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Mortality from cardiac arrest after cardiac surgery—what can be done?
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Background
Internationally, mortality following cardiac arrest after cardiac surgery is high. The Virginia State (USA) registry of 79,582 cardiac operations reported the mortality rate of 49–69% in those suffering cardiac arrest after surgery. Factors such as education, teamwork and communication are crucial in improving outcomes. Recent EACTS (2009) and STS (2016) guidelines address the resuscitative management of such patients. The Australasian Cardiac Surgery Advanced Life Support (CALS) Course is taught in Sydney, Melbourne and Adelaide. We report the impact of the inaugural New Zealand on resuscitation team confidence.

Objectives
To assess what can be done to reduce mortality from cardiac arrest after cardiac surgery.

Methods
Multidisciplinary staff from seven New Zealand units participated in a one-day CALS course at Waikato Hospital. Twelve delegates were included. All were ALS trained; none had attended a previous CALS course. Anonymised self-assessment of confidence was documented pre- and post-course using a Likert Scale focused on six domains (overall confidence, managing cardiovascular emergencies, managing respiratory emergencies, managing the airway, assisting in re-sternotomy, perform re-sternotomy). Data was analysed with a Wilcoxon signed-rank test.

Findings
Confidence to assist in a re-sternotomy had the greatest increase after the course (p<0.01), followed by confidence to perform a re-sternotomy (p<0.01), managing emergencies involving cardiovascular problems (p<0.05), managing emergencies involving respiratory problems (p<0.05), managing the airway (p<0.05).

The overall confidence with resuscitation after cardiac surgery increased (p<0.05).

Conclusions
Significant improvements in confidence in resuscitation after cardiac surgery are achieved following the CALS course. Team dynamics are also enhanced with clearly defined roles.

Rates of unsuspected thyroid cancer in multinodular thyroid disease in Aotearoa
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Background
The association of concomitant thyroid cancer in multinodular goitre (MNG) has been reported to be about 4%. Cancer risk in toxic MNG was considered to be lower than for non-toxic MNG and attributed to TSH suppression. However, recent international studies suggest an approximate 18% risk of occult malignancy in both toxic and non-toxic MNG.

Objectives
To ascertain the risk of thyroid cancer New Zealand population undergoing thyroidectomy for MNG.

Methods
Single-centre study of patients undergoing thyroidectomy for multinodular disease 1 December 2006 to 30 November 2016.

Findings
Six hundred and two patients underwent surgery for multinodular disease (448 non-toxic and 154 toxic MNG). Of these, 95/602 (16%) had thyroid cancer. After excluding patients with a preoperative suspicion of cancer, 30/401 (8%) patients with non-toxic MNG and 15/151 (10%) with toxic MNG had unsuspected or occult thyroid cancer (p=0.358). Patients with toxic MNG were less likely to undergo preoperative fine needle aspiration than those with non-toxic MNG (34% vs 52%, respectively p=0.0001). Two-thirds of unsuspected thyroid cancers were incidental micropapillary carcinomas, which were unlikely to alter survival irrespective of therapy.

Conclusion
Malignancy rates in MNG are higher than historically reported, although most unsuspected cancers are unlikely to alter patient outcome even if diagnosis is delayed.
Is the medium the message? Format matters in medicines information
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Background
Providing tailored information about prescribed medicines to patients is an important part of clinical pharmacy services. A good understanding of the purpose of the medicines and possible side effects may contribute to better compliance as well as reducing risks from inappropriate use of medicines. However, the patients’ preferences and the form in which patients prefer to receive this information has only sparsely been examined.1 This study aimed to examine the patients’ preferences and whether these preferences were affected by demographic factors (self-identified ethnicity, age or gender).

Objectives
To ascertain the patients’ preferences and the form in which patients prefer to receive prescribed medicine information.

Methods
A questionnaire requesting demographic data and patient preferences was developed. The choices offered were personalised medication cards, pamphlets, smart-phone app, face-to-face conversation, e-mail and video. Patients were asked to rank their preferences. Choices were then ordered by the percentage of patients who ranked each among their top three preferences. The questionnaire was tested and refined after a pilot study. Patients in Waikato, Thames and Tokoroa hospitals were selected on a random basis. Patients under 50 years old were excluded from the study. The questionnaire was distributed to the selected patients by clinical pharmacists of the wards involved. Patients were left to fill out the questions on their own, and the questionnaires were collected by the pharmacists on the same day.

