Royal Australasian College of Surgeons
Te Whare Piki Ora o Māhutonga

Louis Barnett Prize 2025
Finalist Abstracts
Overview

Name	Abstract title	Specialty	Information provided with submission
Dr Cameron Wells	'Failure to Rescue' after Gastrointestinal Cancer Surgery: a driver of hospital variation, ethnic inequities, and a target for quality improvement in Aotearoa	General Surgery Registrar	Postoperative mortality remains a key quality metric in surgical care. However, crude mortality rates do not distinguish between the occurrence of complications and a hospital's ability to effectively manage them. 'Failure to rescue' (FTR), defined as mortality after a complication, provides a more nuanced measure and may offer insights into system-level drivers of inequity in Aotearoa.
Dr Anna McDonald	Paediatric multifocal musculoskeletal sepsis and the aftermath: a 15-year review of health outcomes	Orthopaedic Surgery	New Zealand has a high incidence of paediatric acute haematogenous osteomyelitis (AHO) of 18 per 100,000 per annum. Most children follow an uncomplicated disease course of antibiotics and 40% requiring surgery. However, some children deteriorate and need intensive care admission, with life-threatening sepsis. This study reviewed the disease course of children in the Paediatric Intensive care unit (PICU) with multifocal musculoskeletal sepsis, aiming to identify long-term physical and psychosocial outcomes.
Dr Sarah Hunter	Deprivation, Ethnicity, and Eczema: Understanding Associations for Childhood Bone and Joint Infection	Orthopaedic Surgery Registrar	Rates of childhood bone and joint infection (BJI) in New Zealand (NZ) are among the highest in the world, with disproportionate burden experienced by Māori and Pacific

			children. Eczema, also inequitably distributed by ethnicity, is a potential risk factor for BJI. This study describes recent incidence of BJI and investigates disease risk secondary to eczema.
Dr Sam Lynskey	Clinical Biomarker Shoulder Study: Transcriptomic differences between inflammatory conditions of the shoulder: osteoarthritis and rotator cuff tears – The SHOaW Study	Orthopaedic Surgery Registrar	Shoulder osteoarthritis (OA), cuff tear arthropathy (CTA), and rotator cuff tears (RCTs) are major causes of musculoskeletal disability. Unlike hip and knee OA, the molecular drivers of shoulder pathology remain poorly defined. This thesis hypothesised that shoulder conditions exhibit distinct transcriptomic signatures shaped by clinical phenotype and systemic comorbidity, particularly metabolic syndrome (MetS). This study defines disease– and comorbidity–specific transcriptomic signatures across degenerative shoulder conditions and identify biomarkers predictive of tendon healing.
Dr Sam Hale	The anaesthetic efficacy of tetracaine and oxymetazoline compared with Co-phenylcaine in healthy individuals	SET Trainee Otolaryngology Head and Neck Surgery	Nasal anaesthetic-decongestant sprays are commonly used prior to nasal instrumentation, such as flexible and rigid nasal endoscopy. Co-phenylcaine (lignocaine 5%, phenylephrine 0.5%, ENT Technologies Pty Ltd., Melbourne, VIC, Australia) is a combination spray commonly used for this purpose. However, lignocaine is less potent than other local anaesthetics, and both active constituents of Co-phenylcaine have a bitter taste. It was hypothesised that a combination spray containing tetracaine and oxymetazoline would both offer more potent topical anaesthesia and have a better taste. This study seeks to determine whether a tetracaine-

			oxymetazoline combination spray may provide more effective mucosal anaesthesia than Co-phenylcaine, and whether it may be better tolerated.
Dr Jamie-Lee Rahiri	Revealing the Surgical Evidence Gap: Māori Health, Equity, and the Call for Responsive Research in Aotearoa	SET Trainee General Surgery	Māori in Aotearoa New Zealand face profound surgical inequities, including higher perioperative mortality and significantly lower access to care. Persistent deficit-based narratives continue to undermine efforts to achieve equity, often problematising Māori to justify inequitable systems and structures. While surgical research holds the potential to drive transformational change and uphold Te Tiriti o Waitangi, it can also perpetuate harm and reinforce racism when not conducted in a culturally safe and responsive manner. This study maps and critically evaluates surgical research concerning Māori in Aotearoa New Zealand and assess its responsiveness using validated Māori frameworks.

