric procedures used for weight loss and the resolution of obesity-related comorbidities in severly obese individuals. It has evolved from a series of other operations and has become increasingly popular as stand-alone bariatric procedure.[1,2]

LSG was initially used as a staging procedure for high-risk patients undergoing bariatric surgery prior to biliopancreatic diversion with duodenal switch (BPD-DS) or Roux-en-Y gastric bypass (RYGB). It has now being increasingly favoured as a single-stage procedure with the major advantage over other bariatric procedures being that it is less invasive whilst still achieving comparable weight loss.

At Counties Manukau District Health Board, South Auckland, over 500 LSG procedures were performed between 2006 and 2011. This article discusses the use of LSG as a single-stage procedure for the treatment of obesity and related comorbidities.

Methods

A literature review was conducted independently by two authors (DPL, PPS). Several medical databases were utilised including MEDLINE, Scopus, Pubmed and EMBASE from inception to August 2011. The search terms used were ‘sleeve gastrectomy’, ‘laparoscopic sleeve gastrectomy’, ‘LSG’, ‘bariatric surgery’, ‘weight loss surgery’, ‘obesity surgery’, ‘obesity’, ‘complications’, ‘outcomes’, ‘weight loss’, ‘comorbidity’ and ‘comorbidity resolution’. Additional articles were recovered by scrutinising reference lists in recovered articles by two authors (DPL, SS). There were no specific exclusion criteria.

The history of the sleeve

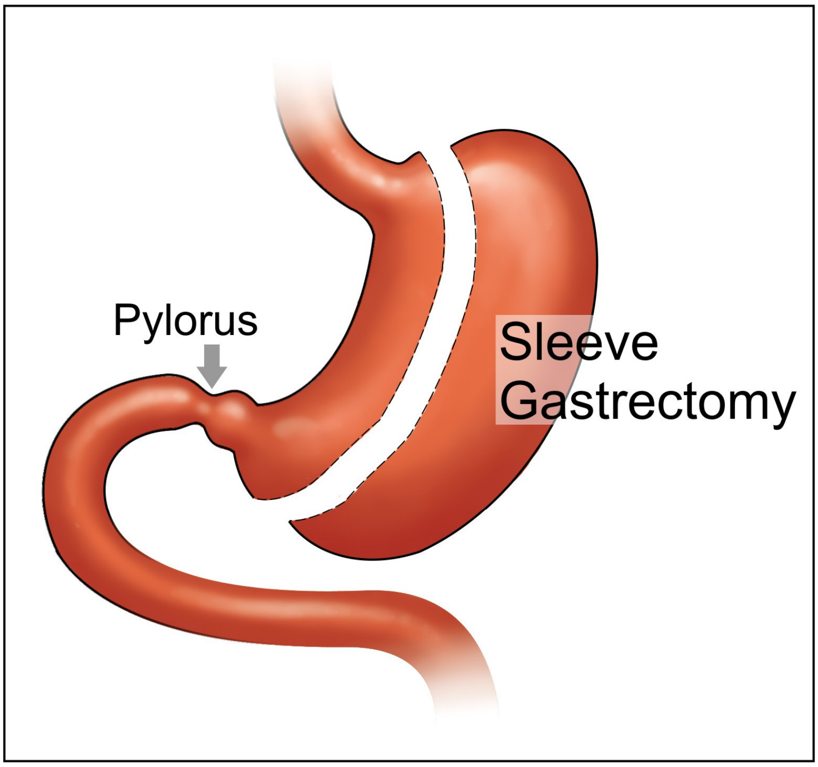
LSG is vertical gastrectomy to create a tubular stomach approximately 100–150 ml in volume[3] (Figure 1). This concept was initally developed in the setting of anti-reflux surgery by Lawrence Tretbar who was able to demonstrate weight loss following fundoplication.[4]

In 1988, Doug Hess modified this concept by substituting plication with a vertical gastrectomy to develop a sleeve. This become part of the BPD-DS,[2–5] and had the advantages of leaving an intact pylorus, which prevented dumping syndrome, and utilising a dudodenal-enteric anastomosis which helped prevent marginal ulcers.[5]

BPD-DS was first attempted laparoscopically in 1999 on pigs.[6] With this proving to be feasible, it was attempted in humans. However, it was noticed that for patients with higher BMI, there was an increased incidence of postoperative morbidity.[3] In order to solve this, it was decided to split the restrictive and malabsorptive components of the procedure by performing LSG as the first stage followed by the laparoscopic enteric anastomosis as the second stage.[3]

Eighteen cases were performed between September 2000 and September 2001 and there was noted to be a drastic reduction in the incidence of major morbidity.[3].

Figure 1. Diagram of laparoscopic sleeve gastrectomy



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LSG as a primary procedure was first reported in the literature in 2003[7,8] with the report showing excellent weight loss results. These results have been compared to other more established bariatric procedures and have been shown to be comparable to laparoscopic Roux-en-Y gastric bypass (LRYGB) and BPD-DS with less morbidity and superior weight loss results compared to laparoscopic adjustable gastric banding (LAGB) [1, 9-12]. This weight loss has been attributed not only to anatomical restriction but also to significant hormonal suppression inducing early satiety which is not demonstrated after LAGB and more so than that seen in LRYGB.[1,13]

Mechanism of weight loss

LSG is classified as a restrictive procedure, affecting weight loss through anatomical restriction.[14] As understanding of the factors which regulate appetite increase, it is now also believed that LSG also affects weight loss through the modulation of gut hormones.[1,9,13]

Several studies have demonstrated that circulating levels of ghrelin, a hormone thought to increase appetite, are significantly decreased early after LSG leading to earlier satiety.[1,13] This is thought to occur as a result of removing the fundus which is where ghrelin producing cells are located.[15]

Studies have also been conducted comparing the effects of LSG versus other bariatric procedures on gut hormones. One study demonstrated that while ghrelin levels are significantly lower following LSG, LAGB has little to no effect on circulating levels of ghrelin.[11] It has also been shown that LSG is superior to LRYGB in its effects on gut hormones, which not only regulate appetite but also those that regulate glucose homeostasis.[15,16]

Selection criteria

Established patient selection guidelines exist within the current literature including the American National Institutes of Health (NIH) Consensus Statement on Gastrointestinal Surgery for Severe Obesity and the Interdisciplinary European Guidelines for Surgery for (Morbid) Obesity.[17,18].

Criteria for referral include patients with a body mass index (BMI) greater than or equal to 40 kg/m^2 alone or BMI greater than or equal to 35 kg/m^2 with at least one comorbidity which is improved by surgically induced weight loss, and have tried and failed to lose weight or maintain weight loss despite appropriate non-surgical care. Individual bariatric centres will also have local guidelines which may have additional considerations specific to their practice or institution.

Contraindications to surgery are detailed in these same guidelines. As detailed in the European guidelines, these include absence of periods of identifiable medical management, inability to participate in prolonged follow-up, presence of non-stabilised psychiatric disorders, alcohol abuse and/or drug dependencies, diseases which are life threatening in the short term and inability to care for oneself or absence of social support.[18] These conditions are standard for all bariatric procedures. Currently, there are no specific indications which would select patients for a specific bariatric procedure.

Efficacy

Weight loss—There is an increasing amount of literature to support the use of LSG as a single stage procedure. Studies have demonstrated that LSG produces weight loss results in the short term which are comparable to, and in some cases superior to, other more established bariatric procedures.[15,19–22]

A recent systematic review of LSG found that the mean percentage excess weight loss (%EWL) at 1 year was 59.8% (range of 46% to 83.3%).[23] For follow-up at 2 and 3 years, the mean %EWL was 64.7% and 66% respectively.[23] This compares favourably to weight loss results reported for LRYGB which at 1, 2 and 3-year follow-up achieved a mean %EWL of 62.8%, 54.4% and 66% respectively.[23] However, when compared to %EWL for LAGB of 37.8%, 45% and 55% at 1, 2 and 3 years respectively, LSG appears to achieve superior weight loss.[23]

A randomised controlled trial conducted by Kehagias and colleagues found LSG and LRYGB to equally safe and effective procedures.[24]

Though there is robust evidence demonstrating excellent short to mid-term weight loss results after LSG, there is a lack of long-term data to show the durability of these results. Himpens and colleagues reported follow-up data for 41 out 53 patients who underwent LSG out to 6 years and showed a mean %EWL of 57.3%, though this had decreased from 72.8% at 3 years.[25]

Similarly, in a series of 26 patients who underwent LSG, Bohidjalian and colleagues found a reduction in %EWL from a peak of 60.3% at 2-year follow-up to 55% at 5-year follow-up [26]. The longest follow-up data available from Sarela and colleagues reports %EWL in 19 patients assessed at up to 9 years postoperatively of which 11 had sustained %EWL greater than 50%.[27]

It is thought that though LSG affects short-term weight loss, there is a tendency towards weight regain which has been demonstrated in series that report follow-up greater than 5 years.[28] With this in mind, it is unclear whether a second stage procedure is required for patients who undergo LSG and longer follow-up data are required to clarify this.

Comorbidity resolution—The current literature suggests that LSG is effective at resolving obesity related comorbidity. Shi and colleagues reported in their systematic review comorbidity resolution rates of between 45% to 95.3% in patients with type 2 diabetes mellitus (T2DM) hypertension, obstructive sleep apnoea (OSA), hyperlipidaemia, osteoarthritis, gastroesophogeal reflux, depression and peripheral oedema at 12 to 24 months follow-up [23]. Resolution of urinary incontinence in women after LSG has also been reported by Srinivasa and colleagues who found a resolution rate of 90% at 12 months.[13]

The majority of the literature describes the efficiacy of LSG at resolving T2DM. Reported resolution rates for T2DM are in the range of 63%-100%.[29–31] LSG has been shown to be not only comparable, but often superior, to other laparoscopic bariatric procedures with regards to T2DM resolution.

Abbatini and colleagues reported that diabetes resolution after LSG was 80.9% at three months.[30] This result was comparable to LRYGB at 81.2% and superior to LAGB at 60.8%.[30] Omana and colleagues demonstrated significant resolution of diabetes after LSG with a result of 100%. This was again vastly superior to LAGB (46%).[31]

Though the current evidence is consistent that LSG is superior to LAGB with regards to T2DM resolution, there is still some conjecture when compared to gastric bypass with a recent randomised controlled trial by Lee and colleagues showing T2DM resolution to be significantly higher in laparoscopic mini gastric bypass at 12 months follow-up.[32] How this resolution occurs in LSG is not well understood. Initially, resolution was attributed to weight loss. However, biochemical improvement has been shown to occur well before weight loss,[30] and may be related to neuro-hormonal mechanisms.

There is also substantial evidence describing the efficacy of LSG with regards to resolution of hypertension and obstructive sleep apnoea. Complete resolution of hypertension ranges from 55% through to 93% at 6 to 18-month follow-up with a mean resolution rate of 71.7% out to 24 months.[23] Similarly, resolution rates of OSA have shown to be acceptable with rates ranging between 52.6% to 100% with a mean rate of 83.6% at 24 months follow-up [23].

Other benefits of LSG—Though weight loss and comorbidity resolution are the most recognised outcomes of this procedure, LSG also offers other postoperative benefits. These benefits are described in Box 1.

Box 1. Additional benefits of LSG

- Little food intolerance
- Low incidence of late (more than 30 days postoperatively) complications
- Less micronutrient deficiencies compared to gastric bypass
- Minimal dumping

Complications

The postoperative complication rate reported in the literature varies from 1 to 29% after LSG.[33] This may depend on surgical technique (bougie size, amount of antrum excised, staple-line re-inforcement etc), patient factors, complication definitions and the follow-up period. This complication rate is comparable to other more established bariatric procedures.

The major complications associated with single stage LSG are listed in Box 2. This is not an exhaustive list and the incidence of each of these complications is low. The Michigan Bariatric Surgery Collaborative reported on the largest LSG series. This included 854 patients who underwent LSG between 2006 and 2009 across 25 hospitals and 62 surgeons and they reported a major complication rate of 2.2%.[34]

In a retrospective comparative analysis, Lakdawala and colleagues showed no difference in complication rates between LRYGB and LSG.[21] There have also been shown to be no significant difference in complication rates when compared to LAGB.[35]

Staple line leak—The risk of staple line leak is the greatest concern for bariatric surgeons and patients. Leak rates range between 0–7% with a mean occurrence of 2.4%.[36] Staple line leak is associated with significant morbidity, prolonged convalescence and increased risk of mortality. It is difficult to manage with little consensus in the current literature regarding an optimal treatment approach.

Most leaks occur relatively early after surgery which often makes surgical management difficult due to poor tissue quality and inflammation.[37] The placement of endoscopic stents and percutaneous drains in conjunction with gut rest and parenteral nutrition is generally the preferred management option though resolution often takes an extended period of time.[36]

Box 2. Major postoperative complications associated with LSG

- Staple line leak
- Intra-abdominal haemorrhage
- Intra-abdominal abscess
- Stricture
- Wound infection
- Splenic injury
- Pulmonary embolism
- Trocar site hernia
- Late cholelithiasis
- Bowel obstruction
- Respiratory failure
- Renal failure
- Death

Effectiveness in the super-obese

Surgical risk is thought to increase significantly with BMI greater than 50 kg/m^2. It is recognised as an independent predictor of postoperative morbidity and mortality, and this has been attributed to a greater burden of obesity-related comorbidity.[38–40]

Previous studies have investigated postoperative morbidity in super-obese patients after laparoscopic bariatric surgery and found increased rates of postoperative complications.[41,42] As mentioned previously, LSG was initially used as the first stage of BPD-DS in high-risk patients and this stepwise approach was demonstrated to decrease postoperative mortality.

