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EDITORIAL

Interpreters in culturally responsive healthcare: navigating dual roles and systemic gaps in Aotearoa New Zealand

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Interpreters in culturally responsive healthcare: navigating dual roles and systemic gaps in Aotearoa New Zealand

Ruqayya Sulaiman-Hill, Fareeha Ali, SM Akramul Kabir, Richard Porter

This editorial highlights the critical role of professional interpreters in ensuring safe and equitable healthcare for people with limited English in Aotearoa New Zealand. It draws on research with Muslim professionals involved in the 15 March 2019 response, showing how dual roles can create emotional and ethical challenges. The article identifies systemic gaps in training and support for interpreters, particularly in trauma-related contexts. It calls for consistent certification, trauma-informed practices and recognition of interpreters as essential members of the healthcare team.

Recurrence rate of premalignant and early malignant lesions of the gastrointestinal tract following endoscopic submucosal dissection: a single-centre cohort

Luka Kablar, Anurag Sekra

Endoscopic submucosal dissection is an advanced technique used during endoscopy to remove either precancerous or early cancerous masses in the gastrointestinal tract, which previously required removal with surgery. It was originally pioneered in Japan, but it has gained increasing traction in Western countries including New Zealand. The risk of recurrence of the precancerous or cancerous mass following the endoscopic submucosal resection is an important quality measure. Our study demonstrated that the recurrence rate in our cohort of patients was low at 3.3%, which is within the international benchmark.

Screening and assessment of type 2 diabetes risk factors among Pacific youth attending community health events in Auckland

Fulton Q Shannon II, Chris Puli'uvea, Jasmine Tan, Rinki Murphy, Glenn Doherty

This study looked at young Pacific and Māori people in Auckland to find out how much they know about type 2 diabetes and what might put them at risk. More than half of those involved were found to be obese, and many regularly drank sugary drinks, smoked or drank alcohol, factors that can increase the chance of developing diabetes. Although most young people knew about diabetes, many did not fully understand the risks or how to prevent the disease. This research highlights that more youth-focussed health education and support are needed to help prevent diabetes in these communities.

A comparative assessment of AI and manual transcription quality in health data: insights from field observations

SM Akramul Kabir, Fareeha Ali, Ruqayya Sulaiman-Hill

This study compared two AI transcription tools—Otter.ai and Avidnote—with manual transcription to assess their accuracy and cultural sensitivity. While both AI tools were faster and more cost-effective, they struggled with accented speech and culturally specific terms. Avidnote performed better with multilingual content, but both required human review to ensure quality. The findings support a hybrid approach, combining AI efficiency with culturally informed human oversight, especially in healthcare and research settings.

Capacity to manufacture key pharmaceuticals in New Zealand after a global catastrophe

Nick Wilson, Peter Wood, Matt Boyd

Because human civilisation faces major global catastrophic risks (e.g., a nuclear war, bioengineered pandemic, major solar storm, etc.) it is important that nations such as New Zealand consider their resiliency. This study found that of the 10 most extensively prescribed pharmaceuticals (for acute treatment), none could be manufactured in New Zealand after a trade-ending global catastrophe. This suggests a possible need to plan for shared resiliency with other neighbouring nations (e.g., Australia).

New Zealand Chronic Obstructive Pulmonary Disease Guidelines: 2025 update

Robert J Hancox, Stuart L Jones, Christina Baggott, Sarah Candy, Nicola Corna, Cheryl Davies, James Fingleton, Sandra Hotu, Syed Hussain, Wendy McRae, Murray Moore, Betty Poot, Jim Reid, Sarah Rhodes, Justin Travers, Joanna Turner, Robert Young

This update revises the Asthma and Respiratory Foundation NZ's Chronic Obstructive Pulmonary Disease (COPD) Guidelines in line with the latest national and international evidence. The guidelines provide simple, practical, evidence-based recommendations for the diagnosis, assessment and management of COPD in a New Zealand context. The intended users are health professionals responsible for delivering acute and chronic COPD care in community and hospital settings.

Digital contact tracing in Aotearoa New Zealand: a scan in the right direction, or a digital dead-end?

Andrew Chen, Tim Chambers, Andy Anglemyer, Phoebe Elers, June Atkinson, Sarah Derrett, Tepora Emery, Rogena Sterling, Tahu Kukutai, Michael G Baker

Digital contact tracing (DCT) means using phones and online forms, like QR code check-ins, Bluetooth proximity logs or web surveys, to help find and warn people who might have been exposed to COVID-19 or other infectious diseases. In New Zealand, lots of people used these tools, but the QR and Bluetooth features didn't deliver as much as hoped because the data weren't routinely used by contact tracers and the process had too many manual steps. The online self-service form worked best: people filled it out quickly, and contacts were notified fast and at scale. To work well next time, DCT needs to be easier to use, more trusted and accessible (especially for priority communities) and deployed where it makes the most difference, during fast-moving outbreaks or when manual tracing is overloaded.

Penetrating glass injury leading to brachial artery pseudoaneurysm: a rare case with early onset symptoms

Vasu Kamboj, Anand L Acharya, Tarun Goyal, Divakar Goyal

This paper describes a rare case of a 30-year-old male who injured his right upper arm on a glass window and developed swelling and a wound. A pseudoaneurysm is a type of bulge in a blood vessel wall that poses a risk of bleeding if not treated promptly. Doctors used a computed tomography (CT) scan to confirm the diagnosis and performed surgery to remove it and repair the damaged vessel. The patient's recovery was uneventful with a full range of motion of his limb. The report emphasises the importance of early recognition and treatment to prevent further harm.

Pseudoaneurysm of the lateral circumflex femoral artery following direct anterior approach total hip arthroplasty—a case report

Poasa Cama, Georgina Chan

This report describes an uncommon complication after hip replacement surgery. An 88-year-old man

had a standard hip replacement through the front of the hip (called the anterior approach). A few days later, he returned with worsening thigh pain and weakness. Scans showed that a small artery deep in his thigh had formed a bulge (called a pseudoaneurysm), which was leaking blood into the surrounding muscle. He was treated with a minimally invasive procedure called embolisation, where the leaking vessel is blocked using coils. He made a full recovery and later had his other hip successfully replaced without issues.