Findings
Overall the preferred media were face-to-face conversations (81%, 95% CI 71–88%) and personalised medication cards (78%, 95% CI 69–86%), followed by pamphlets (58%, 95% CI 48–68%). Smartphone apps, e-mail and videos were not popular choices in the overall population. Patients under 50 years old showed an increased preference for smartphone apps (67%, 95% CI 41–85%), compared to patients 50 years and older (17%, 95% CI 11–28%). This preference was also shown by Māori patients, but could reflect the younger mean age of hospitalised Māori patients (52 years versus 68 years for non-Māori). Preferences were not influenced by gender or education.

Conclusions
Age and ethnicity may affect the preferred medium for receiving information about medicines, but the patient’s personal preference should be considered when delivering medicines information.

References

Findings from the Midland Region Lung Cancer registry
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Background
The completeness and accuracy of the New Zealand Cancer Registry (NZCR) are vital for cancer control in New Zealand. This study aims to report the characteristics of newly diagnosed lung cancer cases and compare the data accuracy of registrations in the NZCR with the Midland Region Lung Cancer register (MLCR).

Objectives
To compare the data accuracy of registrations in the NZCR Midland Region Lung Cancer register.

Methods
Lung cancer (ICD code: C33, C34) and mesothelioma cases (ICD code: C45) diagnosed in 2011–2015 were extracted from both the NZCR and the MLCR. The two datasets were linked by the National Health Index (NHI) number. The cancer extent/stage, date of diagnosis, gender, ethnicity, DHB, date of birth, date of death and date of diagnosis were compared for cancer cases identified in both datasets. For cancer cases diagnosed in the Waikato DHB and identified in the NZCR only, clinical records of these patients were examined to verify the lung cancer or mesothelioma diagnosis.

Findings
In total, 2,126 lung cancer registrations and 81 mesothelioma registrations were identified in the NZCR, including four duplicate lung cancer registrations. Of the 1,570 lung cancer registrations and 29 mesothelioma registrations recorded in the MLCR, 1,483 (94.5%) lung cancer cases and 54 (91.5%) mesothelioma were identified in the NZCR. Of the cancer cases identified in both datasets, 51.3% of the cancer extent in the NZCR was correct for lung cancer registrations and only 17.0% for mesothelioma registrations. The consistency of the two datasets was 99.0% for gender, 96.2% for ethnicity, 98.4% for DHB, 99.7% for date of birth, 94.4% for date of death and 89.9% for date of cancer diagnosis (difference ≤30 days).

There are 639 lung cancer registrations and 27 mesothelioma registrations not identified in the MLCR, including 190 lung cancer registrations and 10 mesothelioma registrations in the Waikato DHB. After examining the clinical records of the 200 Waikato patients, 110 (57.9%) were confirmed to be diagnosed with lung cancer or mesothelioma in 2011–2015, 10 (5.3%) were diagnosed with lung cancer or mesothelioma before 2011 or after 2015, 34 (17.3%) did not have lung cancer nor mesothelioma, and 36 (18.9%) could not be verified.
Conclusion
The MLCR provides excellent clinical data on newly diagnosed lung cancer cases. However, there is some under-reporting compared with the NZCR. Combining the two sources of data gives a more complete picture of the incidence of lung cancer in our region.

Improving coronary graft patency with postoperative aspirin and clopidogrel versus aspirin and ticagrelor
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Background
Dual anti-platelet therapy (DAPT) reduces events post-coronary artery bypass graft (CABG).1 In PLATO CABG study aspirin and ticagrelor (AT) was superior to aspirin and clopidogrel (AC).2 The mechanism remains unclear. We hypothesise this may relate to superior graft patency with AT.

Objectives
The primary objective is to compare the effect of dual antiplatelet therapy on the incidence of graft occlusion at 12 months. As assessed by multislice computed tomography coronary angiography (CTCA) in patients randomised to AT or AC.

Methods
Randomised, open label design of patients undergoing isolated CABG following an acute coronary syndrome (ACS).

Findings
As of 1 June 2017, a total of 85 patients have been randomised. (43 AT v 42 AC) with 83% male and mean age 63 years. Demographics were similar for both groups. Follow-up results of CTCA were available in 58 patients at 12 months.

Conclusion
Preliminary results of IMPACT study show that DAPT is safe in post-ACS patients undergoing CABG. No difference is apparent in clinical outcomes or graft patency at 12 months. Significant ticagrelor discontinuation due to dyspnoea (P<0.01).