Though it is thought that LSG is safe in the super-obese population, it is unclear whether it is effective in producing satisfactory weight loss in these patients. Several studies have demonstrated that although LSG affects excellent absolute weight loss in this group of patients, a large proportion remain with a BMI of more than 40 kg/m^2 at follow-up of 12–18 months.[9]

According to European guidelines, these patients would still qualify for further bariatric surgery which may suggest that LSG might be more effective as a staging procedure in this select group of patients.[18] This is supported by a recent systematic review which found that studies identifying patients as super-obese or high-risk were likely to have a second stage procedure approximately 2 years after the initial LSG. More long-term follow-up data are required to clarify this.[20]

Conclusion

LSG is an increasingly popular stand alone bariatric procedure. It produces significant and sustainable weight loss in severely obese patients and effectively cures obesity related comorbidity. It is safe with a major complication rate which is comparable to other common bariatric procedures. With the majority of the literature reporting short to mid-term weight loss results, further research is required to investigate long term weight loss outcomes. Further research is also required to investigate the efficacy of LSG in super-obese patients.

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References:

1. Sammour T, Hill AG, Singh P, et al. Laparoscopic sleeve gastrectomy as a single-stage bariatric procedure. Obes Surg. 2010;20:271–5.
2. Jossart G, Anthone G. The History of Sleeve Gastrectomy. Bariatric Times. 2010;7:9–10.
3. Gagner M, Matteotti R. Laparoscopic biliopancreatic diversion with duodenal switch. The Surgical clinics of North America. 2005;85:141–9, x–xi.
4. Tretbar L, Taylor T, Sifers E. Weight reduction. Gastric plication for morbid obesity. J Kans Med Soc. 1976;77:488–90.
5. Hess DS, Hess DW. Biliopancreatic diversion with a duodenal switch. Obes Surg. 1998;8:267–82.
6. de Csepel J, Burpee S, Jossart G, et al. Laparoscopic biliopancreatic diversion with a duodenal switch for morbid obesity: a feasibility study in pigs. J Laparoendosc Adv Surg Tech A. 2001;11:79–83.
7. Regan JP, Inabnet WB, Gagner M, et al. Early experience with two-stage laparoscopic Roux-en-Y gastric bypass as an alternative in the super-super obese patient. Obes Surg. 2003;13:861–4.
8. Gagner M, Gumbs AA, Milone L, et al. Laparoscopic sleeve gastrectomy for the super-super-obese (body mass index >60 kg/m(2)). Surg. 2008;38:399–403.
9. Akkary E, Duffy A, Bell R. Deciphering the sleeve: technique, indications, efficacy, and safety of sleeve gastrectomy. Obes Surg. 2008;18:1323–9.
10. Cottam D, Qureshi FG, Mattar SG, et al. Laparoscopic sleeve gastrectomy as an initial weight-loss procedure for high-risk patients with morbid obesity. Surg Endosc. 2006;20:859–63.

11. Langer FB, Reza Hoda MA, Bohdjalian A, et al. Sleeve gastrectomy and gastric banding: effects on plasma ghrelin levels. Obes Surg. 2005;15:1024–9.
12. Himpens J, Dapri G, Cadiere GB. A prospective randomized study between laparoscopic gastric banding and laparoscopic isolated sleeve gastrectomy: results after 1 and 3 years. Obes Surg. 2006;16:1450–6.
13. Srinivasa S, Hill LS, Sammour T, et al. Early and mid-term outcomes of single-stage laparoscopic sleeve gastrectomy. Obes Surg. 2010;20:1484–90.
14. Abu-Jaish W, Rosenthal RJ. Sleeve gastrectomy: a new surgical approach for morbid obesity. Expert Rev Gastroenterol Hepatol. 2010;4:101–19.
15. Karamanakos SN, Vagenas K, Kalfarentzos F, et al. Weight loss, appetite suppression, and changes in fasting and postprandial ghrelin and peptide-YY levels after Roux-en-Y gastric bypass and sleeve gastrectomy: a prospective, double blind study. Ann Surg. 2008;247:401–7.
16. Peterli R, Wolnerhanssen B, Peters T, et al. Improvement in glucose metabolism after bariatric surgery: comparison of laparoscopic Roux-en-Y gastric bypass and laparoscopic sleeve gastrectomy: a prospective randomized trial. Ann Surg. 2009;250:234–41.
17. NIH. Gastrointestinal surgery for severe obesity. Proceedings of a National Institutes of Health Consensus Development Conference. Am J Clin Nutr. 1992;55 (Suppl 2):487S–619S.
18. Fried M, Hainer V, Basdevant A, et al. Interdisciplinary European guidelines for surgery for severe (morbid) obesity. Obes Surg. 2007;17:260–70.
19. Leyba JL, Aulestia SN, Llopis SN. Laparoscopic Roux-en-Y gastric bypass versus laparoscopic sleeve gastrectomy for the treatment of morbid obesity. A prospective study of 117 patients. Obes Surg. 2011;21:212–6.
20. Brethauer SA, Hammel JP, Schauer PR. Systematic review of sleeve gastrectomy as staging and primary bariatric procedure. Surg Obes Relat Dis. 2009;5:469–75.
21. Lakdawala MA, Bhasker A, Mulchandani D, et al. Comparison between the results of laparoscopic sleeve gastrectomy and laparoscopic Roux-en-Y gastric bypass in the Indian population: a retrospective 1 year study. Obes Surg. 2010;20:1–6.
22. Dapri G, Cadiere GB, Himpens J. Laparoscopic repeat sleeve gastrectomy versus duodenal switch after isolated sleeve gastrectomy for obesity. Surg Obes Relat Dis. 2011;7:38–43.
23. Shi X, Karmali S, Sharma AM, et al. A review of laparoscopic sleeve gastrectomy for morbid obesity. Obes Surg. 2010;20:1171–7.
24. Kehagias I, Karamanakos SN, Argentou M, et al. Randomized clinical trial of laparoscopic Roux-en-Y gastric bypass versus laparoscopic sleeve gastrectomy for the management of patients with BMI <50 kg/m^2. Obes Surg. 2011;21:1650–6.
25. Himpens J, Dobbeleir J, Peeters G. Long-term results of laparoscopic sleeve gastrectomy for obesity. Ann Surg. 2010;252:319–24.
26. Bohdjalian A, Langer FB, Shakeri-Leidenmuhler S, et al. Sleeve gastrectomy as sole and definitive bariatric procedure: 5-year results for weight loss and ghrelin. Obes Surg. 2010;20:535–40.
27. Sarela AI, Dexter SP, O'Kane M, et al. Long-term follow-up after laparoscopic sleeve gastrectomy: 8-9-year results. Surg Obes Relat Dis. 2011.
28. D'Hondt M, Vanneste S, Pottel H, et al. Laparoscopic sleeve gastrectomy as a single-stage procedure for the treatment of morbid obesity and the resulting quality of life, resolution of comorbidities, food tolerance, and 6-year weight loss. Surg Endosc. 2011;25:2498–504.
29. Li X-X, Rosenthal RJ, Zheng C-Z. Efficacy of laparoscopic sleeve gastrectomy on morbidly obese patients with type 2 diabetes mellitus. Zhonghua Wei Chang Wai Ke Za Zhi. 2009;12:269–72.
30. Abbatini F, Rizzello M, Casella G, et al. Long-term effects of laparoscopic sleeve gastrectomy, gastric bypass, and adjustable gastric banding on type 2 diabetes. Surg Endosc. 2010;24:1005–10.

31. Omana JJ, Nguyen SQ, Herron D, et al. Comparison of comorbidity resolution and improvement between laparoscopic sleeve gastrectomy and laparoscopic adjustable gastric banding. Surg Endosc. 2010;24:2513–7.
32. Lee WJ, Chong K, Ser KH, et al. Gastric bypass vs sleeve gastrectomy for type 2 diabetes mellitus: a randomized controlled trial. Arch Surg. 2011;146:143–8.
33. Gumbs AA, Gagner M, Dakin G, et al. Sleeve gastrectomy for morbid obesity. Obes Surg. 2007;17:962–9.
34. Birkmeyer NJ, Dimick JB, Share D, et al. Hospital complication rates with bariatric surgery in Michigan. JAMA. 2010;304:435–42.
35. Wong SKH, Kong APS, Mui WLM, et al. Laparoscopic bariatric surgery: a five-year review. Hong Kong Med. 2009;15:100–9.
36. Aurora AR, Khaitan L, Saber AA. Sleeve gastrectomy and the risk of leak: a systematic analysis of 4,888 patients. Surg Endosc. 2012;26:1509–15.
37. Oshiro T, Kasama K, Umezawa A, et al. Successful management of refractory staple line leakage at the esophagogastric junction after a sleeve gastrectomy using the HANAROSTENT. Obes Surg. 2010;20:530–4.
38. Sanchez-Santos R, Masdevall C, Baltasar A, et al. Short- and mid-term outcomes of sleeve gastrectomy for morbid obesity: the experience of the Spanish National Registry. Obes Surg. 2009;19:1203–10.
39. Sarela AI, Dexter SP, McMahon MJ. Use of the obesity surgery mortality risk score to predict complications of laparoscopic bariatric surgery. Obes Surg. 2011;21:1698–703.
40. Gupta PK, Franck C, Miller WJ, et al. Development and validation of a bariatric surgery morbidity risk calculator using the prospective, multicenter NSQIP dataset. J Am Coll Surg. 2011;212:301–9.
41. Kakarla VR, Nandipati K, Lalla M, et al. Are laparoscopic bariatric procedures safe in superobese (BMI >/=50 kg/m2) patients? An NSQIP data analysis. Surg Obes Relat Dis.. 2011;7:452–8.
42. Topart P, Becouarn G, Ritz P. Should biliopancreatic diversion with duodenal switch be done as single-stage procedure in patients with BMI > or = 50 kg/m2? Surg Obes Relat Dis. 2010;6:59–63.

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SIDS prevention: 3000 lives saved but we can do better

Edwin A Mitchell, Peter S Blair

Abstract

Mortality from sudden infant death syndrome (SIDS) has decreased substantially from the late 1980s. This has been attributed to the change in infant sleep position initially from prone (front) to side and then to predominantly supine (back). We calculate that this has saved over 3000 lives. However, we argue that we could save more infant lives, if more focus was given to the risks observed from parents sleeping in the same bed as their babies.

The prevention of sudden infant death syndrome (SIDS or cot death) has been one of the major success stories in epidemiology. In the 1980s the SIDS mortality rate in New Zealand was extremely high (over 4/1000 live births) that is one in every 250 babies died suddenly, unexpectedly and without explanation.

The New Zealand Cot Death Study was a 3-year case–control study (1987-1990), funded by the Medical Research Council (now Health Research Council). Results from the first year of the study were reported in 1991 in this *Journal*.[1] This identified three modifiable risk factors for SIDS, namely prone sleeping position, maternal smoking and lack of breastfeeding.

A prevention programme was launched with the release of the first year's results.[2] However, the prevalence of prone sleeping position had started falling before the study was completed, and with it a reduction in SIDS mortality.[3] Prone sleeping position changed from 43% in the controls, which were a representative sample of all live births, prior to the prevention programme to less than 3%.

The fall in SIDS mortality was dramatic, with a halving of the SIDS mortality rate, within 2 years and this was accompanied by a reduction in total (all causes) postneonatal mortality (1–11 month mortality) showing that the reduction was real.[4]

Mortality rates have continued to decline, albeit more gradually and this has been attributed to the reduction in the prevalence of side sleeping position,[5] which doubles the risk of SIDS compared with supine (back) sleeping position. This occurred without understanding of the pathophysiological mechanisms by which prone sleeping position causes death, although since then this has been the focus of considerable research, debate and speculation.

Other countries rapidly followed our lead, initially in Australia and then in the United Kingdom. The number of deaths in the UK fell from 1500 to 600 by the mid 1990s with a concomitant fall in prone sleeping.[6] Since then the numbers have halved again with clear evidence of a reduction in side sleeping position and head covering.[7] Indeed as the "Back to Sleep" campaign has been implemented throughout the developed world similar results have been seen.

How many lives has this simple intervention saved in New Zealand? Given that total postneonatal mortality had not changed in the two decades prior to the prevention programme it can be assumed that the SIDS mortality rate would have remained unchanged if the association between infant sleeping position and SIDS had not been identified.

The table shows the number of deaths from SIDS that would be expected to have occurred if the mortality rate had remained unchanged, the number of deaths from SIDS that did occur and thus the number of lives saved each year. Cumulatively more than 3000 lives have been saved.

A similar calculation has been done for England & Wales with over 17,000 lives saved and in the United States more than 40,000 lives saved (Hauck, personal communication, 2011). It is hard to think of any other intervention in the developed world that has had such a dramatic, rapid and clear cut effect.