The immunological impostor: Kikuchi-Fujimoto disease vs systemic lupus erythematosus

Akram Shmendi

This paper describes the case of a 29-year-old woman who developed fever, tiredness and swollen neck glands. At first, doctors were worried she might have a serious illness like cancer (lymphoma) or lupus, but after further tests, a lymph node biopsy confirmed she had Kikuchi-Fujimoto disease (KFD). This is a rare but harmless condition that usually gets better on its own within a few months. Because her symptoms and blood tests looked similar to lupus, she was given medication at first, but this was later stopped once her condition settled. The case highlights the importance of recognising KFD so patients can avoid unnecessary treatment and investigations.

Interpreters in culturally responsive healthcare: navigating dual roles and systemic gaps in Aotearoa New Zealand

Ruqayya Sulaiman-Hill, Fareeha Ali, SM Akramul Kabir, Richard Porter

Aotearoa New Zealand is one of the most linguistically and culturally diverse nations in the world, home to over 200 ethnicities and more than 160 languages.[1,2] According to the 2023 Census, nearly 30% of New Zealanders were born overseas, reflecting a demographic shift that has seen the proportion of foreign-born residents rise from 17% in 1996 to over 27% today.[3] This diversity enriches our society but presents significant challenges in healthcare delivery, particularly for individuals with limited English proficiency (LEP).

While the health system must prioritise Māori health advancement, reflecting Te Tiriti o Waitangi obligations, it simultaneously carries a duty to all communities. The Oranga Tamariki guidelines[4] acknowledge that interpreters may be required even when individuals are New Zealand-born, due to linguistic preferences within whānau or communities. Interpreter services are not a discretionary add-on; they are a public health necessity and a reflection of our collective commitment to equity.

While advances in artificial intelligence (AI) have led to the development of instant translation tools, these cannot replace professional interpreters in healthcare settings. Nuanced understanding, cultural context and emotional sensitivity are critical—especially when working with vulnerable populations—and these elements are beyond the scope of current or foreseeable AI capabilities.

Effective communication is a cornerstone of quality healthcare, and language barriers can lead to misdiagnoses, poor adherence to treatment plans and feelings of isolation and mistrust.[5] As the demographic landscape continues to shift, the need for professional interpreters has become increasingly urgent. Languages such as Samoan, Mandarin and Hindi are now among the most commonly spoken in Aotearoa New Zealand after English and Māori.[3] In this context, interpreters are not merely linguistic conduits; they are essential facilitators of equitable, culturally responsive care.

In high-stakes or emotionally charged contexts, such as post-trauma care, interpreters may also experience psychological strain. Their proximity to distressing content and vulnerable clients can impact their wellbeing, underscoring the need for appropriate support and the risks associated with informal or unsupported interpreting practices.

Language barriers and informal interpreting risks

In some communities, older individuals who arrived through family reunification schemes may have had limited opportunities to learn English. These people may rely on adult children or grandchildren to interpret during medical consultations. While this practice is often well intentioned and driven by privacy concerns, it raises important issues around accuracy, emotional burden and confidentiality, especially when discussing sensitive health matters.[6]

Family members may lack the medical vocabulary needed to convey complex information, while patients may withhold details due to embarrassment or fear of burdening their relatives. These dynamics underscore the need for professional interpreters trained to navigate medical terminology and maintain confidentiality. In emotionally sensitive situations, the presence of a professional interpreter can be the difference between silence and disclosure.

The case for professional interpreters

Professional interpreters play a critical role in bridging communication gaps between healthcare providers and patients from diverse backgrounds.

Their presence can transform clinical encounters, ensuring that patients understand their diagnosis, treatment options and follow-up care. Studies consistently show that trained interpreters improve communication, increase patient satisfaction and contribute to better health outcomes.[5]

Beyond linguistic accuracy, interpreters often serve as cultural brokers, helping to navigate cultural nuances that may affect patient–provider interactions. This role becomes especially important in trauma contexts, where emotional safety and cultural sensitivity are paramount.

Lessons from the mosque attacks and dual relationships

Our research team from the University of Otago in Christchurch recently conducted a qualitative study exploring the experiences of Muslim professionals who supported members of their own community following the 15 March 2019 mosque attacks. These people often navigated dual relationships, simultaneously holding both personal and professional roles, which added emotional and ethical complexity to their work. Several participants also acted as interpreters in addition to their primary roles.

Their experiences highlighted the challenges of interpreting in trauma-related environments, especially when working with individuals they knew personally. As one participant explained, "*Our* [Muslim] *community is all about trust… if they don't trust, they can't open up.*" Yet, paradoxically, being known within the community sometimes undermined trust: "*Some people started avoiding me… they were not comfortable* [with me] *anymore because I knew* [all the details of] *their court case.*"

These tensions reflect the fragility of trust in dual-role contexts and the need for clear boundaries and support structures. The concept of dual relationships is well documented in mental health literature,[7] but its application to interpreters remains underexplored.

Systemic challenges and emotional risk

Despite their qualifications and experience, interpreters in our study sometimes reported feeling professionally undermined. Their competence was often judged through the lens of ethnicity or community familiarity rather than formal training. One participant shared, "*It feels like doing this job makes me seem unreliable or not trustworthy* [in the community]." Others described being unfairly blamed for miscommunications: "*The client said that the simultaneous interpretation was so bad that she couldn't understand what they* [the phone interpreter] *said… she thought it was me, but I wasn't even doing that interpreting.*"

The study revealed significant gaps in agency support and standardisation. Some interpreters were assigned to sensitive cases with minimal preparation or follow-up. "*There was not even an email, nothing* [to check on me]*… just a timesheet… out and go. It was the most tough job.*" Agencies lacking trauma-aware protocols left interpreters vulnerable to psychological harm and professional isolation.

Systemic issues such as poor co-ordination between agencies and inadequate training were frequently cited. As one interpreter noted, "*I was never told what the discussion would be, what it could look like…*" Another involved an interpreter who was asked to assist in a legal case related to the 15 March attacks. The material was highly sensitive and graphic, and the case concerned an individual they knew personally who had been killed. The interpreter received no prior warning, no briefing and no psychological support afterwards.

Despite the challenges, interpreters also reflected on positive aspects of their work. One noted a client saying, "*You helped me a lot, I got through this*", while another emphasised, "*Knowledge is power… I want my community to get the power back for themselves*", reinforcing the role of information in promoting agency.