Royal Australasian College of Surgeons
Te Whare Piki Ora o Māhutonga

‘Failure to Rescue’ after Gastrointestinal Cancer Surgery: a driver of hospital variation, ethnic inequities, and a target for quality improvement in Aotearoa

Cameron Wells [1], Chris Varghese [1], William Xu [1,2], Luke Boyle [3], Sameer Bhat [1,4], Emma Wehipeihana [5], Luke Paterson [6], Matthew McGuinness [7], Celia Keane [1,2], Wal Baraza [1,5], Chris Harmston [1,2], Jason Gurney [8], Doug Campbell [3], Jonathan Koea [1,7], Greg O’Grady [1], Ian Bissett [1,5]

[1] *Department of Surgery, University of Auckland, Auckland*
[2] *Department of Surgery, Whangarei Base Hospital, Whangarei*
[3] *Department of Anaesthesia & Perioperative Care, Auckland City Hospital, Auckland*
[4] *Department of Surgery, Whanganui Hospital, Whanganui*
[5] *Department of Surgery, Auckland City Hospital, Auckland*
[6] *Department of Surgery, Taranaki Base Hospital, New Plymouth*
[7] *Department of Surgery, North Shore Hospital, Auckland*
[8] *Department of Epidemiology, University of Otago Wellington, Wellington*

Introduction: Postoperative mortality remains a key quality metric in surgical care. However, crude mortality rates do not distinguish between the occurrence of complications and a hospital’s ability to effectively manage them. ‘Failure to rescue’ (FTR), defined as mortality after a complication, provides a more nuanced measure and may offer insights into system-level drivers of inequity in Aotearoa.

Purpose:

i) Identify an optimal, evidence-based definition of FTR in gastrointestinal (GI) cancer surgery.
ii) Assess the contribution of FTR to hospital-level variation in postoperative mortality, and to changes over time.
iii) Evaluate the role of FTR in driving ethnic inequities in postoperative outcomes for Māori.
iv) Investigate ‘days alive and out of hospital’ (DAOH) as a novel measure of ‘capacity to rescue’.

Methods: A systematic review and empiric cohort study were conducted to identify an optimal FTR definition. National cohort studies of patients undergoing colorectal, oesophagogastric, and hepatopancreatobiliary (HPB) cancer surgery were conducted using the National Minimum Dataset and New Zealand Cancer Registry. Risk-adjusted analyses compared 90-day postoperative outcomes across hospitals, ethnic groups, and time periods between 2005-2020.

Results: A review of 359 studies found wide variation in FTR definitions. An empiric analysis of 31,199 GI/HPB cancer resections identified an optimal FTR definition including 19 postoperative complications at 90 days postoperatively. Differences in FTR (odds ratio [OR] 2.0) were the main driver of hospital variation in postoperative mortality following colorectal cancer resection (OR 2.4). Risk-adjusted DAOH varied significantly between hospitals, with variation most pronounced amongst patients with complications. Minimal hospital variation existed for patients without complications.
Postoperative mortality reduced over time (OR 0.5), driven by improvements in FTR (OR 0.5) rather than complications (OR 0.8). Overall inequities in mortality for Māori were driven by a

combination of higher rates of complications and FTR. However, improvements in FTR for Pakeha were not experienced by Māori, widening existing inequities.

Conclusions: This is the first work investigating ‘failure to rescue’ and its significance in Aotearoa New Zealand. Variation in the ‘capacity to rescue’ patients from complications drives differences in hospital outcomes, inequities in postoperative mortality for Māori, and is an actionable target for quality improvement.

Royal Australasian College of Surgeons
Te Whare Piki Ora o Māhutonga

Paediatric multifocal musculoskeletal sepsis and the aftermath: a 15-year review of health outcomes

Presenter: Dr A McDonald

Other authors: Mr. H Crawford, Mr. M Boyle, Dr C Byrnes; Department of Paediatric Orthopaedics, Starship Childrens hospital, Auckland.

Introduction:
New Zealand has a high incidence of paediatric acute haematogenous osteomyelitis (AHO) of 18 per 100,000 per annum. Most children follow an uncomplicated disease course of antibiotics and 40% requiring surgery. However, some children deteriorate and need intensive care admission, with life-threatening sepsis.

Purpose:
This study reviewed the disease course of children in the Paediatric Intensive care unit (PICU) with multifocal musculoskeletal sepsis, aiming to identify long-term physical and psychosocial outcomes.