References

<table>
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<tr>
<th>CTCA Outcomes at 12 months intention to treat</th>
<th>Aspirin and ticagrelor (n=28)</th>
<th>Aspirin and clopidogrel (n=30)</th>
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<tr>
<td>Grafts assessed</td>
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<td>Any grafts occluded</td>
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<td>Arterial grafts occluded</td>
<td>3 (13%)</td>
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<td>Vein grafts occluded</td>
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<th>Clinical outcomes</th>
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<th>Aspirin and clopidogrel (n=31)</th>
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<tr>
<td>Death</td>
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<td>Revascularisation</td>
<td>2 (6.3%)</td>
<td>2 (6.4%)</td>
<td>NS</td>
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<td>Symptomatic graft failure</td>
<td>3 (9.4%)</td>
<td>3 (9.7%)</td>
<td>NS</td>
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<td>CABG related bleeding events</td>
<td>1 (3.1%)</td>
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<td>NS</td>
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<td>Non-CABG related bleeding events</td>
<td>0</td>
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<th>Reason for study drug discontinuation</th>
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<th>Aspirin and clopidogrel (n=31)</th>
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<td>Need for anticoagulation</td>
<td>2 (6.4%)</td>
<td>1 (3.2%)</td>
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<td>Side effect—dyspnoea</td>
<td>8 (25%)</td>
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<td>Clinical event</td>
<td>0</td>
<td>1 (3.2%)</td>
<td>NS</td>
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Clinical outcomes of overweight or obese patients with stage III colon cancer treated with adjuvant oxaliplatin-based chemotherapy in the Waikato Region

Jayden Wong, Alvin Tan, Sagun Banjade, Michael Jameson
Waikato District Health Board, Hamilton, New Zealand.

Background
According to Ministry of Health statistics, as of 2015/16 data, 35% of New Zealand adults were overweight and 32% were obese. A large retrospective study by Dignam et al demonstrated poorer disease-free survival and overall survival in obese patients with Duke B and C colon cancer. A meta-analysis by Sinicrope et al concluded that obesity is an independent prognostic variable in colon cancer patients. We present our local data in the Waikato region, comparing the clinical outcomes of patients with normal weight (NW) and patients who were overweight or obese (OO).

Objectives
To assess the clinical outcomes of overweight or obese patients with Stage III colon cancer treated with adjuvant oxaliplatin-based chemotherapy in the Waikato Region.

Methods
This was a retrospective cohort study of all patients with completely resected Stage III colon cancer who received adjuvant oxaliplatin-based chemotherapy in the Waikato region from 1 January 2008 to 31 December 2013. Patient baseline characteristics, treatment records and cancer-specific outcomes (three-year disease-free survival (3yr DFS) and three-year overall survival (3yr OS)) were recorded. Patient body mass index (BMI) was documented prior to chemotherapy commencement.

Findings
Total of 86 patients with Stage III colon cancer were treated with oxaliplatin-based chemotherapy over this six-year period; 68 patients received FOLFOX6, 16 patients received FLOX and two patients received CAPOX. Among these patients, three patients were underweight (BMI <18.5 kg/m²), 25 were of normal weight (BMI 18.5–24.9 kg/m²), 42 were overweight (BMI 25–29.9 kg/m²) and 16 were obese (BMI ≥30kg/m²). Baseline characteristics were fairly balanced, apart from a higher proportion of males (60% vs 28%), Māori descent (14% vs 4%) and left-sided primary site (57% vs 32%) in the OO group, compared to the NW group. 3yr DFS was worse in the OO group than the NW group (70.9% vs 77.3%, p=0.57). 3yr OS was similar in both groups (87.9% vs 88.0%). Chemotherapy dosing was not capped based on body surface area at our institution. A greater amount of oxaliplatin was received in the OO group as a mean percentage of their planned total oxaliplatin dose when compared to the NW group (61% vs 68%), with a lower rate of early cessation of oxaliplatin (41% vs 60%). Rate of any-grade peripheral neuropathy was higher in the OO group (95% vs 76%).

Conclusion
Among patients with Stage III colon cancer, overweight or obese patients demonstrated a poorer three-year-disease-free survival when compared to normal weight patients, despite receiving a greater amount of oxaliplatin-based chemotherapy. This difference was not statistically significant; but is in keeping with contemporary literature.

References

The influence of comorbidity on guideline-concordant surgical treatment for primary breast cancer

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Background
Patients with breast cancer and concomitant comorbidity have poorer disease prognosis, which may, in part, be related to a reduction in the receipt of guideline-concordant curative treatment. Excision of the breast tumour and surgical staging/treatment of the axilla are key components of treatment for non-metastatic breast cancer. In this study, we sought to determine the impact of comorbidity on the receipt, quality and timeliness of surgical treatment for primary breast cancer.

Objectives
To assess the influence of comorbidity on guideline-concordant surgical treatment for primary breast cancer.