Table 1. Observed number of SIDS deaths, and the predicted number of deaths if the rate had stayed the same in the 5 years preceding the SIDS prevention campaign

Year	Observed number of SIDS	Livebirths	SIDS rate/1000	Predicted number of SIDS	Total number of lives saved
1985	219	52230	4.19		
1986	213	52824	4.03		
1987	237	55254	4.29		
1988	254	57546	4.41		
1989	237	58091	4.08		
1990	175	60153	2.91	253	78
1991	148	59994	2.47	252	104
1992	137	59266	2.31	249	112
1993	125	58867	2.12	247	122
1994	121	57435	2.11	241	120
1995	121	57791	2.09	243	122
1996	109	57662	1.89	242	133
1997	84	57968	1.45	244	160
1998	67	55674	1.20	234	167
1999	69	57433	1.20	241	172
2000	65	56954	1.14	239	174
2001	48	56124	0.86	236	188
2002	45	54375	0.83	228	183
2003	51	56480	0.90	237	186
2004	45	58556	0.77	246	201
2005	40	58727	0.68	247	207
2006	50	60274	0.83	253	203
2007	56	65121	0.86	274	218
2008	50	65333	0.77	275	225
Total lives saved					**3075**

mean NZ SIDS rate 1985-1989 = 4.20/1000 live births

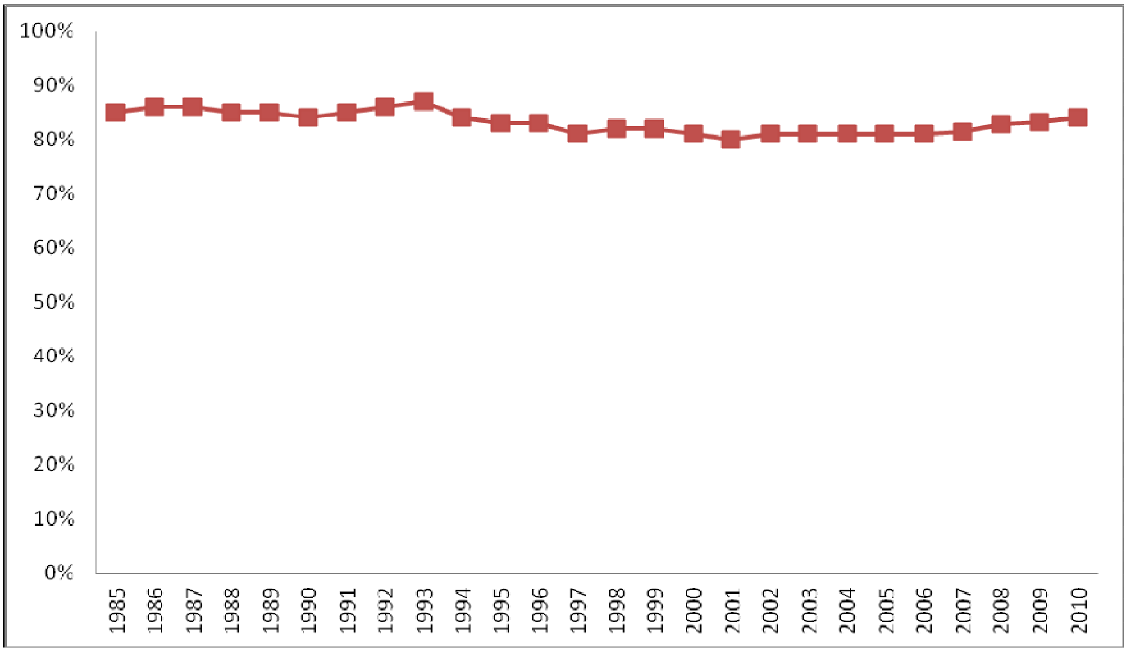
So should we sit on our laurels or could more be done? The SIDS prevention programme also targeted smoking and promoted breastfeeding. There is considerable effort by the Ministry of Health and many other organisations to discourage smoking and promote breastfeeding. Given the many other health benefits there has been somewhat limited focus on their association with SIDS.

The prevalence of smoking in pregnancy has not been consistently collected in New Zealand. In the first year of the New Zealand Cot Death Study (predominantly 1989) the prevalence of smoking in pregnancy in the controls, which were a representative sample of all livebirths, was 34.1%.[1]

In Auckland the prevalence of smoking in pregnancy in 2009 was 10.1%.[8] This is a fantastic achievement, but these total figures hide marked ethnic differences (Maori 41.0% vs. European 6.6%).

New Zealand breastfeeding rates have been good in comparison with many developed countries and thus there has been relatively little room for improvement. The Royal New Zealand Plunket Society (Plunket) has collected breastfeeding data for many years. Figure 1 shows the breastfeeding rates up to 6 weeks of age, 1985 to 2010 (Nikki Hooper, Plunket, personal communication, 2011). New Zealand's high rate of breastfeeding has been maintained.

Figure 1. Percentage of breastfed babies up to 6 weeks of age, 1985–2010



In 1992 we published the association between parents and infants sleeping in the same bed and an increased risk of SIDS.[9] The following year we reported that the risk was particularly in infants of mothers who smoked.[10] This has been confirmed in many other studies.[11]

Further studies have shown that the risk of SIDS from bed sharing is especially high in those infants who are under 3 months of age. Two retrospective studies of infant deaths referred to the coroner in Wellington and Auckland show that more than 50% of all sudden unexpected deaths in infancy occur while bed sharing, and this is 90% in the first month of life.[12,13]

There has been resistance from some quarters about promoting advice not to sleep with baby in the same bed. Some groups have actively encouraged bed sharing to encourage and maintain breastfeeding[14] and there is emerging evidence of a complex interdependent relationship between these two infant care practices.[15]

Although the message about safe sleeping includes the risk from bed sharing, it is so dilute that the message has not been heard[16]. In particular the specific risks associated with hazardous bed sharing need to be clearly spelt out. Inappropriate sleep surfaces such as soft mattresses and sofas should be avoided and parents need to be reminded to never bring the baby into bed if they have recently consumed alcohol or taken legal or illegal sleep-inducing drugs.[7] Surveys in Auckland show that less than 50% of mothers of infants identified the risk of SIDS with bed sharing.[17,18]

So what can be done? Parents need to be given clear evidence based guidance on the risks. The evidence has been summarised by the International Society for the Prevention and Study of Perinatal and Infant Death (ISPID) and the information concerning bed sharing is shown with permission in the box.[19]

Box 1. ISPID recommendations for reducing the risk of Sudden Infant Death Syndrome (reproduced with permission from ISPID)[19]

Always (day and night) place the baby on his/her back when it's time to sleep

- The most significant proven risk factor is the sleep position. The risk of SIDS is over three times higher for a baby sleeping on the stomach.
- The practice of always placing the baby on his/her back when its time to sleep should begin at birth. The baby will become accustomed to sleeping on the back and will have no problems falling asleep.
- Make sure every caregiver uses the "back to sleep" position. A caregiver placing a baby to sleep on his/her stomach or side when the baby is accustomed to sleeping on the back raises the risk of SIDS 18-fold.
- Place the baby on the stomach only when he/she is awake and under adult supervision.

Always keep the baby's environment smoke-free

- Do not smoke during pregnancy. The more you smoke, the greater the risk for SIDS.
- Second-hand smoke is also a risk factor: stay in a smoke-free environment when pregnant.
- Always maintain a smoke-free environment for the baby.

Make the sleeping environment as safe as possible and avoid overheating

- Place the baby to sleep in its own crib next to the parents' bed for the first 6 months (room sharing).

- Never share a bed with baby if you or your partner smoke. Babies whose parents smoke are at increased risk of SIDS while co-sleeping.
- Never share a bed with baby when you have had alcohol or drugs. (Don't use alcohol or drugs when caring for your baby, especially ANY TIME you may fall asleep.) Babies whose parents have recently used alcohol or drugs are at increased risk of SIDS (and accidental suffocation) while co-sleeping.
- There is a slightly increased risk of SIDS with bed sharing for infants less than 3 months even if they were not exposed to cigarettes, particularly if the baby was small (less than 2.5 kg) at birth or born prematurely.
- In some countries there is a recommendation to avoid all bed sharing, although some disagree and advise avoiding bed sharing only if there are other risk factors present such as smoking or alcohol use.
- Never sleep with baby on a couch or sofa. This increases the risk of SIDS and fatal sleep accidents.
- Keep the crib free of soft objects and anything loose or fluffy (bedding, toys, bumpers, pillows, duvets).
- Do not allow the baby's head to be covered with bedding/blankets.
- Keep the room temperature at 18°C to 22°C and avoid over-dressing (i.e. too many layers of clothes; particularly avoid the use of a hat when indoors) when placing the baby to sleep. Overheating has been cited as a risk factor for SIDS in the past, however, it has been shown that thermal factors are less important if the infant sleeps on the back.
- Use a safe, firm mattress that fits the crib properly.
- Use a mattress that is in new or used and in good condition (no tears).

A word about breast feeding and pacifiers

- Breast feeding is always recommended for its numerous benefits for babies and mothers (as a source of multiple necessary nutrients, disease protection and as a contributor to mother-baby bonding). Several studies show that breastfeeding also offers a risk reduction for SIDS.
- Research suggests that using a pacifier may reduce the risk of SIDS. Start using a pacifier after 1 month of age when breast feeding is usually well established. Give a pacifier when you put the baby to sleep, but do not force it. Some but not all studies have shown that pacifiers may have an adverse effect on breast feeding.

Immunisation

- Infants that are immunised have half the risk of SIDS and are protected against diphtheria, tetanus, whooping cough, etc.

Parental education is needed at antenatal services, in the obstetric unit and in the community by well child health care workers. Grandparents, child care workers, baby sitters all need to understand what keeps babies safe.

Modelling of appropriate infant care practices in obstetric hospitals is crucial. If parents are encouraged to bed share in obstetric units to facilitate breastfeeding, one cannot be surprised if this practice continues when the mother and baby go home.

Families need to be reminded that sleeping the infant in a cot next to the parental bed is the most risk-free environment and if they bed-share, intentionally or unintentionally, need to be aware of the risks involved. The media also has an important role, and was used effectively when the SIDS prevention programme was launched, now 20 years ago.

Some families cannot afford cots, and cots should be provided or rented to these families, rather like the Plunket Society's infant car rental scheme. It is somewhat ironic that more infant deaths occur in the parental bed than in car crashes. The disruption to families following the Christchurch earthquakes resulted in some parents having to share their bed with their baby.

The rapid provision of pepi-pods (Figure 2) was not only a humanitarian response, but probably saved infant lives. Similarly the *wahakura*, a woven flax basket, is able to be taken into the parental bed and provides a safe sleeping space.[20] These interventions have face validity, but have not been proven to save lives. However, it is hard to imagine that they have any downside.

Figure 2. Pepi-pod provides a safe sleeping space for baby while co-sleeping

The ideal of course is to identify ways that would enable parent and baby to sleep safely together in the same bed. This is the focus of Nationwide SUDI Case-Control Study which has been just been funded by the HRC.[21]

Unfortunately it will be 3 to 4 years before results are available. In the meantime we need to inform parents about the established risks from bed sharing with their infant.

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References:

1. Mitchell EA, Scragg R, Stewart AW, et al. Results from the first year of the New Zealand cot death study. N Z Med J. 1991;104:71–76.
2. Mitchell EA, Aley P, Eastwood J. The national cot death prevention programme in New Zealand. Aust J Public Health. 1992;16:158–161.
3. Mitchell EA, Tonkin S. Publicity and infants' sleeping position. BMJ. 1993;306:858
4. Mitchell EA, Brunt JM, Everard C. Reduction in mortality from sudden infant death syndrome in New Zealand: 1986–92. Arch Dis Child. 1994;70:291–294.
5. Mitchell EA, Hutchison L, Stewart AW. The continuing decline in SIDS mortality. Arch Dis Child. 2007;92:225–6
6. Blair PS, Sidebotham P, Berry PJ, et al. Major epidemiological changes in sudden infant death syndrome: a 20-year population-based study in the UK. Lancet. 2006;367(9507):314–9.
7. Blair PS, Sidebotham P, Evason-Coombe C, et al. Hazardous cosleeping environments and risk factors amenable to change: case-control study of SIDS in south west England. BMJ. 2009;339:b3666.
8. Pot M, Sadler L, McDougall J, et al. National Women's Annual Clinical Report 2010. http://nationalwomenshealth.adhb.govt.nz/about-us/annual-clinical-reports
9. Mitchell EA, Taylor BJ, Ford RPK, et al. Four modifiable and other major risk factors for cot death: The New Zealand Study. J Paediatr Child Health. 1992;28(Suppl 1):S3–8.
10. Scragg R, Mitchell EA, Taylor BJ, et al. Bedsharing, smoking and alcohol in the sudden infant death syndrome: Results from the New Zealand cot death study. BMJ. 1993:307(6915):1312–8.
11. Vennemann MM, Hense HW, Bajanowski T, et al. Bed Sharing and the Risk of Sudden Infant Death Syndrome: Can We Resolve the Debate? J Pediatr. 2012;160:44-48.e1
12. Escott A, Elder DE, Zuccollo JM. Sudden unexpected infant death and bedsharing: referrals to the Wellington Coroner 1997–2006. N Z Med J. 2009;122(1298):59–68. http://journal.nzma.org.nz/journal/122-1298/3686
13. Hutchison BL, Rea C, Stewart AW, et al. Sudden Unexpected Infant Death in Auckland: a retrospective case review. Acta Paediatrica. 2011;100:1108–12.
14. McKenna JJ, McDade T. Why babies should never sleep alone: a review of the co-sleeping controversy in relation to SIDS, bedsharing and breast feeding. Paediatr Respir Rev. 2005 Jun;6(2):134–52.
15. Blair PS, Heron J, Fleming PJ. Relationship between bed sharing and breastfeeding: longitudinal, population-based analysis. Pediatrics. 2010;126(5):e1119–26.
16. Mitchell EA. Sudden infant death and co-sleeping: stronger warning needed. N Z Med J. 11 December 2009;122(1307):6-9. http://journal.nzma.org.nz/journal/122-1307/3914/
17. Hutchison BL, Stewart AW, Mitchell EA. SIDS protective infant care practices among Auckland mothers. NZ Med J. 2006;119:1–10. http://journal.nzma.org.nz/journal/119-1247/2365/

18. Tipene-Leach D, Hutchison L, Tangiora A, et al. SIDS-related knowledge and infant care practices among Māori mothers. N Z Med J. 2010;123:88–96. http://journal.nzma.org.nz/journal/123-1326/4445/
19. International Society for the Prevention of Perinatal and Infant Death. How to Keep Your Baby Healthy and Reduce the Risk of Sudden Infant Death (SIDS). http://www.ispid.org/prevention.html
20. Tipene-Leach D, Abel S. The wahakura and the safe sleeping environment. J Prim Health Care. 2010;2(1):81.
21. Mitchell EA. The proposed New Zealand SUDI case-control study. Scandinavian J Forensic Sci. 2011;17:34–9.

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The effect of ethnic prioritisation on ethnic health analysis: a research note

Robert Didham, Paul Callister

Abstract

Ethnicity is an important variable in studies of health inequalities in New Zealand. Yet there are ongoing concerns about the nature, quality and use of ethnic data. In 2004, Statistics New Zealand recommended that researchers and policy makers no longer use the system of ethnic prioritisation, a system originally designed to assign people with multiple ethnic responses to one ethnic category. While across a range of disciplines researchers have shifted to using either total ethnic counts or single and combination counts, many health researchers continue to use ethnic prioritisation.