Interpreter training and certification

In response to these systemic challenges, efforts have been made to professionalise and standardise interpreter services. Following the 15 March attacks, free interpreter and translation training courses were provided to build community capacity and support bilingual professionals. The Interpreter Standards Transition Support (ISTS) programme, which ran for 3 years and concluded on 30 June 2024, supported interpreters to achieve professional credentials through NAATI (National Accreditation Authority for Translators and Interpreters) certification.[8]

From 1 July 2024, interpreters working in the New Zealand public sector are required to hold NAATI credentials or be actively working towards

them. This ensures interpreters meet consistent standards of skill, ethics and professionalism, giving agencies confidence in their ability to manage complex, sensitive and trauma-related interactions.[8]

Trauma-informed practice and interpreter wellbeing

Trauma-informed care emphasises safety, trustworthiness, peer support and cultural responsiveness, not only for clients but also for those who work with them.[9] Interpreters working in trauma-related settings often absorb emotional distress without adequate support, but their wellbeing is integral to the quality of care delivered. Support should include:

- Pre-session briefings to prepare interpreters for emotionally charged content.
- Post-session debriefings to process psychological impact.
- Access to supervision and psychological support.
- Recognition of interpreters as part of the care team, not peripheral staff.

These measures are essential to protect interpreters from burnout, vicarious trauma and professional isolation, especially when working within their own communities or navigating dual roles.

Conclusion

Interpreters play a vital role in ensuring equitable, culturally responsive healthcare, but their proximity to trauma, community expectations and systemic gaps can place them at significant personal and professional risk. A trauma-informed approach must extend to those who interpret, not just their clients.

Supporting interpreters through training, supervision and recognition is not optional; it is a prerequisite for ethical, effective care in diverse societies. Their wellbeing is integral to the quality of service they provide. Not only will these efforts contribute to individual wellbeing and professional satisfaction, but they will also enhance the capacity of interpreters to serve their communities effectively.

Inaccurate translation by untrained or informal interpreters can have serious consequences, including clinical errors, breaches of confidentiality and compromised patient safety. Professional interpreters bring not only linguistic expertise but also an understanding of medical terminology, ethical boundaries and cultural nuance—all of which are essential for safe and effective care.

COMPETING INTERESTS
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Recurrence rate of premalignant and early malignant lesions of the gastrointestinal tract following endoscopic submucosal dissection: a single-centre cohort

Luka Kablar, Anurag Sekra

ABSTRACT

AIM: Endoscopic submucosal dissection (ESD) has become a well-established treatment option for premalignant and early malignant lesions of the gastrointestinal tract. This study aimed to evaluate the recurrence rate following ESD in a single tertiary centre cohort of patients.

METHODS: All consecutive patients who received ESD treatment for premalignant or early malignant lesions by a single endoscopist (AS) at Middlemore Hospital from 11 February 2019 to 6 October 2023 were included in this retrospective cohort study. The primary outcome was recurrence rate of premalignant and early malignant lesions of the gastrointestinal tract following ESD. Recurrence was defined as confirmed neoplasm on histopathology on first follow-up surveillance endoscopy. The target recurrence rate was less than or equal to 5%. Secondary outcome was recurrence stratified by location of the lesion, lesion size, *en bloc* resection status, R0 resection status and histopathological type of lesion.

RESULTS: A total of 119 ESD procedures were completed during the study time frame, with 91 having a surveillance endoscopy with a median time of 231 days. Twenty-eight cases did not have surveillance endoscopy completed. Three (3.3%) had recurrence of disease, of which two were oesophageal squamous cell carcinoma and one was rectal sessile serrated adenoma. We were unable to ascertain any statistically significant associations with regard to our secondary outcome variables.

CONCLUSION: This study supports the efficacy of ESD in our centre as a curative treatment modality for premalignant and early malignant gastrointestinal lesions, demonstrating a recurrence rate within the acceptable international benchmark.

Endoscopic submucosal dissection (ESD) is an advanced endoscopic technique achieving *en bloc* resection of premalignant and early malignant lesions within the gastrointestinal tract, which previously had necessitated surgical removal. Originally pioneered in Japan, ESD has gained increasing traction in Western countries, including New Zealand, as institutional expertise has expanded and endoscopic technology has advanced.[1,2]

ESD has many advantages compared to endoscopic mucosal resection as it enables more comprehensive histopathological evaluation of lesions, which facilitates precise staging and subsequent risk stratification and management.[3,4] The technique is also particularly advantageous in significantly reducing the need for surgical intervention, and offers organ preservation, reduced post-operative morbidity and a curative alternative for a selected group of patients who may otherwise require extensive surgery.[3,4]

However, despite its technical advantages, the risk of recurrence remains a concern, particularly in cases with incomplete resection, deep submucosal invasion, positive resection margins or other high-risk histological features.[5,6]

The recurrence rate following ESD varies considerably across studies, with influencing factors including lesion location and size, histological subtype and resection margin status, as well as a centre's yearly case volume.[5–7] While expert centres report high rates of *en bloc* and R0 resection, local recurrence remains a challenge, particularly for oesophageal lesions, which exhibit a greater propensity for residual neoplasia or metachronous recurrence due to field cancerisation effects.[8–11] Understanding these recurrence patterns is paramount in refining patient selection criteria, optimising procedural techniques and enhancing post-procedural surveillance to ensure better

long-term clinical outcomes.

This study aimed to evaluate the recurrence rate of premalignant and early malignant lesions of the gastrointestinal tract following ESD in a single-centre cohort at Middlemore Hospital (MMH), New Zealand. We sought to stratify recurrence rates according to lesion characteristics and resection status, with an emphasis on benchmarking our outcomes against internationally recognised recurrence rates, with a target rate of ≤5%.[3,7]

Methods

Study design and patients

This was a retrospective cohort study conducted in a single centre of MMH in Auckland, New Zealand. MMH provides interventional endoscopy services for the Health New Zealand – Te Whatu Ora Counties Manukau catchment area, caring for a population of approximately 600,000.

In our centre, AS is one of two interventional endoscopists performing ESD. All consecutive adult patients (age ≥18 years) who underwent ESD for premalignant or early malignant lesions by a single endoscopist (AS) at MMH between 11 February 2019 and 6 October 2023 were eligible for the study. Patients were excluded if they had not had their surveillance endoscopy following the ESD. Patient notes were reviewed for surveillance endoscopy between October 2023 and October 2024. The primary outcome was recurrence rate of premalignant and early malignant lesions of the gastrointestinal tract following ESD.

Recurrence was defined as confirmed neoplasm on histopathology on first follow-up surveillance endoscopy. The target recurrence rate was less than or equal to 5% based on comparative international data. Secondary outcome was to determine recurrence rate stratified by location of the lesion (oesophagus, gastric, right colon, left colon/rectum), size of the lesion (≥20mm or <20mm), *en bloc* resection status, R0 resection status and histopathological type of lesion.