Methods:
Children admitted to Starship's PICU from 1st January 2002 to 31st December 2017 with AHO were identified from the Starship osteomyelitis database. A medical notes review was completed to determine survival and inpatient complications. Present-day interviews and physical assessment of the musculoskeletal and respiratory systems along with questionnaires on health-related quality of life, mental health and sleep were performed.

Summary of results:
70 patients were identified over 15 years. Seven children died acutely (five Pasifika and two Māori children) signifying 10% mortality. Main sequelae were recurrence/chronic infection (23%) and growth disturbance (18%). The hip joint and proximal femur had the worst long-term complications with children under 2 years most at risk of long-term issues. No patients had chronic respiratory illness beyond 90 days. Fifteen children had symptoms of neurological impairment, three of whom had permanent acquired brain injury. Twenty-six survivors (41%) were interviewed at a mean of 8.2 years after discharge. Health-related quality of life scores were on par with normative data. All patients who underwent pulmonary function tests had normal results. Six patients and eight parents screened positive for moderate to severe post-traumatic stress disorder. The negative social impact of prolonged hospitalization was an important incidental finding from interviews.

Statement of conclusions:
This study has assisted in policy making in our tertiary hospital for the treatment of paediatric osteomyelitis, highlighting how it can lead to sepsis and sometimes death. Māori and Pasifika children are most at risk. Children under 2 years and those with proximal femur and/or hip involvement are most likely to have chronic sequelae/permanent disability. The adverse social impact of prolonged hospitalization is important to consider with outpatient treatment in the regions preferred by families.

Royal Australasian College of Surgeons
Te Whare Piki Ora o Māhutonga

Deprivation, Ethnicity, and Eczema: Understanding Associations for Childhood Bone and Joint Infection

Dr S Hunter, MBChB, MHSc [1, 2]
Dr E Brown, MBChB[2]
Dr J Mutu-Grigg, MBChB, FRACS [3]
Dr H Crawford, MBChB, FRACS [1,2]
Dr V Selak, MBChB, MPH, PhD [1,4]
Professor C Grant, MBChB, FRACP, PhD[1,]

1. University of Auckland Faculty of Medical and Health Sciences, Auckland, New Zealand
2. Paediatric Orthopaedic Department, Starship Hospital, Auckland, New Zealand
3. Auckland Orthopaedics LtD
4. School of Population Health, University of Auckland, Auckland, New Zealand
5. Department of Child and Youth Health, Starship Hospital, Auckland, New Zealand

Introduction: Rates of childhood bone and joint infection (BJI) in New Zealand (NZ) are among the highest in the world, with disproportionate burden experienced by Māori and Pacific children. Eczema, also inequitably distributed by ethnicity, is a potential risk factor for BJI.

Purpose: This study describes recent incidence of BJI and investigates disease risk secondary to eczema.

Methods: BJI cases were children aged </=15 years admitted with acute haematogenous osteomyelitis (AHO) or septic arthritis (SA) between 2018-2023 in the Auckland region. Data was obtained on eczema status, ethnicity, and area-based socioeconomic deprivation. BJI incidence was estimated using 2018 Census. A retrospective case-control study was undertaken to determine the association between eczema and BJI. Ethnicity-matched controls were identified from the nationally representative NZ Health Survey.

Summary of Results: This study identified 563 cases and 8840 ethnicity-matched controls. Incidence of AHO remains higher for Māori (26.7/100,000) and Pacific (38.5/100,000) compared with European children (17/100,000). Eczema was seen more frequently in BJI cases (30% of BJI cases vs 24% of NZHS controls (p=0.0007)). For NZ Māori and Pacific children, a diagnosis of eczema increased odds of developing BJI (Pacific aOR=1.6, 95% CI 1.1-2.3, Māori aOR=1.6, 1.1-2.4). Pacific children with BJI were more likely than controls to reside in areas of greater socioeconomic deprivation (aOR 1.88, 95% CI 1.3-2.5). European children were more likely to reside in areas of least socioeconomic deprivation (OR 2.3, 95% CI 1.7-3.1).

Statement of Conclusions: Childhood BJI remains inequitably distributed by ethnicity. Eczema may be a suitable focus for strategies to lower disease risk.