Methods
Incident cases of unilateral, stage I–III breast cancer, diagnosed between June 2000 and June 2015 were identified from the prospectively collected Auckland and Waikato Breast Cancer Registers. Comorbidity information was obtained via National Health Index number linkage with administrative hospital discharge data (the National Minimum Dataset), limited to five years preceding the date of breast cancer diagnosis. Comorbidity severity was measured by C3 index score. Receipt of surgical treatment, as well as surgical quality and timeliness indicators, were examined with respect to guideline-concordance by C3 score and individual important comorbidities. Guideline-concordance was assigned in relation to the Standards of Service Provision for Breast Cancer Patients in New Zealand.
and St Gallen International Expert Consensus Statements from relevant years. Multi-variable logistic regression analyses were performed, adjusted for patient demographic and healthcare access factors, as well as tumour stage. Age and C3 score were modelled using cubic splines due to non-linear relationships.

Findings
Application of the inclusion criteria resulted in the identification of 12,652 patients, with 2,609 (20.6%) possessing at least one major comorbidity. Increasing levels of comorbidity severity were associated with reducing likelihood of receiving surgical excision of the primary breast tumour and operative staging/treatment of the axilla. For patients who received surgical treatment, comorbidity had no impact upon the receipt of definitive quality surgery, defined as mastectomy or breast conserving surgery with a 2mm resection margin negative for invasive/in situ disease. Similarly, comorbidity had no association with receipt of appropriate surgical auxiliary management. High levels of comorbidity were associated with a reduction in the receipt of timely primary breast surgery (within 31 days of diagnosis).

Conclusion
Compared with their non-comorbid counterparts, comorbid patients with primary breast cancer receive less guideline-concordant cancer surgery. If surgery is performed, it is of equivalent quality but received at greater delay. The impact of inferior surgical treatment on survival in the context of comorbidity is yet to be determined.

Grant support
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References

Post-operative cardiothoracic x-ray protocols deliver low clinical yield and results that are not cost effective
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Background
New literature suggests that routine post-operative x-rays are no longer necessary and should be determined by clinical assessment.

Objectives
To assess if post-operative cardiothoracic x-ray protocols deliver low clinical yield and results that are not cost effective.

Method
A retrospective analysis of the quantity, indications, new radiological findings and medical intervention post x-ray in cardiothoracic postoperative patients. Positive findings were determined from radiological reports and patient notes utilised for management post x-ray.

Findings
Patient cohort n=49 consisted of average age of 61.7±8.41 and an average number of chest x-rays 4.46±2.58. M:F ratio = 5:1. Total number of x-rays performed was n=219 with those undertaken days 0–2 days postoperatively n=169 (60%). Patients requiring change in management post positive finding was n=16 (17%).

The most common indication for imaging was positioning of lines, tubes and drains n=95 (43%) followed by screening for pneumothorax post drain removal in n=55 (20%). Of those 55, chest tube reinsertion occurred in n=6 (11%). New findings found in n=121 images (55%). Most common new finding was postoperative atelectasis, n=63 (52%) followed by pleural effusions, n=40 (33%) of which n=25 (63%) were graded small.

Conclusion
A small number of post-operative chest x-rays had meaningful positive findings and intervention. Each chest x-ray costs $106, potentially saving $69,960 per year by abolishing routine imaging post chest drain removal. Positive findings demonstrated a diagnosis that can be ascertained clinically rather than requiring imaging. A collective effort between cardiothoracic teams and those responsible for postoperative care should aim to reduce unnecessary imaging, decreasing exposure, decreasing money expenditure and improving clinical astuteness.

Microsurgical dexterity tuition of students and house surgeons: a necessary and worthwhile investment
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Background
The undergraduate curriculum does not include surgical dexterity teaching.
Association between performance status and tumour response to immunotherapy in patients with advanced melanoma: a single regional experience

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Background
On 1 July 2017, PHARMAC amended the funding criteria for PD-L1 inhibitors, pembrolizumab and nivolumab, for patients with advanced melanoma by adding restrictions on ECOG performance status of 0–2. There is no consensus around offering immunotherapy to patients with poor performance status and most of the published trials only include patients with ECOG performance status of 0–1.

Objectives
This study examines the association between performance status and tumour response to immunotherapy in patients with advanced melanoma.

Methods
A study was performed of patients with advanced melanoma treated with immunotherapy at Waikato Oncology Service between 1 July 2016 and 30 June 2017. The electronic chemotherapy prescribing system was used to identify all patients treated during this period. Records were searched to extract patient demographics and treatment-related factors such as ECOG performance, site of metastases, number of doses received, adverse events and radiological response.