Prior to proceeding to ESD, all cases were discussed at a multidisciplinary meeting (MDM). The majority of cases were referred with intent of curative resection; however, some cases were referred for staging. Procedures were undertaken using either conscious sedation with fentanyl and midazolam or under general anaesthesia. ESD was performed using DualKnife J (Olympus America). Each ESD specimen was reviewed by a specialised gastrointestinal pathologist, with all histology results reviewed in an MDM.

For carcinomas, R0 resection was defined as a resection specimen with radial and deep margins clear of dysplasia or cancer, while R1 was defined as a specimen with presence of dysplasia or cancer at the margin.

For patients who had surveillance endoscopy performed, the resection scar site was identified and examined using magnification endoscopy with white light and narrow band imaging, with any abnormalities sampled with biopsy forceps.

Locality authorisation approval was gained from the Counties Manukau Health Research Office prior to the commencement of this study.

Data collection

Patient cases for this study were recorded in a prospectively collected database of ESD procedures. Medical records of these cases were reviewed, and the variables collected included age, gender, ethnicity, location and size of index lesion, *en bloc* resection status, R0 resection status, histopathological type of lesion and date of surveillance endoscopy. If follow-up surveillance endoscopy had occurred, endoscopy and histology data were collected to determine recurrence.

Statistical analysis

Recurrence rate following ESD was calculated as the number of patients with premalignant and early malignant lesion recurrence divided by the total number of patients treated with ESD who had undergone a surveillance endoscopy. A 95% confidence interval (CI) for the recurrence rate was calculated using the exact binomial method. Categorical data were expressed as counts and percentages. Continuous data were expressed as median (interquartile range [IQR]).

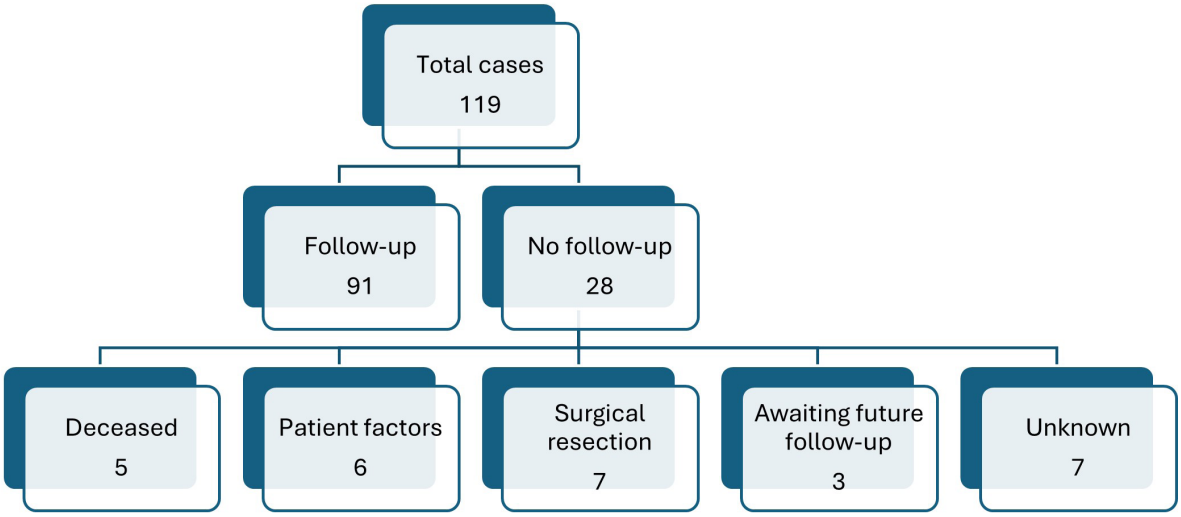
Results

Study participants

A total of 119 ESD procedures were completed during the study timeframe, with 91 (76.5%) having had a surveillance endoscopy following the ESD. Twenty-eight cases did not have surveillance endoscopy completed for a variety of reasons (five deceased, six due to patient factors, seven had surgical resection of area, three pending follow-up in future, seven unknown) as shown in Figure 1.

The cause of death of the five patients who were deceased prior to follow-up surveillance endoscopy included two with aspiration pneumonia

Figure 1: Total number of endoscopic submucosal dissection (ESD) cases and follow-up surveillance endoscopy with reasons for no follow-up.



(following stroke and acute subdural haematoma), one with aortic graft infection, one with metastatic duodenal adenocarcinoma found after ESD of rectal lesion and one unknown.

Seven patients had surgical resection following ESD. Of these, three were to treat a separate synchronous lesion. The remaining four were due to positive deep histological ESD margins, three of which had no residual cancer found in the resected specimens. The one case that had residual cancer in the specimen at the ESD site had an oesophagectomy after the gastro-oesophageal junction lesion was found to invade the muscle layer during the ESD procedure.

Baseline characteristics for the study population are shown in Table 1. The median age of the population was 68 years; 36 (39.6%) were female and 49 (53.8%) were New Zealand European, which was the most common ethnicity group. Of the 91 cases included in the analysis, seven were oesophageal, 26 were gastric, four were right colonic (caecum to distal transverse) and 54 were left colonic (splenic flexure to rectum). Most (87.9%) were >20mm in size. Initial *en bloc* resection was achieved in 80 of the 91 cases (87.9%) with histopathological R0 resection confirmed in 64 cases (70.3%). Median time to surveillance endoscopy was 231 days.

Recurrence rate

The recurrence rate was 3.3% (95% CI: 0.7–9.3%), with three cases identified on follow-up endoscopy. Two recurrences were oesophageal squamous cell carcinomas, while the other was a rectal sessile serrated adenoma with dysplasia. Of the oesophageal recurrences, one had a malignant stricture with local lymph node involvement, which was treated with palliative radiotherapy, and the second was treated with radiofrequency ablation therapy with no features of recurrence on subsequent surveillance. The index resection for the rectal lesion that had recurrence did not achieve *en bloc* or R0 resection status. The recurrence was treated with repeat ESD with no recurrence on subsequent surveillance endoscopy. The secondary outcome of recurrence rate stratified by age (≥70 or <70), gender, ethnicity, location of lesion (oesophagus, gastric, right colon, left colon/rectum), size of lesion (≥20mm or <20mm), *en bloc* resection status and R0 resection status are shown in Table 2, although due to low numbers these did not meet statistical significance.