Census data show that when using prioritisation there are significant losses to Pacific, Asian and European groups, especially for young people. Losses are especially high for New Zealand born people in all age groups. Health researchers need to consider very carefully the costs and benefits of using prioritised data. Based on the census data we suggest the costs, in terms of loss of information and possible biases in findings, outweigh any benefits.

Researchers have been long concerned about the nature and quality of New Zealand ethnic data when undertaking ethnic based health analysis. It is widely known that mortality data (at least during the 1980s and early 1990s) undercounted Māori and Pacific deaths.[1–3]

Current problems include missing data and discrepancies in the way ethnicity is recorded in contributing data sources.[4] People may identify themselves with more than one ethnicity and, while individuals may change their ethnicities over time and should have this recorded at each contact with service providers, in practice the ethnicity or ethnicities held against their health records may not accurately reflect their current preferences.

Health researchers and epidemiologists continue to struggle with these concerns, particularly in regard to the choice of output strategies to handle multiple responses by people who have more than one ethnicity.

Census has recorded multiple responses in a number of ways for many decades, earlier as combinations of ethnicities/ ethnic origins/ races and more recently with up to six ethnicities recorded per individual. Some other collections such as birth and death registrations now record multiple responses routinely in the same manner as done for census, but historic collections frequently restricted their recording to one ethnicity per individual, or, where more than one was collected, the options were only at high level and very restricted.

When respondents to surveys are required to record only one ethnic group, reporting membership of ethnic groups is relatively straightforward provided respondents do in fact write a single response, necessitating selection during data processing. When more than one group is collected, then reporting is more complex.

In the early period during which more than one group was recorded in New Zealand it was normal to output combinations but then to consider groups based on a half-or-more affiliation basis. This applied until around 1981. However, for the 1986 and 1991 censuses, the then Department of Statistics (now Statistics New Zealand) as well as most government agencies and researchers relied primarily on the prioritisation of ethnic groups in order to simplify the presentation of the data.

Under this system, Māori had priority coding, followed by Pacific, then Asian, then other ethnic groups, with people of only European ethnicities last.

The one advantage in using a system of prioritisation is that mathematically ethnic counts equal counts of the total population with specified ethnicity, making statistical analysis more straightforward. However, mathematical expedience should be secondary to the meaning of the data. In New Zealand this advantage was greatly outweighed by the disadvantages.

The disadvantages are that (1) there is no underlying logic to the order of prioritisation except that it privileges the indigenous population, (2) it is not ethnically neutral (that is, it elevates one ethnic group over another), (3) it does not acknowledge the preferences of people, and (4) it biases population measures by misrepresenting the membership of all groups except for Māori.

Moreover, a further complication was that questionnaire design often meant that it was not possible to identify the level of non-response, because the absence of a tick in the targeted tick-boxes was taken to indicate membership of a “non-X” group and then this was treated as though it were some kind of “ethnic group”. Hence the correct denominator for calculation of rates was not available.[14]

Increasingly, the biasing effects of both the process of prioritisation and the increase in non-response have become problematic in New Zealand in recent years, with the growth in the number of people, especially children, reporting ethnicities in more than one ethnic group.[5]

In terms of reflecting the preferences of people, two sets of research confirm that imposed prioritisation is problematic. Using 2006 data from wave one of the Youth Connectedness survey of early adolescents, Kukutai and Callister found that three-quarters of youth who recorded more than one ethnic group were able to choose a main group when asked to do so.[5]

Of the dual identified Māori–European children who could choose a main group, more chose a European ethnicity over Māori. Kukutai also found a similar pattern of self-prioritisation responses among women identified as Māori and European in the 1995 New Zealand Women: Family, Education and Employment (NZW: FEE) survey of women aged 20–59 years.[6]

Among the 183 women who recorded Māori and European ethnic groups, 42% were identified mainly as European, 37% identified mainly as Māori, and the remainder could not choose.

Table 1. More than one ethnicity reported, Census of Population and Dwellings, 1991–2006

Census year	More than one ethnicity reported					
	N			%[1]		
	Total NZ, all ages	Total NZ, 0–14	Māori, all ages	Total NZ	Total NZ, 0–14	Māori, all ages
1991	166,158	77,172	111,351	5.0	19.3	25.6
1996	536,757	181,338	249,894	15.5[2]	45.2	47.8
2001	324,090	145,194	231,552	9.0	34.2	44.0
2006	400,428	164,262	266,934	10.4	38.1	47.2

[1] Percentage of people with a valid ethnic group response.

[2] In 1996 an "Other European" tick-box was included, along with a sub-list that specified English, Irish, Australian, Scottish and Dutch ethnic groups. This led to an increase in the reporting of those groups, though at the highest level of ethnicity this had much less effect than this table implies (see Table 2) because people with multiple responses within a group were counted only once in that group. The tick-box was dropped from subsequent census questionnaires.

Source: Kukutai and Callister, 2009, drawn from Census of Population and Dwellings.

Table 2. More than one Level 1 ethnic group reported, census of population and dwellings, 1991–2006

Census	More than one ethnic grouping					
	Numbers			Percentages		
	Total	0–14	Māori	Total	0–14	Māori
1991	138,171	69,939	111,351	4.1	9.0	25.6
1996	308,154	135,288	249,894	8.9	16.9	47.7
2001	282,825	131,580	231,552	7.9	16.0	44.0
2006	363,402	150,318	266,934	9.4	18.0	47.2

Source: Census of Population and Dwellings.

Disquiet with the system of prioritisation was already increasing from the early 1990s as the limitations and distortions to the data were being recognised. Throughout the 1990s, less use was being made of prioritisation in social science research, though it persisted among some economic, some education and most health analysts, largely because data were most readily available in this form.

Following the 2004 Review of Ethnicity, Statistics New Zealand recommended that researchers and policy makers no longer use ethnic prioritisation. Despite this recommendation and despite an increasing proportion of health data being available in other formats, many health researchers continue to use the system. While many of the studies using prioritised data are published in overseas journals,[7–10] recent examples can be found in this medical journal.[11,12]

So what effect does the continued use of prioritisation have? While each survey will have different characteristics, the five yearly Census of Population and Dwellings allows some tracking of the effect over time.

Table 2 compares the difference in size of each grouping of ethnicities when total responses are used and when the data have been prioritised. For example, in 2006 the

Pacific population is 14.9% larger than prioritised data would suggest even though the Pacific grouping has second ranking in the prioritisation system. The Table shows a loss across all age groups for every ethnic group except Māori, which is accorded the highest priority. The difference in numbers is a result of people who gave multiple responses.[14]

The greatest loss is experienced in the two youngest age groups and is shown to progressively extend into older age groups over time. This reflects the increasing number of children/younger people with multiple ethnicities due to ethnic intermarriage and changes in how people report their ethnic identification.[15]

More significantly though, this progressive extension shows that the effect has both age group and cohort implications. These data suggest that currently the main distorting effect of prioritisation is for studies that focus on young people, for example rates of child immunisation, but any continuation of a prioritised ethnic frame would have increasing significance for health monitoring of older age groups.

Table 3. Percentage understatement of prioritised ethnic counts compared with total responses, 1991, 1996, 2001 and 2006 Censuses

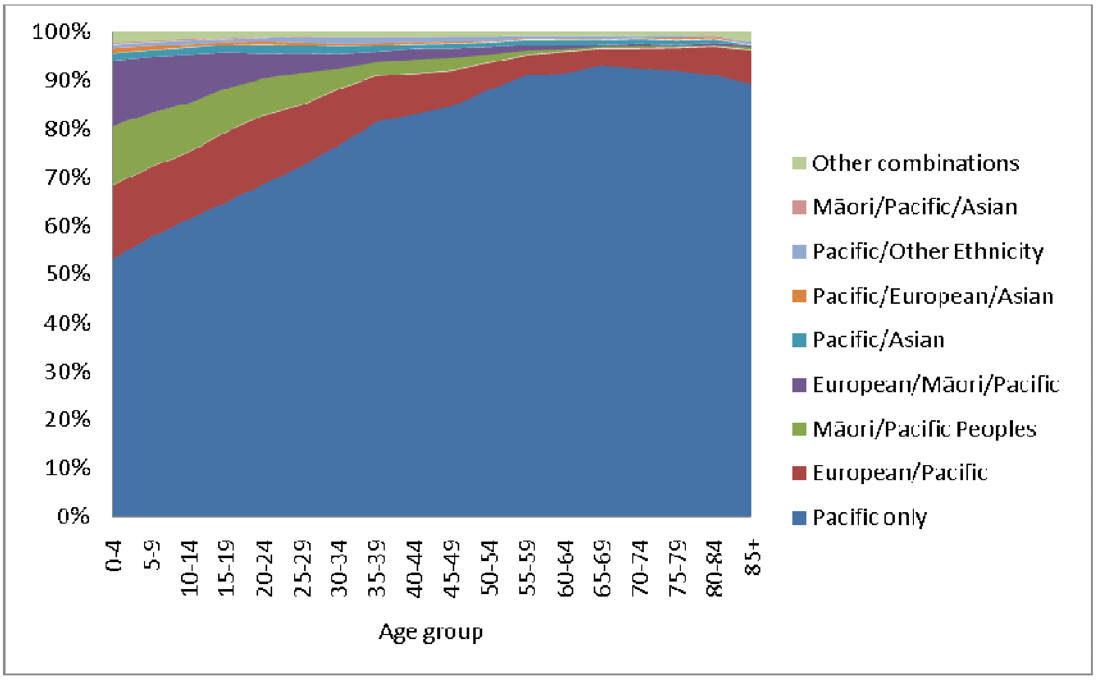
Ethnicity	Year	Age groups								Total
		Under 15	15-19	20-24	25-29	30-34	35-39	40-44	45+	
European	1991	11.6	8.1	5.4	4.4	3.5	2.8	2.0	1.1	4.7
	1996	24.4	19.4	14.7	11.8	10.1	8.2	6.6	3.3	11.0
	2001	24.0	17.2	15.4	12.4	9.1	7.4	5.9	2.6	10.0
	2006	21.4	16.6	14.1	13.0	10.4	8.2	6.8	3.2	10.1
Māori	1991	0	0	0	0	0	0	0	0	0
	1996	0	0	0	0	0	0	0	0	0
	2001	0	0	0	0	0	0	0	0	0
	2006	0	0	0	0	0	0	0	0	0
Pacific	1991	18.4	9.5	5.0	4.4	4.1	2.5	1.7	1.0	9.2
	1996	30.0	20.9	12.8	8.7	7.8	7.8	5.6	4.4	16.8
	2001	29.5	18.5	14.4	9.1	6.4	6.4	5.8	2.6	15.8
	2006	24.7	17.6	13.7	11.6	8.1	5.8	5.8	3.3	14.9
Asian	1991	10.7	9.6	6.3	3.8	2.7	2.9	3.6	3.1	6.1
	1996	13.3	8.5	9.2	8.2	5.3	4.2	4.0	4.7	8.0
	2001	10.5	4.5	4.8	5.2	4.1	2.7	2.4	2.5	5.1
	2006	8.4	4.4	2.4	3.0	3.1	2.7	1.9	2.0	3.9
MELAA	1991	13.9	9.9	5.1	4.9	3.0	2.3	1.2	2.6	6.5
	1996	19.8	16.9	12.6	8.1	6.7	8.9	7.4	5.3	12.0
	2001	14.4	8.1	7.8	5.5	3.4	4.5	4.1	3.8	7.7
	2006	11.7	6.2	4.4	2.8	2.2	2.2	2.3	2.8	5.6

Note: For consistency, "Other" (predominantly New Zealander responses) has been included with European for 2006 Census and the group labelled "Other" prior to 2006 is here labelled "MELAA" (=Middle Eastern, Latin American and African).

Source: Census of Population and Dwellings, Statistics New Zealand.

But Figure 1 suggests that there may be more subtle distortions amongst older age groups. While single ethnicity remains more common amongst older people this reverses somewhat in the oldest age groups. The primary reason for this appears to be longer life expectancy for those Pacific people with multiple ethnic affiliations, specifically better outcomes for those recording Pacific and European.[16] This pattern also holds for the Māori ethnic group. Prioritised data would disguise this pattern.

Figure 1. Main single and combination ethnic responses, Pacific ethnic group, 2006



Source: Census of Population and Dwellings, Statistics New Zealand.

As a further complication for researchers, migration has an effect on the degree to which groups other than Māori lose population due to prioritisation.[17] For example, if we compare the data in table 3 for 2006 with the portion of the 2006 which had been in New Zealand in 2001, as shown in Table 4, we see a more diverse population. Partly this indicates that new migrants tend to identify initially with ethnicities in a single grouping, though many may diversify ethnically as they settle and their lives integrate with other New Zealanders.

Table 4. Percentage understatement of prioritised ethnic counts compared with total responses for people in New Zealand 5 years previously, 2006 Census

Ethnicity	Under 15	15-19	20-24	25-29	30-34	35-39	40-44	45+	Total
European and other	21.9	16.9	14.5	14.2	11.5	8.7	7.0	3.2	10.4
Māori	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific	25.9	19.1	15.2	12.7	8.8	6.1	6.1	3.5	16.0
Asian	10.9	7.5	4.7	5.3	5.3	4.2	2.8	2.4	5.8
MELAA	15.1	9.9	7.3	5.3	4.0	3.6	3.4	3.4	8.4

Source: Census of Population and Dwellings, Statistics New Zealand.

Similarly, Table 5 considers only people born in New Zealand. This shows the much stronger affect of partnering and re-partnering within New Zealand, especially on the subsequent generation, and the diversification of the New Zealand born population across all age groups. Any ethnic based study of the health in older New Zealand born people is potentially much more affected by prioritisation than for those born overseas.

Table 5. Percentage understatement of prioritised ethnic counts compared with total responses for people born in New Zealand, 2006 Census

Ethnicity	**Age groups**								**Total**
	Under 15	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45+**	
European and other	22.4	17.5	15.0	14.3	11.8	9.4	7.8	3.7	11.4
Māori	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific	27.6	21.6	20.7	19.2	16.5	15.5	19.0	25.3	24.2
Asian	13.4	17.5	20.3	27.9	29.2	27.3	21.8	19.2	16.3
MELAA	21.2	36.2	32.5	29.9	33.3	34.4	35.0	25.2	24.1

Source: Census of Population and Dwellings, Statistics New Zealand.