Royal Australasian College of Surgeons
Te Whare Piki Ora o Māhutonga

Clinical Biomarker Shoulder Study: Transcriptomic differences between inflammatory conditions of the shoulder: osteoarthritis and rotator cuff tears – The SHOaW Study

First Author/Presenter
Dr Samuel James Lynskey FRACS / FAOrthA [1,2]

Co-authors
Cooper Moody BMBS [1], Marc Julian Macaluso[2], Mark Ziemann PhD [3,6], Stephen D. Gill PhD [1,6,6], Sean L. McGee PhD [2,4], Richard S. Page FRACS (Orth) / FAOrthA [1,5,6]

[1] Department of Orthopaedic Surgery, Geelong University Hospital, Geelong, VIC 3220, Australia
[2] School of Medicine, Faculty of Health, Deakin University, Waurn Ponds, Geelong, VIC 3220, Australia
[3] Burnet Institute, Melbourne, VIC 3004, Australia
[4] School of Life and Environmental Sciences, Deakin University, Waurn Ponds, Geelong, VIC 3216, Australia
[5] Barwon Centre for Orthopaedic Research and Education (BCORE), St John of God Hospital, Geelong, VIC 3220, Australia
[6] IMPACT – Institute for Mental and Physical Health and Clinical Translation, Barwon Health, Deakin University, Geelong, VIC 3220, Australia

Introduction
Shoulder osteoarthritis (OA), cuff tear arthropathy (CTA), and rotator cuff tears (RCTs) are major causes of musculoskeletal disability. Unlike hip and knee OA, the molecular drivers of shoulder pathology remain poorly defined. This thesis hypothesised that shoulder conditions exhibit distinct transcriptomic signatures shaped by clinical phenotype and systemic comorbidity, particularly metabolic syndrome (MetS).

Purpose
To define disease– and comorbidity–specific transcriptomic signatures across degenerative shoulder conditions and identify biomarkers predictive of tendon healing.

Methods
A systematic review, narrative review, serum biomarker synthesis, and three multi-centre case–control studies were conducted. RNA sequencing was performed on biopsies obtained from 70 patients undergoing shoulder arthroplasty (OA, CTA), rotator cuff repair (RCT, healed vs failed at 2-year follow up), or shoulder stabilisation (instability control arm). Plasma cytokines were profiled. Transcriptomic data were analysed using DESeq2 and Reactome, with clinical correlation via QuickDASH and Oxford scores.

Summary of Results
OA and CTA exhibited distinct transcriptomic profiles. OA showed complement activation and inflammation; CTA displayed heightened metabolic activity with minimal immune activation, supporting the need for pathology-specific treatment strategies. MetS drove mitochondrial dysfunction, Wnt disruption, and ECM degradation in both OA and CTA. This may explain the higher prevalence of OA in non–weight-bearing joints among obese individuals and highlights MetS as a modifiable target to delay disease progression. In OA, bone-derived immunoglobulins triggered complement activation across all joint tissues, correlating with

functional decline. In RCTs, healing at 2 years was linked to epigenetic repair signals (FOXO, histone demethylases), fibrinolysis, and zinc transport, while failed tendons remained metabolically "stuck." Tear-edge tendon cells demonstrated reparative paracrine activity beyond the role of marrow-derived stem cells. These molecular differences underpin the divergence between regenerative and non-regenerative tendon states and may guide perioperative strategies such as biologic augmentation or metabolic reprogramming.

Statement of Conclusions
This work identifies novel transcriptomic pathways and comorbidity-related mechanisms across degenerative shoulder conditions. It supports molecular profiling as a clinically relevant tool for risk stratification, therapeutic targeting, and personalised surgical decision-making in orthopaedic care.

Royal Australasian College of Surgeons
Te Whare Piki Ora o Māhutonga

The anaesthetic efficacy of tetracaine and oxymetazoline compared with Co-phenylcaine in healthy individuals

SJM Hale, O Lengyel, D Louis, R Kim, RG Douglas
Department of Surgery, Faculty of Medical and Health Sciences, University of Auckland

Introduction

Nasal anaesthetic-decongestant sprays are commonly used prior to nasal instrumentation, such as flexible and rigid nasal endoscopy. Co-*phenylcaine* (lignocaine 5%, phenylephrine 0.5%, ENT Technologies Pty Ltd., Melbourne, VIC, Australia) is a combination spray commonly used for this purpose. However, lignocaine is less potent than other local anaesthetics, and both active constituents of Co-*phenylcaine* have a bitter taste. It was hypothesised that a combination spray containing tetracaine and oxymetazoline would both offer more potent topical anaesthesia and have a better taste.