Discussion

ESD is a technically advanced resection technique, and although there are comprehensive data on recurrence rates from Asian countries and more recently from Western countries, there remain limited data from New Zealand centres. Our study demonstrated a recurrence rate of 3.3% following ESD, within our target benchmark of ≤5%. A study from a registry in Germany revealed recurrence rates of 2.3% at 3 months and 2.1%

Table 1: Demographic and clinical characteristics of patients who underwent endoscopy surveillance following ESD.

Baseline characteristic	N (%) or median [IQR]
Age (years)	68 [61–75]
Sex	
Female	36 (39.6%)
Male	55 (60.4%)
Ethnicity	
NZ European	49 (53.8%)
Māori	5 (5.5%)
Pacific Island	12 (13.2%)
Asian	18 (19.8%)
Other European	4 (4.4%)
Unspecified	3 (3.3%)
Time to surveillance endoscopy (days)	231 [161–336]
Location of lesion	
Oesophagus	7 (7.7%)
Gastric	26 (28.6%)
Right colon	4 (4.4%)
Left colon/rectum	54 (59.3%)
Size of lesion (mm)	
≥20mm	80 (87.9%)
<20mm	11 (12.1%)
***En bloc* resection**	
Yes	80 (87.9%)
No	11 (12.1%)
R0 resection	
Yes	64 (70.3%)
No	27 (29.7%)

ESD = endoscopic submucosal dissection; IQR = interquartile range.

Table 2: Recurrence following ESD stratified by variables.

Sub-groups (N)	Recurrence (%)
All (91)	3 (3.3%)
Age	
≥70 years (40)	2 (5%)
<70 years (51)	1 (2%)
Sex	
Female (36)	2 (5.6%)
Male (55)	1 (1.8%)
Ethnicity	
NZ European (49)	1 (2%)
Māori (5)	0 (0%)
Pacific Island (12)	0 (0%)
Asian (18)	2 (11.1%)
Other European (4)	0 (0%)
Unspecified (3)	0 (0%)
Location of lesion	
Oesophagus (7)	2 (28.6%)
Gastric (26)	0 (0%)
Right colon (4)	0 (0%)
Left colon/rectum (54)	1 (1.85%)
Size of lesion	
≥20mm (80)	3 (3.8%)
<20mm (11)	0 (0%)
***En bloc* resection**	
Yes (80)	1 (1.3%)
No (11)	2 (18.1%)
R0 resection	
Yes (64)	0 (0%)
No (27)	3 (11.1%)

at 12 months,[7] which is comparable to our recurrence rate. This finding reinforces the role of ESD as an effective curative intervention for appropriately selected premalignant and early malignant gastrointestinal lesions in a New Zealand cohort of patients in a centre with appropriate endoscopic expertise.

Due to our low number of recurrence cases we were unable to ascertain any statistically significant associations with regard to our secondary outcome variables.

The majority of lesions in our cohort were colorectal and gastric, and our study demonstrated very low rates of recurrence in these groups—1.85% and 0% respectively—comparable with internationally reported rates of 0.5% for colorectal lesions[5] and 3.1% for gastric lesions.[6] This reinforces the efficacy of ESD in these locations at our centre, after careful endoscopic lesion characterisation and MDM discussion.

In contrast, oesophageal lesions exhibited the highest recurrence rate, with two found in oesophageal squamous cell carcinoma. This is consistent with prior reports indicating an elevated risk of both local recurrence and metachronous neoplasia in oesophageal squamous cell carcinoma.[8,9,11] This heightened risk may be attributed to several factors, including the intrinsic biological aggressiveness of oesophageal squamous cell carcinoma and field cancerisation effects.[8,9,11] These results suggest that tailored surveillance strategies may be required to mitigate recurrence risks in high-risk lesions, particularly in the oesophagus. ESD still remains a preferred initial treatment option of superficial oesophageal squamous cell carcinoma compared to surgery, even for T1b lesions demonstrating submucosal invasion, with lower complication rates and shorter hospital stay.[10]

Our findings further corroborate the role of achieving R0 resection in reducing recurrence risk. None of the patients who achieved R0 resection experienced recurrence, whereas those with R1 resection had an 11.1% recurrence rate. This observation aligns with previous literature indicating that incomplete resection significantly increases the risk of local recurrence, often necessitating additional interventions such as repeat endoscopic resection or surgical excision.[12]

However, we do recognise that our sample size was relatively small, and other larger studies have demonstrated conflicting findings, with no association of recurrence rate with R0 resection status or positive horizontal margins for premalignant non-invasive colorectal lesions.[13,14]

Regardless, meticulous endoscopic technique remains paramount, particularly in challenging anatomical locations where technical difficulties may compromise the likelihood of achieving complete resection. The role of R0 resection as a quality reporting measure is an area that warrants further exploration and research.

Due to our low number of recurrence cases we were unable to ascertain any statistically significant associations with respect to patient-related factors, including age, gender and ethnicity. Understanding these potential associations may allow for more personalised surveillance protocols tailored to high-risk patient sub-groups.

The strengths of our study include being a real-world study with a well-defined patient cohort, standardised procedural techniques and histopathological assessments, all of which enhance the reliability of our findings. However, several limitations must be acknowledged. As a single-centre retrospective study, our results may not be generalisable to other institutions, particularly those with differing patient demographics or endoscopist expertise. Additionally, only 76.5% of our cohort had follow-up surveillance endoscopy after ESD in our study timeframe, introducing a potential bias in recurrence estimation. Of the 28 patients who did not undergo follow-up, five were deceased and all cases were felt unrelated to the ESD procedure or recurrence, and seven underwent surgical resection of the tissue, of which only one case had residual tumour at the ESD site. Furthermore, our median time to surveillance endoscopy was 231 days, and as such later recurrence is a possibility and may not have been captured in our study. The total number of recurrences in our cohort was small, and as such was not powered to detect any statistically significant differences in other collected variables.

Conclusion

Our study supports the efficacy of ESD as a curative treatment modality for premalignant and early malignant gastrointestinal lesions in a real-world New Zealand setting, demonstrating a recurrence rate within the acceptable international benchmark. The findings highlight the necessity for rigorous surveillance, particularly for high-risk lesions such as oesophageal squamous cell carcinoma. Future research should focus on refining post-ESD surveillance protocols, identifying risk stratification tools and exploring adjunctive therapeutic strategies to further mitigate recurrence risks and optimise patient outcomes.

COMPETING INTERESTS
No conflicts of interest.