The recognition of multiple ethnicities is important in making comparisons between different ethnic groups as people reporting several ethnicities may have different characteristics from those who do not, and each of the combinations may have different characteristics from each other as well as from the contributing groups.

While prioritisation does not affect the number of people of Māori ethnicity, it is important to recognise that approximately half of all Māori identify with other ethnicities. Pacific children are an example of the significance of this. Whereas prioritisation provides a total count for Māori, prioritised data effectively remove more than a quarter of the Pacific children from their count.

Even though prioritised data do provide a total count for Maori, it remains problematic for Māori from a different perspective. It camouflages multiple ethnicity within Māori. There is much research showing that those reporting only Māori or only Pacific ethnicities (and those with both Māori and Pacific ethnicities) tend to have poorer outcomes across a range of non-health measures than do those reporting Māori or Pacific and European ethnicities.[18,19]

Using a variety of data sources, Kukutai has found that those who have a strong Māori identification seem to be more disadvantaged than those with “thinner” ties to Māori identity.[20] Some exploratory health research also showed differences in mortality rates between ‘sole’ Māori and Māori reporting more than one ethnic group.[16] The reasons for these differences are far from clear.[20]

The distinction between sole and mixed groups is only part of the story, though. Differentials within Pacific point too to another aspect of diversity of high importance for health researchers. Māori is recorded as a single ethnicity so it is not easy to demonstrate diversity within either “sole” Māori or “mixed” Māori.

Symptomatic evidence of such diversity has been shown by recent work by Tony Blakely and his team. This work demonstrated that there are significant differences in mortality between different Pacific ethnicities, with, for example, Cook Island, Samoan and Tongan mortality rates varying markedly from each other strongly suggestive that heterogeneity within even the “sole” major groupings such as Pacific needs to be taken into account in policy formulation.[21]

The within-ethnic-group differences are disguised not only by prioritisation but also by total counts. This is a consequence of grouping ethnicities into collectives. However, prioritisation exacerbates this and makes it difficult to even start developing hypotheses and research instruments to determine the underlying causes of new or emerging ethnic inequalities on the basis of large heterogenous groupings. This is transparently clear for groupings such as Asian and Pacific, but has implications for groups we often treat as unitary.

As an example, the small but important rise in melanoma amongst Māori identified by using prioritised data may possibly be concentrated amongst those recording Māori and European ethnic groups.[22] Because prioritisation changes the relativity between groupings, this may be due to the shifting of groups with higher melanoma incidence into the Māori group, the moving of groups with lower incidence out of Maori or a consequence of ongoing interethnic partnering.[15,16,23]

In turn, this might be due to shifts in skin colour within the wider Māori ethnic group. While skin colour data would be needed to fully test this hypothesis, abandoning prioritised ethnicity data as a surrogate would be a useful first step to help better understand this recent shift and to better understand the relationship between incidence among Māori and among Pacific.

Conclusion

Despite a recommendation by Statistics New Zealand in 2004 that ethnic prioritisation no longer be utilised in research, its use continues within the health research community for the two reasons that it is mathematically simpler within epidemiological models and much recent historical health data are only available in this form.

We consider the benefits of using this system are greatly outweighed by the costs. Where possible, single and combination ethnic responses should be examined and, where single groups are required, total counts used.

We recognise that total counts are overlapping categories, and this can present some challenges for some statistical modelling approaches. But new methods need to be developed to handle complex ethnic, rather than using potentially misleading output methods simply to fit data into models.

There are two key reasons: this is an increasingly extensive feature of the populations of interest and understanding the phenomenology of pathologies requires a robust valid basis if the populations are to be disaggregated along ethnic lines.

Finally, some older datasets will require some continued use of prioritised data. However, when reporting such data researchers need to take care in relation to what patterns such data may be disguising.

The principal concern remains that for ongoing analytical work with contemporary data, datasets should be designed to accommodate multiple analytical strategies at a range of scales to better understand the relationship between social identification parameters and biomedical data.

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References:

1. Graham P, Jackson R, Beaglehole R, de Boer G. The validity of Māori mortality statistics. New Zealand Medical Journal 1989;102:124–126.
2. Pomare E, Keefe-Ormsby V, Ormsby C, et al. Hauora: Māori Standards of Health III. Wellington: Eru Pomare Māori Health Research Centre, 1995.
3. Te Ropu Rangahau Hauora a Eru Pomare. Counting for nothing: Understanding the issues in monitoring disparities in health. Social Policy Journal of New Zealand 2000;16:1–16.
4. Shaw C, Atkinson J, Blakely T. (Mis)classification of ethnicity on the New Zealand Cancer Registry: 1981–2004. New Zealand Medical Journal. 2009;122(1294):10–22.
5. Kukutai T, Callister P. A ‘main’ ethnic group? Ethnic self prioritisation among New Zealand youth. Social Policy Journal 2009;36:16–31.
6. Kukutai T. The problem of defining an ethnic group for public policy: Who is Māori and why does it matter? Social Policy Journal of New Zealand 2004;23:86–108.
7. Harris R, Tobias M, Jeff M, et al. Effects of self-reported racial discrimination and deprivation on Māori health and inequalities in New Zealand: cross-sectional study. Lancet 2006;367:2005–09.
8. Jeffreys M, Stevanovic V, Tobias M, et al. Ethnic inequalities in cancer survival in New Zealand: Linkage study. American Journal of Public Health 2005;95(5):834–837.
9. Blakely T, Fawcett J, Hunt D, Wilson N. What is the contribution of smoking and socioeconomic position to ethnic inequalities in mortality in New Zealand? The Lancet 2006;368(9529):44–52.
10. Stevens W, Stevens G, Kolbe J, Cox B. Ethnic differences in the management of lung cancer in New Zealand. Journal of Thoracic Oncology 2008;3(3):237–244.
11. Richardson A, Fletcher L, Sneyd M, et al. The incidence and thickness of cutaneous malignant melanoma in New Zealand 1994–2004. New Zealand Medical Journal 2008;21(1279):18–26.
12. Harris R, Robson B, Curtis E, et al. Maori and non-Maori differences in caesarean section rates: a national review. New Zealand Medical Journal 2007;120(1250). http://journal.nzma.org.nz/journal/120-1250/2444/content.pdf
13. Jatrana S, Crampton P, Richardson K. Continuity of care with general practitioners in New Zealand; Results from the SoFIE-Primary care. New Zealand Medical Journal 2011;124(1329):16-25. http://journal.nzma.org.nz/journal/124-1329/4536/content.pdf
14. Didham R. Understanding and working with ethnic data. Wellington: Statistics New Zealand, 2005.
15. Callister P, Didham R, Kivi A. Who are we?: The conceptualisation and expression of ethnicity. Official Statistics Research Series, Volume 4, Wellington: Statistics New Zealand 2009.
16. Callister P, Blakely T. Ethnic classification, intermarriage, and mortality: Some methodological issues in relation to ethnic comparisons in Aotearoa/New Zealand. Working Paper, Wellington School of Medicine 2004.

17. Didham R. The Impact of Prioritisation on the Interpretation of Ethnicity Data. Wellington: Statistics New Zealand, 2011.
18. Callister P, Didham R, Potter D, Blakely T. Measuring ethnicity in New Zealand: developing tools for health outcomes analysis. Ethnicity & Health 2007;12(4):299–320.
19. Engler R. School leavers' progression to bachelors-level study. Wellington: Ministry of Education, 2010.
20. Kukutai T. The thin brown line: re-indigenizing inequality in Aotearoa New Zealand. Unpublished PhD, Stanford University, 2010.
21. Blakely T, Richardson K, Young J, et al. Does mortality vary between pacific groups in New Zealand?: Estimating Samoan, Cook Island Maori, Tongan and Niuean mortality rates using hierarchical Bayesian modelling. New Zealand Medical Journal 2009:122(1307):18–29. http://journal.nzma.org.nz/journal/122-1307/3910/content.pdf
22. Sneyd MJ, Cox B. Melanoma in Maori, Asian, and Pacific peoples in New Zealand. Cancer Epidemiology Biomarkers and Prevention 2009;18(6):1706–1713.
23. Callister P, Didham R, Potter D. Ethnic Intermarriage in New Zealand. Wellington, Statistics New Zealand, 2005.

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Biological glue for persistent airleak: a case report

Paul Tan, Cindy Lee, Lutz Beckert

Abstract

We report the case of a pneumonthorax in 95-year-old man with three management issues: a wrongly placed drain despite fluoroscopic guidance; the need for a larger drain because of the size of the pneumonthorax; and the use of fresh frozen plasma (FFP) as a biological glue for an ongoing airleak.

Case report

A 95-year-old man presented initially with a right toe pain secondary to osteomyelitis and was treated in hospital with intravenous antibiotics. He developed dyspnoea whilst in hospital and a chest X-ray revealed a large right-sided pneumothorax for which he underwent a fluoroscopic insertion of a right pleurocath. He had ongoing symptoms following the pleurocath insertion and clinical assessment revealed a non-functioning tube.

A CT chest showed a malpositioned pleurocath, outside the pleural space positioned underneath the right pectoral muscle, emphysematous changes including a large right lower lobe bullae and a persistent large right pneumothorax,

Figure 1. Serial chest X-rays showing progressive improvements and subsequent resolution of the pneumothorax

A 12 Fr Rocket drain was inserted. The patient made some symptomatic improvements however the lung did not inflate fully. Because of the ongoing air leak a larger a 24 Fr drain was inserted as per the BTS guidelines.[1] Despite these changes the patient had ongoing air leak and radiological unresolved pneumothorax.

On day 16 he underwent a pleurodesis with 100 ml of FFP which was instilled into his pleura via his intercostal drain. His air leak stopped within a few hours and his pneumothorax resolved both clinically and radiologically. His intercostal drain was removed on day 18, he was discharged from hospital and has not had a relapse of his pneumothorax.

Discussion

This case highlights three management aspects:

- Chest drains may be inserted wrongly even when fluoroscopy is used. Ongoing clinical and radiological assessment is needed.
- Although the use of small less invasive pleural catheter is recommended in the first instances some patients with large pneumonthorax occasionally need a large bore chest tube or a second chest tube inserted.
- Biological glue is especially suitable for older patients (with multiple comorbidities) who may not be candidates for surgical intervention.

The current BTS guidelines suggest consideration of chemical pleurodesis if the patient is unwilling or unable to undergo surgery. The chemical agents generally used are talc or doxycycline.[1] Given the problems sourcing intrapleural doxycycline and the reported adverse effects of talc, we decided on FFP as a biological glue for this patient.[2]

Fibrin is considered a biological glue, the substrate of which can come from plasma in the form of cryoprecipitate or fresh frozen plasma. Two small studies have shown promising outcomes of resolution and reduced recurrence of pneumothoraces in the use of biological glue in patients with persisting air leaks. Methods of instillations include directly into the pleural space via the intercostals drain or selective intrabronchial tamponade.[3]

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References:

1. BTS guidelines for the management of spontaneous pneumothorax. Thorax 2003;58:ii39–ii52 doi:10.1136/thorax.58.suppl_2.ii39.
2. AF Matar, JG Hill, W Duncan, N, Orfanakis. Use of biological glue to control pulmonary air leaks, Thorax 1990;45:670-674 doi:10.1136/thx.45.9.670.
3. Rehse DH, Aye RW, Florence MG. Respiratory Failure Following Talc Pleurodesis. Am J Surg. 1999 May;177(5):437–40.

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Leukaemia cutis in myelomonocytic leukaemia

Mita Manna, Habib U Rehman

Clinical—An 84-year-old man presented with a 2-year history of worsening thrombocytopaenia and monocytosis with an associated painless plaque-like erythematous rash on his back and chest (Figure 1).

Figure 1. Patient with erythematous rash

Physical examination showed an erythematous malar rash sparing the nasolabial folds and involving the front and back of the upper chest and hepatosplenomegaly with no appreciable lymphadenopathy. A biopsy taken from the upper back demonstrated dermal interstitial infiltrate of mature histiocytic cells with occasional cells containing larger, atypical nuclei with conspicuous nucleoli. By immunohistochemistry these cells stained for CD68, confirming histiocytic differentiation and were negative for CD43/117/myeloperoxidase.

A bone marrow biopsy and aspirate with flow cytometry showed the patient to have *chronic myelomonocytic leukaemia-1* (CMML-1).

Discussion—CMML is a myelodysplastic/myeloproliferative disorder characterised by monocytosis and associated anaemia and/or thrombocytopaenia. Skin infiltration by leukaemic cells, known as leukaemia cutis, is a frequent feature of acute monoblastic leukaemia but is rare in CMML.

Lesions may be erythematous maculopapular rash, numerous widespread skin nodules, localised bullous lesions or a widespread itchy rash.

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Response to Dr Sinéad Donnelly's 'Debates on euthanasia' editorial

We thank Dr Sinéad Donnelly for her considered and personal comments[1] about our recent paper[2] in the *NZMJ*.

Donnelly writes that "care of the person who is dying is not an issue for debate". We respectfully disagree. What constitutes care of the dying person must be examined and deliberated if it is to reflect what patients (and their families) want.

Our study clearly found that the care given to some dying people (friends and family of our participants) was experienced as inadequate and poor, leading them to wish for an assisted death were they ever to be in a similar situation.

We agree with Donnelly that better medical care for older people is needed, especially near the end of life when patients are uniquely vulnerable to the medical care they are the recipients of (for better or worse).

The issue of 'being a burden' was one of several themes that arose from our interviews with participants. Although some of our people spoke about their concern at becoming a burden on others, many spoke of their fear of becoming a burden on themselves. In other words, they feared becoming someone they did not want to become—someone they no longer recognised. This was voiced as a fear of losing independence and of increasing dependence.

We should not necessarily view this concern as a reflection on society's lack of care towards older people as Donnelly suggests, but rather as a way in which some people view losing control of one's life. Thus one important aspect that arises is how society responds to the person who believes they have come to the end of their life and who wants the right to choose how they would wish that end to come.