Result
Forty-four patients were commenced on, or received treatment prior to 1 July 2017. Thirty-eight patients received pembrolizumab, while only six patients had nivolumab. The median age at the time of immunotherapy commencing was 67.5 years. Approximately 2/3 of patients had more than two medical comorbidities prior to commencing immunotherapy. 18/44 patients had multiple liver metastases, and five had brain metastases. The majority of patients had ECOG performance status 0–1; six patients had ECOG performance status of 2 and none had performance status >2.

Out of 35 patients who have completed their first radiological tumour assessment, 23 patients had tumour response or stable disease compared to 12 patients with disease progression. Of the 23 patients with tumour response, 22 had ECOG Ps of 0–1, and one had ECOG Ps = 2. Four patients died from complications of metastatic disease shortly after commencing treatment; two of these had performance status of 2.

Conclusion
This study has shown that all patients treated with immunotherapy at Waikato Hospital since funding was first approved had a performance status between 0–2. It is unlikely that the new changes to funding criteria will significantly impact upon clinical practice. The study also showed only a small proportion of the patients had ECOG performance of 2 (6/44), however seemed to have worse outcomes.

Development of a qPCR method to measure mitochondrial and genomic DNA damage with application to chemotherapy-induced DNA damage and cryopreserved cells

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Background
DNA damage quantitation assays such as the comet assay have focused on the measurement of total nuclear damage per cell. The adoption
Objectives
We look at an adaptation of a real-time qPCR technique, to assess DNA damage in nuclear and mitochondrial targets relative to control.

Methods
Novel aspects of this assay include: application of the assay to the Rotor-Gene platform with optimised DNA polymerase/fluorophore/primer set combination in a touchdown PCR protocol. Assay validation was performed using ultraviolet C radiation in A549 and THP1 cancer cell lines. A comparison was made to the comet assay applied to peripheral blood mononuclear cells and an estimation of the effects of cryopreservation on ultraviolet C induced DNA damage was carried out. Finally, dose responses for DNA damage were measured in peripheral blood mononuclear cells following exposure to the cytotoxic agents bleomycin and cisplatin.

Findings
We show reproducible experimental outputs across the tested conditions and concordance with published findings with respect to mitochondrial and nuclear genotoxic susceptibilities.

Conclusions
The application of this DNA damage assay to a wide range of clinical and laboratory-derived samples is both feasible and resource-efficient.

Kaumātua mana motuhake: kaumātua managing life-transitions through tuakana-teina/peer-education
Brendan Hokowhitu, John Oetzel, Rangimahora Reddy, Linda Smith, Mary Simpson, Sophie Nock, Hineiti Greensill, Michael Cameron, Pare Meha, Kirsten Johnston University of Waikato.

Background
People face significant transition points as they age, such as loss of independent living, loss of a spouse and changing health conditions. Successfully navigating these transitions depends on being able to manage emotional and socio-economic factors, as well as service systems, while often being reliant on family or whānau. Historically however, kaumātua have faced a dominant society that has failed to realise their full potential as they age. Yet, for Māori, kaumātua are “carriers of culture, anchors for families, models for lifestyle, bridges to the future, guardians of heritage and role models for younger generations.” Kaumātua mana motuhake is invested in upholding kaumātua tino rangatiratanga (independence and autonomy) via high-quality Māori research that will lead to better life outcomes for kaumātua and their whānau.

Objectives
This seeks to address the mana motuhake of kaumātua (older Māori aged 55 or older), through a ‘tuakana-teina’ peer-educator model where kaumātua work with other kaumātua in relation to significant life-transitions. The project investigates the health outcomes of a ‘tuakana-teina’ peer-educator model in relation to wellness, social connectedness, life enhancement, independence and significant life-transitions.

Methods
The research comprises two stages: training of kaumātua who will then serve as tuakana (peer educators) for other kaumātua (teina/peers). The research design is a pre- and post-test, clustered randomised staggered design with Tuatahi (intervention) and Tuara (control) groups. Tuatahi participate in the training programme initially, while Tuara participate in subsequent training. The capacity of tuakana is assessed at three stages: pre-test, post-intervention for the Tuatahi group and post-intervention of the Tuara group. After training, each tuakana will talk with each teina at least three times to address relevant life-transitions of their teina. Teina will also complete three evaluations at the same stages as the tuakana. The research design enables a rigorous comparison of the training while ensuring that all teina receive the intervention.

Findings
The outcome of the research is a manualised intervention bringing a strength-based, holistic and cultural approach to meet social and health needs of kaumātua and their whānau.

Conclusion
We engage stakeholders throughout the research process with the aim of scaling up the intervention, provided it demonstrates efficacy and cost-effectiveness.