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Screening and assessment of type 2 diabetes risk factors among Pacific youth attending community health events in Auckland

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ABSTRACT

AIMS: The primary objective of this study was to explore type 2 diabetes (T2D) awareness, knowledge, attitudes and risk factors among youth in Auckland.

METHODS: We undertook convenience sampling of participants aged 16–25 years of Pacific and Māori descent recruited from South, Central and East Auckland through multiple community outreach events organised by the Tongan Health Society from 25 May to 31 July 2024. An additional three participants aged 26–31 years were assessed opportunistically to enhance our study power. Data were collected through a structured survey, an HbA_{1c} point-of-care test, body composition assessments (using the TANITA RD-545 InnerScan PRO body composition scale) and height measurements.

RESULTS: In a sample of 138 participants (aged 16–31 years; 58% female; 62% Tongan, 18% Samoan and 3% Māori), 51.9% were classified as obese, and one new case of diabetes was identified. Approximately 60.1% of participants reported awareness of T2D. Of these, 40% were made aware primarily through familial sources. High consumption of sugary drinks was common. Non-dietary risk factors included a first-degree family history of T2D (36%), smoking (39%) and alcohol consumption (45%). Most participants reportedly engaged in regular physical activity (41% males and 59% females). Participants suggested a multifaceted, youth-focussed care model, primarily lifestyle management for T2D prevention and management.

CONCLUSIONS: A significant proportion of young people aged 16–31 years were identified as obese and had a higher proportion of dietary and non-dietary risks for T2D. The results underscore the necessity for tailored prevention strategies, mainly aimed at Pacific and Māori youth, to mitigate the risk of future T2D development.

Type 2 diabetes (T2D) is a major global health issue with a steadily rising number of cases, particularly early onset in young people.[1] In Aotearoa New Zealand, over 250,000 individuals have been diagnosed with diabetes. The prevalence rates are highest among people of Māori, Pacific and South Asian descent, while the absolute numbers are highest among New Zealand Europeans.[2] T2D is the most common type recorded, with around 228,000 diagnosed New Zealanders.[3] It is projected that by 2040 about 400,000 people in Aotearoa New Zealand, especially Māori and Pacific peoples, may be diagnosed with T2D due to the increasing rate of obesity. [3]

Lack of knowledge about T2D prevention and limited advocacy for accessible care contribute to this trend.[3] Approximately 50% of diagnosed individuals face serious complications within 10 to 15 years.[4] Early diagnosis and effective management are crucial, particularly for those with early-onset T2D, to reduce the risk of chronic conditions like kidney and cardiovascular diseases.[5] Young people with T2D often struggle to manage their blood sugar levels and are frequently undertreated for related conditions such as hypertension and dyslipidaemia.[4] They also face increased diabetes distress and obesity stigma,[6] and an aggravated cardiovascular disease profile,[7] leading to poor quality of life. Research shows that those with early-onset T2D are more susceptible to microvascular complications that worsen by early adulthood.[8] A study in Australia noted higher mortality among these individuals than those diagnosed later.[8] The TODAY study highlighted increased T2D-related complications in minority racial and ethnic groups.[9]

There is an emerging trend of early-onset T2D among young people in Aotearoa New Zealand,[10] necessitating evidence to address healthcare needs and inform health policy changes, particularly for Pacific and Māori youth. This research aimed to

explore T2D awareness, knowledge, attitudes and risk factors among youth in Auckland. We also explored participants' preferred care models for T2D.

Methods

Study design

The study employed a cross-sectional design and convenience sampling for participant assessment.

Data collection and analysis

Data collection was implemented across several community outreach events between 25 May and 31 July 2024, in collaboration with the Tongan Health Society (THS), a Pacific primary care provider. The target population consisted of all individuals aged 16–25 years old who attended the THS community outreach events. However, three participants above the upper band of the targeted age group were opportunistically assessed for the study.

We held 10 pop-up events during the THS community outreach campaigns in South, Central and East Auckland. Participants were engaged with information about the research, screening procedures, knowledge assessments, attitude, risk, and health education. All participants provided verbal and written consent before data collection, which lasted about 30 minutes and involved a self-administered, paper-based questionnaire.

HbA_{1c} testing

The A1cNow Plus analyser (professional only) by Point of Care Diagnostics NZ was used to measure HbA_{1c} from a capillary blood sample, which has shown 97.83% sensitivity and 77.42% specificity (95% confidence limit) compared with standard laboratory venous HbA_{1c}.[9,10,11] The results were categorised as normal (HbA_{1c} <41 mmol/mol), pre-diabetes (HbA_{1c} 41–49mmol/mol) and diabetes (HbA_{1c} 50mmol/mol or higher).[12] Each participant was informed of their results after 5 minutes with the corresponding interpretation. Participants recording results that indicated pre-diabetes or diabetes were referred to a primary care service provider for further clinical investigations and management.

Body composition measurements

We conducted a body composition assessment using the TANITA RD-545 InnerScan PRO scale, which measures weight, body fat, muscle mass, muscle quality, physique rating, bone mass, visceral fat, basal metabolic rate, metabolic age, total body water and body mass index (BMI).[13] Each participant's weight, BMI and body fat percentage were recorded. Height measurements were taken using the Road Rod Portable Stadiometer from Hopkins Medical.[14]

Body composition indicators, such as body fat percentage and BMI, were classified according to established standards to assess the risk of developing T2D.[15,16] BMI classifications followed ethnic-specific cutoffs: for overweight—Pacific/Māori ≥26.0kg/m^2 to <32.0kg/m^2 and European ≥25.0kg/m^2 to <30.0kg/m^2; for obesity—Pacific/Māori ≥32.0kg/m^2 and European ≥30.0kg/m^2, as recommended by a prior study.[17] We compared the standard BMI thresholds[18] with these ethnic-specific cutoffs and estimated their concordance with corresponding body fat percentage categories from Macek et al.[19] We reclassified participants based on BMI and excess adiposity thresholds identified by Macek et al. (defined as ≥25% for males and ≥35% for females). A participant was considered obese if their BMI indicated obesity and their body fat percentage confirmed excess adiposity. Conversely, if the BMI indicated obesity without excess adiposity, the participant was reclassified as overweight. Participants with a BMI of 40 or above were automatically categorised as obese.[20]