A person may wish to end their life at a time of their choosing rather than using their financial resources to sustain a life which they no longer value, preferring rather to leave that money to benefit others (either in the community or their own families)—and that is also what our respondents said.

One of the findings that came out of this small study was a need to further explore what 'being a burden' means for people. As Donnelly rightly notes, we are all burdens on others at various times in our lives. If a person has lived their life making authentic choices and decisions for themselves (and others they deeply care for), fearing becoming a burden at the very end of life may be something they are not prepared to accommodate or accept.

Whilst we agree with Donnelly that such a reason (for an assisted death) is not a reason to legislate for euthanasia, it is a reason to listen very carefully to their choices around medical care at the end of life especially if a patient is refusing medical treatment that is life-sustaining.

Donnelly disagrees with our claim that euthanasia is legalised in carefully qualified situations, and quotes the work of Margaret Somerville and others to show that a slippery slope exists in both Oregon and the Netherlands. However there are many prominent scholars and researchers who challenge that view. For instance, Margaret Batten et al,[3] state that in relation to vulnerable people, *"there is no current factual support for so-called slippery-slope concerns about the risks of legislation of assisted dying – concern that death in this way would be practiced more frequently on persons in vulnerable groups"*.

Of course this does not mean that abuses could not happen; it means that a society in which assisted dying is legally permissible must be vigilant to ensure procedures are in place to protect vulnerable people.

Dutch researchers[4] recently assessed frequency and characteristics of euthanasia, physician-assisted suicide and other end of life practices in 2010, and assessed trends since 1990 in the Netherlands. They conclude that *"euthanasia and physician-assisted suicide did not shift to different patient groups and the frequency of ending life without explicit request continued to fall"* (Ibid., 8).

Donnelly claims that "legalisation of euthanasia creates societal pressure on vulnerable populations, such as people with disabilities, to end their lives". Presumably the same could be said for legally allowing adults to refuse any medical treatment and care even when such a decision leads to certain death: this is every New Zealander's right under the Bill of Rights[5] and the Health and Disability Code of Consumers' Rights.[6]

We do not wish to be pedantic but on such an emotional topic, language is important. Donnelly comments on, *"healthy older people advocating euthanasia"*. Although our participants are members of an organisation that supports legal medical assistance in dying, in this study they were not advocating euthanasia; rather they discussed their reasons for supporting the availability of a medically assisted death.

But perhaps more importantly, the questions and concerns that Donnelly raises in her paper about end-of-life care in New Zealand are crucial and must be addressed. We need more discussion and research that explores what New Zealanders think about medical hastening of death so that what is significant to people can be addressed.

For some people, better palliative care (or even access to palliative care) may be the answer in addressing and ameliorating end of life concerns; for others it may be access to an assisted death at a time of their choosing.

Do our doctors and nurses consider assisting a patient to die (in some circumstances) part of their professional role? What do patients who are terminally ill want? What do our disabled community want?

In many cases we simply do not know; but we ought to be asking. To that end we have recently completed interviewing older New Zealanders who are opposed to medical practices that hasten dying.

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References:

1. Donnelly S. Debates on euthanasia. N Z Med J 2012;125(1358):5–8. http://journal.nzma.org.nz/journal/125-1358/5263/content.pdf
2. Malpas PJ, Mitchell K, Johnson MH. “I wouldn’t want to become a nuisance under any circumstances”—a qualitative study of the reasons some healthy older individuals support medical practices that hasten death. N Z Med J 2012;125(1358):9–19. http://journal.nzma.org.nz/journal/125-1358/5256/content.pdf
3. Battin MP, van der Heide A, Ganzini L, et al. Legal physician-assisted dying in Oregon and the Netherlands: evidence concerning the impact on patients in “vulnerable” groups. JME 2007;33:591–597.
4. Onwuteaka-Philipsen BD, Brinkman-Stoppelenburg A, Penning C, et al. Trends in end-of-life practices before and after the enactment of the euthanasia law in the Netherlands from 1990 to 2010: a repeated cross-sectional survey. The Lancet (Published Online July 11). http://press.thelancet.com/netherlands_euthanasia.pdf
5. Ministry of Justice. New Zealand Bill of Rights Act. Ministry of Justice. Wellington: NZ Government, 1990.
6. Health and Disability Commissioner. Code of Health and Disability Services Consumers' Rights. Health and Disability Commissioner. Wellington, NZ Government, 2009.

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NZMA
New Zealand Medical Association

Outpouring of public support for wider smokefree area policies in New Zealand

Background—New information on public support for new smokefree policies in New Zealand comes from a very large (n=20,792) poll of public opinion. The poll was run on the Stuff website below an article on possible differences between political parties (National and Maori parties), about the nature of the Government's Smokefree 2025 policy. The article was headed *Total smoking ban too difficult – Key.*[1]

The poll took one aspect of the ending of tobacco use, smokefree areas. The question asked was: *Where should smoking be banned?* Six options were provided (only one could be selected). Comments could be made below the article in the Stuff website.

Poll results—As of 26 July 2012 at 12.15 pm, the results (out of n=20,792 votes) were:

- 'Everywhere' (i.e., ban everywhere): 8362 votes (40.2%)
- 'In all public places': 6838 votes (32.9%)
- 'Outside bars and offices': 465 votes (2.2%)
- 'In cars': 307 (1.5%)
- 'In homes with children' 1552 votes (7.5%) and
- 'Nowhere': 3268 votes (15.7%)

In addition, 144 comments were added by viewers below the article in the 29-hour period from 8.40 am 23 July, to 1.47 pm, 24 July, 2012 (the discussion thread appears to have been closed off then).

Discussion—The voters in an online poll such as this are a highly self-selected group. The respondents were by definition limited to those who: (i) have Internet access; (ii) accessed this particular online news source (Stuff); (iii) were interested in the particular article headline enough to at least glance at the article; and then (iv) were motivated enough to click the online voting mechanism.

However, over 20,000 people were motivated to give their view of the single smokefree situation they would most like. One interpretation of the results is that when provided with these six options, 15,200 people (73%) indicated that they wanted either no smoking anywhere, or no smoking in public places (with an extra 11% wanting smokefree cars, sidewalks or homes with children).

There is some other evidence for this level of support for change from New Zealand surveys of the public that were designed with proper scientific rigour. In a 2010 nationally representative survey, 76% (54% of smokers) agreed that 'smoking should be banned in all outdoor public places where children are likely to go'.[2] In four other such national surveys between 2008 and 2010, between 43 and 57% of respondents have agreed with the statement that: 'cigarettes and tobacco should not be sold in New Zealand in ten years time.'[3]

Majority support for some new smokefree areas also comes from surveys only of smokers. These areas include cars with pre-school children, anywhere in outdoor eating areas, at council-owned playgrounds, and within 5 metres of entrances to public buildings.[4,5]

Collectively, this picture suggests that both central government and local governments would be supported by most New Zealanders in doing more to develop smokefree areas in their jurisdictions.

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References:

1. Levy D. Total smoking ban too difficult – Key. Stuff. Wellington. July 23, 2012. Accessed July 26, 2012. http://www.stuff.co.nz/national/politics/7328948/Total-smoking-ban-too-difficult-Key
2. Trappitt R, Li J, Tu D. Acceptability of smoking in outdoor places where children go: Health and Lifestyles Surveys 2008-2010. Health Sponsorship Council. Wellington. June 2011. Accessed July 25, 2012. http://www.hsc.org.nz/sites/default/files/publications/In%20Fact%20-SF-acceptability%20outdoors%20children-110608.pdf
3. Trappitt R, Li J, Newcombe R. Public support for the End Game: HSC's Health and Lifestyles Survey. Health Sponsorship Council. Tobacco-free Aotearoa Conference 2010, Auckland. 4-5th November, 2010. Accessed November 10, 2010. http://www.smokefree.co.nz/conference2010/ppts-tobacco/103.pdf
4. Wilson N, Blakely T, Edwards R, et al. Support by New Zealand smokers for new types of smokefree areas: national survey data. N Z Med J 2009;122(1303):80–9.
5. Thomson G, Wilson N, Weerasekera D, et al. Most smokers support smokefree council-owned playgrounds: national survey data. N Z Med J 2009;122(1291):122–3.

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The heating of the dark: an agony in Christchurch

(With thanks and apologies to Lewis Carroll)

“Preface: I will not (as I might) point to the strong moral purpose of this poem.”[1]

And fogs arose around the River Thames in 1952 and powerful Snarks were jumping out of coal fires, buses, trucks and cars. They entwined themselves in the fog and caused thousands of people to die. ‘We must search for these Snarks and deal with them’ said Dr WHO. The family of Snarks that lived in coal was banished. Some were sent to China and Japan where there were Dragons which consumed them.

All seemed satisfactory for a time but in most countries excess deaths continued in the winter. Was there another family of Snarks causing problems? Was there something wrong with our houses? Everyone knows that a Snark can jump through glass of single thickness.

An even worse possibility was considered. Had the Snarks which had been sent to China and Japan produced offspring inside the dragons? These could have found new life in the cars, trucks and buses, made from the dragons’ droppings, and these could cause problems anywhere.

‘We must act quickly’ said Kapitan Minif-Eaw. We are “enveloped in absolute mystery.”[1] ‘We urgently need an update of our Ha’pence report’ to “ensure an objective assessment and avoid obvious errors which might mislead”.[2] ‘The expense of contracting-out does not matter—it sits in another column. Get like-minded people of standing, or those who have worked with us, to peer review the report. Don’t worry about contrary submissions or criticisms we have received. Ignore them. We must win the game.’

“Navigation was always a difficult art
Though with only one ship and one bell…
…the Captain they trusted so well
Had only one notion for crossing the ocean
And that was to tingle his bell.”[1]

In keeping with this, whilst there are several families of Snark, the Updated Ha'pence Report remained blinkered by the one which lives in PM_{10}. Although “particles of different sizes typically have different sources and different chemical and biological composition (and) the mechanisms of particle toxicity are complex and still not fully understood… all PM_{10} is considered equally toxic.”[3]

Whilst “assessment of air pollution effects should ideally include an appraisal of the sum of scientific evidence from laboratory, clinical and epidemiological studies, that…is beyond the scope of this report.”[3] Although “there is evidence that both proximity to busy roads and nitrogen dioxide exposure have important health impacts it was not possible to quantify these exposures..”[3]

Geocoding of health outcomes “is not sufficiently accurate for studies based on proximity to roads. There is insufficient representative nitrogen dioxide monitoring data on which to base an assessment of human exposures…PM_{10} has more extensive local observations than any other pollutant."[3]

Therefore, "PM_{10} is the best available indicator of air pollution exposure currently in New Zealand...Although $PM_{2.5}$ rather than PM_{10} is increasingly used in overseas assessments, there is insufficient information currently available in New Zealand to undertake a robust assessment of $PM_{2.5}$ effects."[3]

"The Jury had each formed a different view
(Long before the indictment was read)"[1]

This report, funded by Kapitan Minif-Eaw and three other sponsors, "may be used by New Zealand Government agencies as a reference in the development of policy."[3] 'After all', said Kapitan Minif-Eaw 'decisions are more efficient if you ignore information that doesn't fit. A "weight of evidence" approach is less arduous, uncertain or time-consuming than trying to find the truth or prove untruth. It will give an answer when scientists are still unsure. Although the scientific evidence does not prove causation, I am sure that PM_{10}, including salt-spray PM_{10} and dust PM_{10}, is the cause of premature death.

"But it knows any friend it has met once before
It never will look at a bribe
And in charity-meetings it stands at the door
And collects—though it does not subscribe."[1]

Kapitan Minif-Eaw continued: 'Our job is to maintain clear rules and regulations based on our judgement. Our provincial staff will then be able to properly carry out their duty.' So Leutnant He-man listened to the words of Kapitan Minif-Eaw who was the superior line-administrator.

Dr WHO, by contrast, was an external adviser whose guidelines could be interpreted as the Kapitan liked, including the advice that occasional higher levels of PM_{10} were of much less concern than sustained high levels. Leutnant He-man decided to prohibit the use of open fires and encourage people to change from wood burners to electricity. The city was now very dependent on one source of heating.

"The bowsprit got mixed with the rudder sometimes. It was not the slightest use to appeal to the Bellman about it—he would only refer to his Naval Code and read out in pathetic tones Admiralty instructions which none of them had ever been able to understand."[1]

A giant Taniwha arose from the swamp and shook the buildings. Many people were killed. Fortunately, the weather was mild and the Snark could not cause too many more deaths. 'But wait' It said, 'next year there will be cold weather and I may have a new strain of flu virus to help me. Then you will feel my ongoing power. The need for warmth will force poor people to crowded places like shopping malls where I shall also attack.' And the people were frightened, many houses had been shattered, and at times the electricity had failed.

Leutnant He-man was worried. He consulted Kapitan Minif-Eaw. 'The people are restive. Some still want their wood burners. Others do not believe all that we tell them. What shall we do?' 'They need answers and truth' said Kapitan Minif-Eaw.

‘The expense does not matter—anyway, the ratepayers are paying. We must win the game. Take out three full-page advertisements.’ After all,

“What I tell you three times is true.”[1]

‘I’ll give it to them then’ said Leutnant He-man. “We have spent $46 million on the problem. Home heating is the major cause of pollution; and it’s PM_{10} particles which are responsible; we must now meet a national target of three high pollution days a year by 2016 and only one by 2020; air pollution in Christchurch results in 158 premature deaths annually in those aged 30 years and over; new homes are not permitted to install wood burners or open fires; this includes new homes being rebuilt due to the quakes; we are concerned for people in difficult circumstances after the earthquakes.”[4]

“They claimed it with smiles and soap.”[1,5]

Kapitan Minif-Eaw addressed his staff. ‘Although Europe allows 35 days in excess each year and America allows up to three times the level once a year, this has no bearing on our situation. We should lead the world and then we will be admired in International Forums—well—at least for our audacity.’