Purpose

To determine whether a tetracaine-oxymetazoline combination spray may provide more effective mucosal anaesthesia than Co-*phenylcaine*, and whether it may be better tolerated.

Methods

Four anaesthetic-decongestant nasal sprays were tested in ten healthy participants (Co-*phenylcaine*, and tetracaine 0.5%, 1% and 2% with oxymetazoline 0.05%). Sensory thresholds were sequentially measured at the head of the inferior turbinate using Semmes-Weinstein monofilaments over the following hour. Participants also rated taste on a Likert-style scale, and reported whether they experienced subjective numbness of the maxillary teeth.

Summary of results

A median peak sensory threshold of 60 g (the maximum tested) was observed with Co-*phenylcaine*, but this threshold was exceeded by all the tetracaine-based sprays. Tetracaine 2% with oxymetazoline 0.05% had a significantly more rapid onset than Co-*phenylcaine* (4 min vs 6 min, $p < 0.05$) and a longer duration of action. Eight participants reported dental numbness after administration of tetracaine 2% with oxymetazoline 0.05%, but only one participant after Co-*phenylcaine*. Tetracaine-based sprays were generally perceived to taste less unpleasant than Co-*phenylcaine*.

Statement of conclusions

Tetracaine 2% with oxymetazoline 0.05% is a more potent and rapidly acting anaesthetic-decongestant spray than Co-*phenylcaine*, with a longer duration of action.

Royal Australasian College of Surgeons
Te Whare Piki Ora o Māhutonga

Revealing the Surgical Evidence Gap: Māori Health, Equity, and the Call for Responsive Research in Aotearoa

J-L. Rahiri, N. Appleby, M. Kahi, A. Wheeler, J. Tuhoe, S. Ameratunga, R. Love, W. MacFater, M. Harwood

Introduction
Māori in Aotearoa New Zealand face profound surgical inequities, including higher perioperative mortality and significantly lower access to care. Persistent deficit-based narratives continue to undermine efforts to achieve equity, often problematising Māori to justify inequitable systems and structures. While surgical research holds the potential to drive transformational change and uphold Te Tiriti o Waitangi, it can also perpetuate harm and reinforce racism when not conducted in a culturally safe and responsive manner.

Purpose
To map and critically evaluate surgical research concerning Māori in Aotearoa New Zealand and assess its responsiveness using validated Māori frameworks.

Methods
A scoping review was conducted of surgical studies involving Māori published from 2000 to 2023, guided by a Kaupapa Māori methodological approach. Studies were assessed using two frameworks—CONSIDER (Consolidated criteria for strengthening reporting of health research involving Indigenous Peoples) and the Māori framework—to evaluate governance, partnership, methodological integrity, dissemination, and alignment with Māori health priorities. Studies scoring below 50% on framework criteria were classified as low responsiveness.

Summary of results
We identified 254 studies, predominantly quantitative (91%) and focused on general surgery (55%). The majority framed Māori as a “risk factor” rather than examining structural determinants of inequity. Critically, 96% of studies were rated low quality using the CONSIDER framework and 68% using the Māori framework. Only 2% included Māori authorship, and most lacked Māori governance, partnership, or meaningful engagement. In contrast, Kaupapa Māori studies, although few, demonstrated higher quality, strengthened methodological integrity, and centred Māori worldviews and priorities.

Statement of conclusions
Surgical research has the power to drive transformational change and fulfil Te Tiriti o Waitangi obligations; however, when conducted without cultural safety and Māori leadership, it can perpetuate harm and entrench racism. Our work not only exposes these critical shortcomings but also provides clear, actionable recommendations to guide the development of more equitable and responsive surgical research, as published in our article.

References
Rahiri JL, Tuhoe J, Harwood M, et al. Surgical research for Māori in Aotearoa New Zealand: a scoping review of the evidence base and its responsiveness to Māori. *Lancet Reg Health West Pac*. 2024;45:100974. doi:10.1016/j.lanwpc.2024.100974.

Royal Australasian
College of Surgeons
Te Whare Piki Ora o Māhutonga