Knowledge, attitude, risk assessment and preferred care models for T2D

We administered a structured questionnaire to assess participants' knowledge of and attitude and risk for T2D. The questionnaire was adapted from prior validated tools[21,22] and pilot-tested with 10 youth from the targeted demographic. The questionnaire aimed to gather demographic and risk information, including dietary habits (e.g., sugary drink consumption), physical activity (e.g., exercise frequency), alcohol use (e.g., current alcohol consumption), knowledge of T2D, awareness of T2D, access to care (e.g., testing history for T2D) and preferences for care models (e.g., desirable care types for T2D in Pacific and Māori communities). Knowledge of T2D was categorised as "good", "fair", or "poor": "good" if participants answered "yes" to both having heard of T2D and knowing it can cause other health complications; "fair" if they had heard of T2D but did not know about its complications; and "poor" if they had never heard of T2D. Attitudes were assessed through four questions: 1) Can anyone get T2D? 2) Am I at risk of developing T2D? 3) Should every-

one be tested for T2D (HbA_{1c})? 4) Is it essential to prevent T2D complications? Each question scored 1 point if the response was "yes", while "no" and "don't know" responses were scored 0. Four points indicated a "good" attitude (answering "yes" to all), 2–3 points was "fair" and 0–1 point was "poor". Furthermore, preference for care model was assessed through predetermined options (e.g., lifestyle management programmes) and an open-ended field (other, specify) to capture information not anticipated in the predefined options.

Data entry and analysis

The completed paper-based questionnaires were entered into IBM SPSS Statistics Software (version 29.0; Chicago, Illinois, United States). The data from SPSS were imported, cleaned and stored in Microsoft Excel (Microsoft Corporation, Redmond, Washington, United States). We conducted descriptive analyses and summarised the data into frequencies and proportions using the total number of valid responses for each variable as the denominator, respectively. For example, the question about ethnicity required multiple responses, where applicable; hence the denominator was more than the total sample assessed (n=138). All statistical analyses were performed using Stata (version 16.1; Stata Corp LLC, Texas, United States).

Health education for T2D prevention

A nurse provided one-on-one in-person targeted health education for T2D prevention and management for all participants post-assessment. HbA_{1c} and body composition results were discussed with the participants, highlighting risk factors associated with developing cardiometabolic conditions. Further education was provided regarding managing these risk factors, ensuring participants were actively involved in their health journey. The health education was targeted at improving awareness of T2D, increasing understanding of the benefits of early diagnosis and treatment for T2D, enhancing knowledge of the risks of T2D and lifestyle adjustments to prevent the disease and diabetes-related health complications, and increasing advocacy for access to diabetes care services, especially weight management programmes for people classified as obese or with pre-diabetes.

Ethical considerations

The Southern Health and Disability Ethics Committee granted ethical approval (ethics reference: 2024 EXP 20214). We obtained verbal and written informed consent from all participants before the screening and interviews. Acknowledging the significance of tikanga, we upheld Māori values, beliefs and worldviews. Our research team focussed on fostering relationships with participants while preserving mana throughout the study. We recognised the sacredness of the body (tapu) and ensured that blood samples were collected, tested and discarded with respect. Participants could request a lotu or karakia before sample disposal. Additionally, they were informed of their right to access their records to review and verify only the information they provided during the assessment.

Results

Demographics

We assessed 135 young people aged 16–25 years, and an additional three young people aged 26–31 years from several suburbs in the south, central and east of Auckland. Table 1 shows the demographic distribution of the study participants. Females represented 58% (n=80) of the study participants. The median age was 20 (16–31) years. There was an almost equal proportion of youth aged 16–19 (46.4%, n=64) and 20–24 (45.7%, n=63). Most participants identified as Tongan (62%, n=110), followed by Samoan (18%, n=31).

Knowledge of diabetes

Most participants (60.1%, n=83), reported having heard about T2D. The most common sources of information about T2D were from a family member, (40%, n=58), health promotion materials, (16%, n=24) and social media (13%, n=19). Approximately 36% (n=50) of participants reported having a first-degree relative with T2D. More than half (56.8%, n=46) of the participants who had ever heard about T2D knew about other types of diabetes. In addition, 62.0% (n=49) of participants mentioned that T2D causes other health complications. Furthermore, over a third (36.6%, n=49) of participants displayed a "good" knowledge of T2D, and participants with a "poor" knowledge of T2D represented 41.0% (n=55) of the sample (Table 2).

Attitude towards T2D

Regarding participants' attitudes towards T2D prevention and management, 56.2% (n=77) thought anyone could develop T2D, but 32.1% (n=44) thought they were at risk of developing the condition. In addition, 75.4% (n=104) of

Table 1: Demographic distribution of participants, Auckland, 2024.

Variable	Frequency (n)	Percent (%)
Gender (n=138)		
Female	80	58.0
Male	58	42.0
Age group (n=138)		
16–19	64	46.4
20–24	63	45.7
25 and older	11	7.9
Ethnicity* (n=177)		
Tongan	110	62
Samoan	31	18
Niuean	7	4
Fijian	7	4
NZ Māori¶	6	3
Asian	6	3
European	5	3
Tuvaluan	3	2
Cook Island Māori	2	1

*The question for ethnicity was designed for multiple responses. Hence, some participants identified with more than one ethnicity.
¶NZ Māori = Aotearoa New Zealand Māori. The classification of NZ Māori and Cook Island Māori was adapted from the Aotearoa New Zealand National Census, Stats NZ.

Table 2: Description of participants' knowledge of T2D (including other types of diabetes), Auckland, 2024.

Variable	Frequency (n)	Percent (%)
Ever heard about T2D (n=138)		
Yes	83	60.1
No	55	39.9
Source(s) of information about T2D* (n=147)		
Family member	58	40
Health promotion materials (e.g., poster/pamphlets/banners)	24	16
Social media	19	13
Healthcare professional	15	10
Television	13	9

Table 2 (continued): Description of participants' knowledge of T2D (including other types of diabetes), Auckland, 2024.

Variable	Frequency (n)	Percent (%)
Radio	9	6
Other (e.g., school, friends)	9	6
Know other types of diabetes (n=81)		
Yes	46	56.8
No	35	43.2
Other types of diabetes (n=59)¶		
Type 1 diabetes	44	75
Gestational diabetes	15	25
T2D causes other health complications (n=79)		
Yes	49	62.0
No	12	15.2
Do not know	18	22.8
Scale of knowledge (n=134)		
Good	49	36.6
Fair	30	22.4
Poor	55	41.0

T2D = type 2 diabetes.
*The question for the source(s) of information about T2D was designed for multiple responses. Hence, some participants identified with more than one source.
¶Participants responded "yes" to knowing other types of diabetes through a multiple-response question.

respondents indicated that testing for T2D should be universally accessible, whereas 76.1% (n=105) underscored the significance of preventing complications associated with T2D. Meanwhile, less than a quarter (24.6%, n=34) of participants believed a person with T2D could reverse their glucose level to normal. Regarding a scale of attitude, more than half (52.9%, n=73) of the participants recorded a "fair" attitude towards T2D, while an almost equal proportion of participants displayed "good" (23.2%, n=32) and "poor" attitude (23.9%, n=33) (Table 3).