As darkness descended, the fire hearths and wood stoves remained cold. Increased admissions to hospital of patients with severe flu caused some consternation. The continuing excess deaths in winter raised questions in the Parliament.

Kapitan Minif-Eaw found it difficult to respond and Leutnant He-man said he was only doing his duty by carrying out orders. Kapitan Minif-Eaw pointed out ‘The experience of pursuing this social experiment on the basis of an unresolved theory is not all negative. Other countries will benefit from our mistakes. I am, however, concerned about my staff at this time of employment uncertainty, and even for their physical safety because the Snark might turn out to be a Boojum.’

“……..beware of the day
If your Snark be a Boojum! For then
You will softly and suddenly vanish away
And never be met with again.”[1]

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References:

1. Lewis Carroll, The Hunting of the Snark. An agony in eight fits. eBooks@Adelaide 2007.
2. Currie K, Hunt D. Government response to air pollution articles in NZMJ. N Z Med J 2011; 124 (1335). http://journal.nzma.org.nz/journal/124-1335/4694/content.pdf
3. Updated Health and Air Pollution in New Zealand Study (HAPINZ Report) March 2012.
4. The Press, 23, 25, 26 June, 2012.
5. A reference to TH Huxley’s reply to “Soapy Sam” (Samuel Wilberforce), 1860. “ I would not be ashamed to have a monkey as an ancestor but would be ashamed to be connected with a man who used his great gifts to obscure the truth.”

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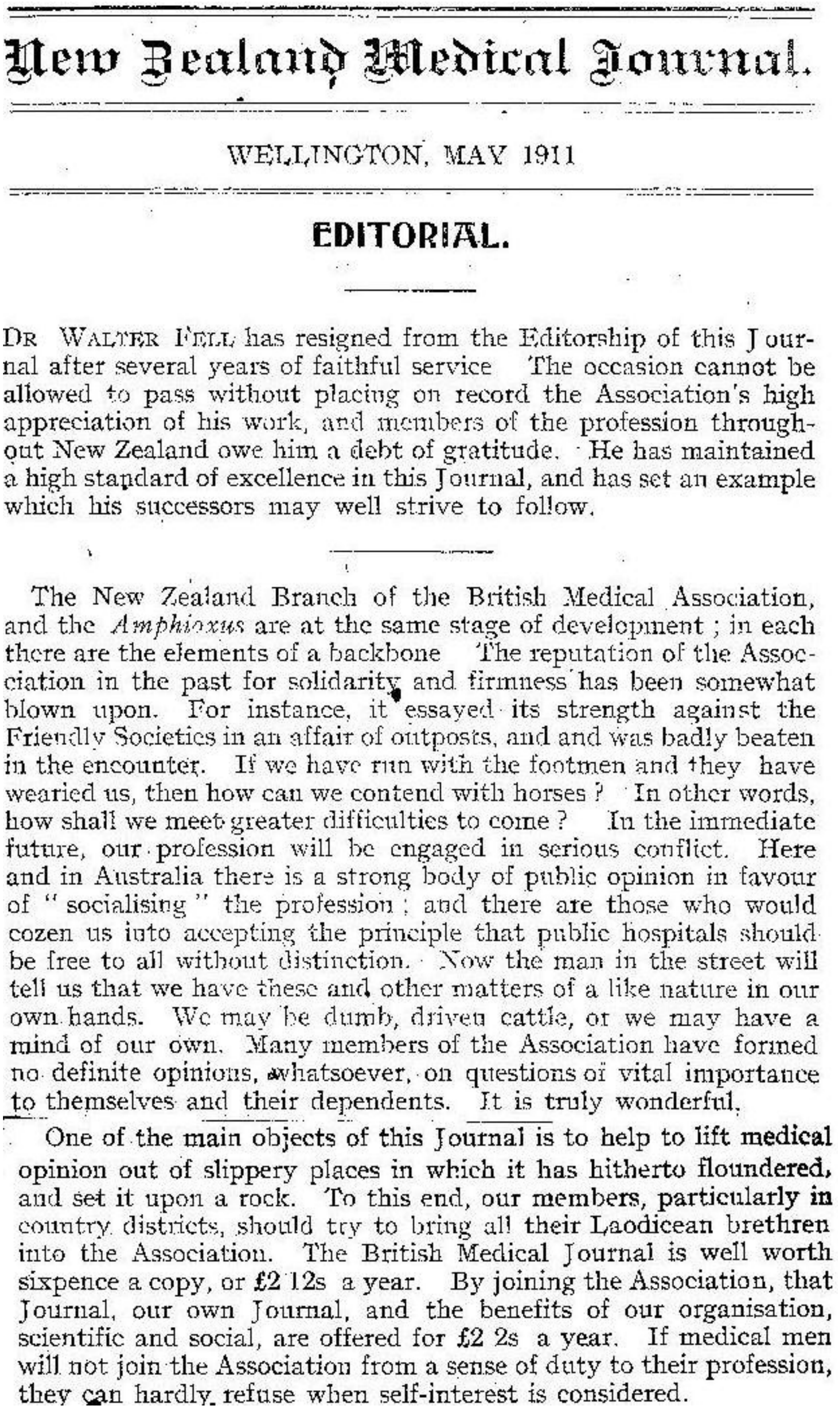
Dr Walter Fell and the New Zealand Branch of the British Medical Association

Excerpt from an editorial published in NZMJ 1911 May;10(38):28–31.



New Zealand Medical Journal.

WELLINGTON, MAY 1911

EDITORIAL.

DR WALTER FELL has resigned from the Editorship of this Journal after several years of faithful service The occasion cannot be allowed to pass without placing on record the Association's high appreciation of his work, and members of the profession throughout New Zealand owe him a debt of gratitude. He has maintained a high standard of excellence in this Journal, and has set an example which his successors may well strive to follow.

The New Zealand Branch of the British Medical Association, and the *Amphioxus* are at the same stage of development; in each there are the elements of a backbone The reputation of the Association in the past for solidarity and firmness has been somewhat blown upon. For instance, it essayed its strength against the Friendly Societies in an affair of outposts, and and was badly beaten in the encounter. If we have run with the footmen and they have wearied us, then how can we contend with horses? In other words, how shall we meet greater difficulties to come? In the immediate future, our profession will be engaged in serious conflict. Here and in Australia there is a strong body of public opinion in favour of "socialising" the profession; and there are those who would cozen us into accepting the principle that public hospitals should be free to all without distinction. Now the man in the street will tell us that we have these and other matters of a like nature in our own hands. We may be dumb, driven cattle, or we may have a mind of our own. Many members of the Association have formed no definite opinions, whatsoever, on questions of vital importance to themselves and their dependents. It is truly wonderful.

One of the main objects of this Journal is to help to lift medical opinion out of slippery places in which it has hitherto floundered, and set it upon a rock. To this end, our members, particularly in country districts, should try to bring all their Laodicean brethren into the Association. The British Medical Journal is well worth sixpence a copy, or £2 12s a year. By joining the Association, that Journal, our own Journal, and the benefits of our organisation, scientific and social, are offered for £2 2s a year. If medical men will not join the Association from a sense of duty to their profession, they can hardly refuse when self-interest is considered.

Hormonal contraceptives and arterial thrombosis

Although several studies have assessed the risk of venous thromboembolism with newer hormonal contraception, few have examined thrombotic stroke and myocardial infarction. This historical cohort study from Denmark followed 1,626,158 women aged between 15 and 49 years of age over a 15-year period. Subjects with a history of cancer or cardiovascular disease were excluded. Data concerning the use of contraceptives and the clinical end points were obtained from national registries.

The conclusions reached were that although the absolute risks of thrombotic stroke and myocardial infarction associated with the use of hormonal contraception were low, the risk was increased by a factor of 0.9 to 1.7 with oral contraceptives that included ethinyl estradiol at a dose of 20 µg and by a factor of 1.3 to 2.3 with those that included ethinyl estradiol at a dose of 30–40 µg, with relatively small differences in risk according to progestin type. An editorial commentator applauded the study and notes that women should be reassured by the results which document the small magnitude of the problem of arterial thrombotic events in women using estrogen/progestin contraception.

N Engl J Med 2012;366:2257–66 & 2316–18.

Zinc as an adjunct to antibiotic treatment in Asian infants with serious bacterial infection

Serious bacterial infections are a major cause of death in early infancy in developing countries. Inexpensive and accessible interventions that can add to the effect of standard antibiotic treatment could reduce infant mortality. This randomised trial report from Delhi, India concerns 700 infants aged between 7 and 120 days who were considered to have a serious bacterial infection. Half were treated with antibiotics and 10 mg of zinc daily orally or antibiotic and placebo. Significantly fewer treatment failures occurred in those taking zinc than placebo (10% vs 17% – relative risk reduction 40%). Ten receiving zinc died compared with 17 given placebo (relative risk 0.57).

Lancet 2012;379:2072–78.

Egg allergy in children alleviated by oral immunotherapy

Egg allergy has a cumulative prevalence of approximately 2.6% by 2.5 years of age, with allergic reactions varying in severity from mild urticaria to systemic anaphylaxis. This report concerns a randomised trial evaluating oral immunotherapy using egg-white powder for the treatment of children with egg allergy. 55 children, 5–11 years of age were randomised to an escalating dose of egg-white powder or placebo. In the oral-immunotherapy group, 28% (11 of 40 children) passed the oral food challenge at 24 months and were considered to have sustained unresponsiveness.

At 30 months and 36 months, all children who had passed the oral food challenge at 24 months were consuming egg. Very good news for a proportion of the subjects, bearing in mind how difficult it is to maintain an egg-free diet.

N Engl J Med 2012;367:233–43.

Total hip arthroplasty versus resurfacing arthroplasty

This randomised trial attempts to elucidate whether resurfacing arthroplasty provide better hip function than total hip arthroplasty in patients with severe arthritis of the hip. 126 patients were randomised to either total hip arthroplasty (replacement of femoral head and neck) or hip resurfacing arthroplasty (replacement of the articular surface of femoral head only). Both procedures replaced the articular surface of the acetabulum.

The researchers report that they saw no evidence of a difference in hip function in patients with arthritis of the hip, 1 year after receiving a total hip arthroplasty versus resurfacing arthroplasty. We can assume that the researchers will follow these patients for an extended period and report upon longer term outcomes.

BMJ 2012;344:e2147.

Exclusion of older people from clinical research

Exclusion of older people from clinical research, and of under-recruitment to clinical trials, is widespread. This problem has stark consequences, according to an expert committee of the European Medicines Agency (EMA). “The drugs we are using in older people have not been properly evaluated.” This is clearly of great importance considering the fact that the older generation are the fastest growing sector of the population.

There are several reasons for the exclusion. Exclusion of patients with comorbidity and cognitive impairment tends to keep older people out of trials. In addition, elderly patients were discouraged by a dislike of randomisation, concerns about the consent procedure, and practicalities such as transport. These are the problems but what is the solution? The EMA suggests that as the drug manufacturers sponsor drug trials they should be proactive. Simplification of information about trials and consent procedures would be helpful according to the EMA.

BMJ 2012;344:e3445.

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Stanley Peter Lay

Member of the NZ Order of Merit; MBChB 1956; Dip Obst 1967; FRNZCGP 1991 (10 August 1932 – 11 June 2012)

Peter was born in Stratford, Taranaki, the eldest of Olympic javelin thrower Stan and Ngaio Lay's four children.

He started school at Stratford Primary and was dux of Vogeltown, New Plymouth. His secondary schooling was at New Plymouth Boy's High where he excelled academically, in sport and as a leader.

My first glimpse of him was at Nelson College when he visited as Captain of the Cricket First XI, as an elegant and effective batsman.

Later while at medical school in Dunedin I remember him hitting a golf ball at Balmacewan Golf Course dead straight and almost 'out of sight'.

Peter was serious about contract bridge from an early age. As a resident of the 6th year students' quarters at Wellington Hospital in 1956 he encouraged other students to play and was a clear and patient teacher.

I also recall something of his style in preparing for final examinations. One day I saw him stretched out on the living room couch reading *Brain's Diseases of the Nervous System*, the hefty bible of neurology, like a novel!

I first saw Peter and Margaret together at the house surgeons quarters in 1957, the year before their marriage. The occasion would I think have been before a ball. They were a truly stunning pair, Peter tall and very handsome, Margaret exquisitely beautiful and blonde. I was also impressed by the knowledge that they had been keenly competitive in first-year science studies in Dunedin.

Peter had intended a career in orthopaedics but when serving out a second year of a medical bursary, as the sole general practitioner in the Special Area practice based at Collingwood, Golden Bay, he enjoyed the challenge and lifestyle. He then, to Margaret's surprise, suddenly bought a practice at Kaponga, Taranaki where he had spent childhood holidays and gone to school briefly. That was to last 10 years but extended to 40.

He was not renowned for a conventional 'bedside manner' but his patients 'knew' they were cared for and the standard of the medical care he provided, was excellent and comprehensive. He clearly took into account all relevant aspects of his patient's illness, family and life situation.

And he kept up-to-date. Kaponga, during the earlier years still had a maternity hospital. Through most of his time in practice he continued to deliver babies, some 2000 in all. He took time in 1967 to do the Diploma in Obstetrics at Auckland Hospital, and very much valued a close association over the years with Stratford obstetrician, Ross Gordon. He also enjoyed friendship and the ability to cover for each other, with Dr Ken Fox after he arrived at nearby Manaia.

If there was a motor accident or an accident on the 'Mountain' [Mt Taranaki], Peter would go. It was understood in the family that medicine came first and it was hard on his family at times. He always gave more than 150%. But there were compensations too. He shared with Margaret a great love in developing the beautiful extensive garden of their Kaponga home.

As a Medical Officer of Special Scale he was appointed as Visiting Physician to the Hawera Hospital, a position he held for 30 years and helped to establish and operate a local cardiology unit. There were changes over time with the shutting down, after many battles to keep it open, of the little Kaponga Maternity Hospital; practising from rooms provided by the district rather than from home and the development of outreach from the Taranaki Base Hospital at New Plymouth. But until the day he retired, he continued to run a coherent rural general practice. It was a sad day for the district when 'Dr Peter' left.

Community Service: Peter's abilities and energy also meant he contributed much more than just service to his patients. In 1964 he became a member, then chairman of the Kaponga Town Council. In the late 70s he was on the Eltham Council. He was chairman of the board of St Mary's Diocesan School for Girls, Stratford in the 1980s. He was a Life Member of Kaponga Fire Brigade and Life Member of the Kaponga Cricket Team. He was medical adviser the Order of St John and to the Egmont racing and Hawera trotting clubs.

Other Interests and Sport: Peter was a passionate gardener and together with Margaret created a beautiful garden which they often opened for charities and later the Taranaki Rhododendron Festival. It was a wonderful hobby to have when at home 'tied to the telephone'. My daughter, when little, wistfully eyed the pony grazing over the back fence and wondered if I was the "same kind of doctor as Dr Lay".

Peter played bridge at Hawera and later he and Margaret played together at Stratford and New Plymouth.

Peter was a fine cricketer. He won a University Blue at Otago, and a Cap for the University of New Zealand. He captained the Kaponga Cricket Team and played a few games for Taranaki but couldn't continue because of medical commitments.

He was of course also a low handicap golfer. However in a note to the organising committee of the medical class reunion in 1991 he wrote that his golf 'got worse every year'. My long-time golfing partner and I still recall the time, around then, when standing on the 265m elevated 6th tee of Wellington's hilly Ohariu Valley Club Peter casually took out a driver and hit the ball over the tall trees that then guarded the deep gully immediately in front of the green. To no-one's surprise it came to rest within easy reach of the hole! Peter loved his golf and continued to play regularly with a group of friends, including the late Dr Warren Muirhead, at New Plymouth after retirement.

He was an avid reader and loved listening to classical music. He was a keen and capable photographer. He was interested in advances in technology and one of the first doctors to computerise his records.

It was great for Peter to have Mt Taranaki on his doorstep, where he could go tramping and botanising. Margaret says he took some excellent plant photographs.

Awards: In 1991 Peter was made a Fellow of The Royal New Zealand College of General Practitioners and in 1998 was honoured with Membership of The New Zealand Order of Merit for services to medicine and the community.

He retired at the end of 1999 and tragically his elder daughter Katherine, a much loved teacher of mathematics at New Plymouth Girl's High School died the following year of breast cancer. The Kaponga property was sold in 2001 and the Lays moved to New Plymouth.

Margaret believes that Peter never really recovered from these losses. His health deteriorated grievously over the last 3 years of his life. It seems likely and poignant, that in the earlier part of this time he would have known exactly what was happening to him. Margaret supported him with tenacity and love through this extraordinarily difficult period.

Peter is survived by his wife Margaret, daughter Judith, son Richard and six grandchildren.

Ian McDougall of Wellington (retired psychiatrist and MOH for Taranaki 1962–63; a classmate and long-time friend of Peter) wrote this obituary.

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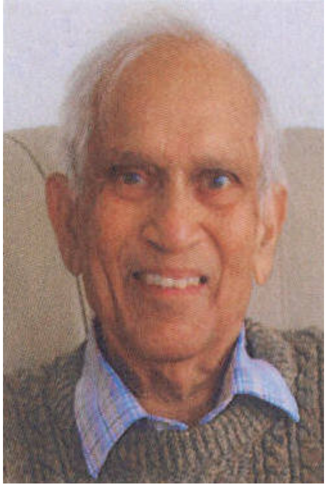
NZMA
New Zealand Medical Association

Arthur Julian Paul

30 December 1926 – 4 May 2012

Arthur Julian Paul was born in Jabalpur, in the state of Madhya Pradesh, India.



He was the third son of Professor Julius Nogenderanath Paul (Director of Education) and mother Lillian Alexandra.

Arthur was educated at Christchurch Boys' College, Jabalpur, where he was a bright student and an accomplished cricket and tennis player.

He entered Nagpur University Medical School in 1949 and graduated, MB BS, Nagpur (1954). At medical school he represented the University of Nagpur at Tennis.

Following graduation he was appointed house surgeon to the Jabalpur Hospital.

In 1956 Arthur travelled to the England to complete postgraduate studies at the Royal Institute of Public Health and was awarded The Diploma in Public Health (1957).

Subsequent appointments in England included 2 years as a house surgeon, at St Lukes Hospital, Bradford, where he met Shirley Mowle, a first-year nurse student from Norfolk. Their romance, despite causing ripples amongst the Nursing and Medical fraternity, did not prevent their marriage on 6 December 1958.

In 1959 they moved to Nottingham where he was appointed medical officer of health and where their eldest two sons were born.

In 1962 the family went to India to live. Arthur was appointed to a lectureship in public health at Jabalpur Medical College. At that time India was in a state of emergency because of escalating tensions with China along their common Himalayan border, causing great instability and uncertainty.

In 1963, Arthur and returned to the England where he joined a general practice in Dagenham. A particularly severe English winter forced Arthur to consider warmer climes. In 1965 the family moved to the Seychelles.

Arthur was appointed on a 3-year contract to provide general medicine and public health services at the Seychelles Hospital. During this time their third son, fondly known as their "Seychelles Souvenir'', was born

In 1968 the family returned to India for a holiday to visit Arthur's family. While perusing the *Lancet* he noticed an advertisement seeking a general practitioner in the rural Northland town of Maungaturoto. Fearful of another English winter, Arthur applied for the position and when appointed the family migrated to New Zealand.

The family enjoyed living among the friendly rural community. Arthur enjoyed life as a rural general practitioner in New Zealand. He found it clinically rewarding and satisfying and spent the next 20 years in solo practice, with his wife Shirley as his practice nurse, in Maungaturoto.

Arthur developed a special interest in acupuncture, which was not widely used at that time. He found acupuncture a useful adjunct in the management of acute and chronic pain.

The local St John Ambulance was an important resource in rural general practice, and Arthur became the Medical Superintendent of the Maungaturoto Order of St John, training volunteers in first aid.

Arthur and Shirley loved the country life of the Northern Kaipara, even though he was on call 7 days a week. They joined in many activities of Maungaturoto including the Otamatea Repertory and the weekly bridge meeting held in their home. Arthur was a founding member of Maungaturoto Rotary Club.

As a young man in India, Arthur had developed a lifelong passion for hunting and fishing, acquired when he joined his father and brothers on a number of sikars (big game hunting safaris). In New Zealand he continued his passion. When time permitted, he made fishing forays on the Kaipara Harbour. Arthur never missed the opening day of duck shooting and he managed to get away on occasions to the Bay of Islands for big game fishing, and the Te Urewera National Park for deer hunting.

Arthur retired from fulltime general practice in 1989 and he and Shirley moved to Tauranga. For the next 20 years he was active in regular locum GP work, which extended from Kaitaia to Gore. Arthur claimed to have fished every river and lake in between! Arthur had a special affinity for the remote East Coast especially Te Kaha and Te Puia. He enjoyed working with Māori communities.

In recent years he largely restricted his locum work to the Western Bay of Plenty with the Te Mana Toroa Health Group, a group of affiliated Māori General Practices. It was fitting that on his final admission to Tauranga Hospital he was nursed in the Ward 2A, Kaupapa Unit.

Arthur is survived by his wife, Shirley and three sons, David, Jonathan and Adrian.

Ian Taylor wrote this obituary.

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Ian Alan McPhail

MBChB (Otago), FRNZGP, OSJ (19 November 1930 – 11 June 2012)

Ian was born in Rangiora, North Canterbury. His father was a GP in Rangiora, and in the Volunteer Naval Reserve. When the war broke out the family moved to Auckland.

Ian completed his primary education at Takapuna Primary School, moving on to attend Kings College where he boarded.

He attended Auckland University where he did most of a BSc in an endeavour to get into Medical School. At the time Returned Servicemen were coming home and had preference for University. Consequently, only 13 of 250 applicants were accepted, Ian not one of them.

Three years later he was accepted for the Otago Medical School and moved to Dunedin.

While in Dunedin, he married and they had 3 children, Alan, Diana and Bridget (deceased).In 1956 Ian graduated from Otago with MBChB.

He spent 2 years as a House Surgeon at Dunedin Hospital. It was there that he met Peter Tapsell, at that time Orthopaedic Registrar, and Ian, Senior House Surgeon.

Peter suggested Ian apply to Rotorua, where in 1958 he commenced as the only Registrar at Rotorua Public Hospital. In 1960 he went into General Practice as Junior Partner to the late Dick Sill. Ian continued to do casualty work and worked as a part-time anaesthetist. Mark Irwin joined the practice in 1961.

Ian was in the Naval Reserve, and after starting as an ordinary Seaman, worked his way through the ranks, finally becoming a Surgeon Lieutenant after he graduated. He resigned from the Naval Reserve in 1962 due to increasing pressures of General Practice. In 1975 Ian bought the 196 Old Taupo Road premises, and he went into solo practice.

As a 10-year-old, Ian became a cadet with St John and his association continued for many years. He became Brigade Surgeon, Order of St John in 1962, and was Principal Medical Officer of St John Ambulance Association, Bay of Plenty from 1985 to 1988. He helped to set up the Life Support Unit which he regarded as one of the highlights of his career. Through the 1970s and 80s he did many call outs with the ambulance, being picked up from his surgery rooms. In the 1970s he received the Officer of the Order of St John from the Governor General.

Ian was Secretary of the Medical Association, Rotorua-Taupo from 1960 to 1962, and President in 1975. He was also Medical Association rep on the National Committee for Emergency care.

Ian married Diane in 1983, and together they have a son, Stuart.

During Ian’s time as a GP he delivered 2000 babies and his practice boasted 1500 patients. In 2003, after 40 years as a GP in Rotorua, Ian retired at 72, to spend more time with his family. He was presented with a Rotorua District Community Award at a surprise retirement function, for his outstanding service to the district and community. Ian enjoyed solo practice and never lost his love for his patients.

Twelve months after retiring, and following a lot of persuasion, he reluctantly agreed to do a locum for Korowai Aroha Health Clinic for 2 months—it actually became 8½ years. Unexpected and unplanned, this turned out to be a great decision for Ian.

He loved the staff and patients at Korowai Aroha, and was at work on the morning of 5 June before his final trip to hospital. Ian felt privileged to be embraced by the Korowai Aroha whanau. Ian related to people from all walks of life, and all age groups, humble and never judgemental.

No tribute to Ian would be complete without mentioning his love of stock cars. In the early days as a driver, and after breaking his ribs in a spectacular airborne roll, and earning the title of 'The Flying Doctor', he had to resign himself to being a constant sideline supporter. He along with five other locals instigated the site and development of the “Rotorua Paradise Valley Raceway”. He became Patron and a Life Member in 1972.

Ian is survived by his wife Diane, and children Alan, Diana and Stuart.

Diane Bonnington-McPhail wrote this obituary from notes left by Ian.

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Thomas Nigel Ellison

18 June 1936 – 13 August 2011

Dr Thomas (Tom) Nigel Ellison was born in Avarua, Rarotonga. He was the second youngest child of 11 of English, Scottish and New Zealand Māori descent (Ngāi Tahu, Te Atiawa, and Ngāti Porou). His father Dr Edward Pōhau Ellison graduated from Otago Medical School as one of the first Māori graduates of Medicine alongside Sir Maui Pōmare, Sir Peter Buck and Dr Tūtere Wī Repa.

The Ellison family has a sterling reputation for sports, and Tom was named after his uncle who was the first All Black captain in 1893.

Tom's sporting prowess was demonstrated early on, playing representative rugby for Taranaki.

Following a concussion and on advice from his father he swapped to hockey and went on to play representative hockey for Otago, New Zealand Universities, and New Zealand.

He was a natural at golf and a piano man. He and his band of merry music makers used to take a piano round on the back of the trailer to the dance halls getting things hopping.

Dr Tom graduated from Otago University with an MB CHB in 1964 and went on to embody the words distinguished service with the steadfast support of his wife Sybil.

His surgery was always been attached to their home in Raglan and he was assisted by Sybil for over 40 years as a solo rural general practitioner. His son Sean joined them as the practice manager in later years, during which time the practice gained cornerstone accreditation.

At his busiest times, Dr Tom was travelling 100 miles a week to visit the sick. Roads were not what they are today and although he was on call every day and night he always had a smile for you. He was a volunteer doctor with the Fire Service and in 1981 he was awarded the Queen's Service Medal for Fire Service. He assisted in the formation of the local St John's Ambulance and gave his time to educate their volunteers over the years.

He was the Port Health Officer and assisted in the formation of the Raglan Air Sea Rescue service, which he also participated in. He held high office in local Plunket, the Fishing Club, the Bowling Club, the Raglan Club and the local kindergarten.

The Royal New Zealand College of General Practitioners (RNZCGP) awarded the Distinguished Service Medal posthumously in recognition of this on 10 February 2012 at Poihakena marae. His family received the medal and on the same day a Whānau Ora centre was opened at the marae and dedicated to his memory.

This date had been chosen as it was the 50th wedding anniversary of Tom and Sybil. Their story is one of love at first sight—followed by a marriage which was far too short according to Sybil. She was not too impressed to be spending their 50th wedding anniversary without Tom and described meeting him as "the best thing that ever happened to me" and for those who have seen them together it is clear how taken Tom was with her. Tom is also survived by their three sons Sean, Brett and Rhys and five mokopuna [grandchildren].

Tom also received several other awards from St Lazarus of Jerusalem including Knight Commander in 1991.

Te Akoranga a Maui is the Māori Faculty of the RNZCGP and Dr Tom was a kaumātua who sat on their Taumata since its inception, providing wise counsel and inspiration to generations of Māori doctors.

In 2005 he was honoured by Te Ohu Rata o Aotearoa (Te ORA) with the Maaririe Goodall Award which recognises the special contributions made towards improving the health of Māori and Pacific Island peoples. This is known to be the highest accolade that Te ORA bestows on a member of the health workforce.

In 2010 he was the first recipient of the Manu Ao Māori—the Māori leadership award of Te ORA.

Dr Keri Ratima (Māori Director, RNZCGP) wrote this obituary.