Assessment of risk factors for T2D

Dietary factors

Most participants (91.3%, n=126) reported consuming sugary drinks like Coca-Cola, Fanta, processed fruit juices and energy drinks. Nearly equal proportions reported consuming either 1–1.5 litres (23.5%, n=24) or more than 1.5 litres (22.5%, n=23) daily, while 54.0% (n=55) consumed less than a litre. More than a third reported consuming sugary drinks several (3 or more) days a week, with 39.4% (n=49) drinking twice weekly and 31.5% (n=39) drinking once weekly before assessment (Table 4). Meanwhile, 93.4% (n=128) reported eating fruit. Among these, 22.7% (n=29) consumed two servings daily, and 17.9% (n=23) less than one serving. Most participants reported eating fruits several times a week before their assessment (Table 4). Furthermore, 89.7% (n=122) confirmed eating non-starchy vegetables. Among these, 23.8% (n=29) consumed two servings daily, while 14.8% (n=18) ate three servings. Meanwhile, 28.9% (n=35) of participants reported eating non-starchy vegetables several days a week before the assessment (Table 4).

Table 3: Description of participants' attitude towards T2D, Auckland, 2024.

Variable	Frequency (n)	Percent (%)
Anyone can get T2D (n=137)		
Yes	77	56.2
No	9	6.6
Do not know	51	37.2
Perceived personal risk of developing T2D (n=137)		
Yes	44	32.1
No	30	21.9
Do not know	63	46.0
Everyone should get tested for T2D (n=138)		
Yes	104	75.4
No	5	3.6
Do not know	29	21.0
A person with T2D can reverse glucose level to "normal" (n=138)		
Yes	34	24.6
No	16	11.6
Do not know	88	63.8
It is important to prevent T2D complications (n=138)		
Yes	105	76.1
No	2	1.5
Do not know	31	22.4
Scale of attitude (n=138)		
Good	32	23.2
Fair	73	52.9
Poor	33	23.9

T2D = type 2 diabetes.

Table 4: Description of dietary risk factors for T2D, Auckland, 2024.

Variable	Frequency (n)	Percent (%)
Drink sugary drinks* (e.g., Coca-Cola, Fanta, Just Juice, energy drinks) (n=138)		
Yes	126	91.3
No	12	8.7
Quantity of sugary drink consumed daily (n=102)		
<1 litre	55	54.0
1–1.5 litres	24	23.5
>1.5 litres	23	22.5
Frequency (average) of sugary drinks consumption 1 week before assessment (n=124)		
None	2	1.6
Once a week	12	9.7
Twice a week	39	31.5
Several days of the week, but not everyday	49	39.4
Every day of the week	11	8.9
I don't remember	11	8.9
Eat fruits (n=137)		
Yes	128	93.4
No	9	6.6
Number (average) of serving of fruits eaten in a day (n=128)		
Less than one serving	23	17.9
One serving	21	16.4
Two servings	29	22.7
Three servings	11	8.6
Four or more servings	16	12.5
Do not know	26	20.3
Do not wish to answer	2	1.6
Frequency (average) of fruits eaten 1 week before assessment (n=128)		
None	7	5.5
Once a week	19	14.8
Twice a week	27	21.1

Table 4 (continued): Description of dietary risk factors for T2D, Auckland, 2024.

Variable	Frequency (n)	Percent (%)
Several days of the week, but not everyday	42	32.8
Every day of the week	16	12.5
I don't remember	17	13.3
Eat non-starchy vegetables (n=136)		
Yes	122	89.7
No	14	10.3
Number (average) of serving of non-starchy vegetables eaten in a day (n=122)		
Less than one serving	25	20.5
One serving	20	16.4
Two servings	29	23.8
Three servings	18	14.8
Four or more servings	6	4.9
Do not know	19	15.5
Do not wish to answer	5	4.1
Frequency (average) of non-starchy vegetables eaten 1 week before assessment (n=121)		
None	5	4.1
Once a week	17	14.1
Twice a week	28	23.1
Several days of the week, but not everyday	35	28.9
Every day of the week	6	5.0
I don't remember	30	24.8

T2D = type 2 diabetes.
*Sugary drinks include any drink containing sugar or artificial sweeteners.

Nondietary factors

Table 5 summarises the non-dietary risk factors evaluated. Over one-third of participants (36.2%, n=50) reported a blood relative (e.g., parent or sibling) have been diagnosed with T2D. Regarding physical activity, 70.8% (n=97) incorporated exercise into their daily routines. Among these, 39.5% (n=51) engaged in vigorous activities (e.g., heavy weightlifting, rugby). For the 88 participants who reported their exercise duration, the majority (31.8%, n=28) lasted between 90 and 120 minutes. Additionally, 34.4% (n=33) exercised several days a week but not daily and 20.8% (n=20) were active every day before the assessment (Table 5). Furthermore, 47.1% (n=65) of participants reported ever smoking tobacco (e.g., cigarettes, pipes, cigars and vapes), with 38.5% (n=25) being current smokers. Additionally, 47.5% (n=65) reported having a current smoker in their household. Regarding alcohol use, 58.8% (n=80) indicated they had consumed alcohol, with 45.0% (n=36) of this group currently drinking alcohol (Table 5).

Preferred care model for T2D

Participants (287 response) recommended a preferred care model for individuals with T2D of a similar age. Over half (25.1%, n=72) suggested lifestyle management programmes, including diet modification and physical activity. Other recommendations included self-monitoring of blood sugar levels (15.3%, n=44), supportive community health promotion programmes (13.2%, n=38) and psychosocial support, such as stress management and emotional wellbeing counselling (10.5%, n=30). Additionally, 15.3% (n=44) did not know any recommended care model for T2D (Figure 1).

Health screening results

HbA_{1c} test

Approximately 99.3% (n=137) of participants had a "normal" HbA_{1c} result (<41 mmol/mol). One female participant tested positive for T2D with a result of 57mmol/mol, representing 0.7% (n=1). She was referred to her general practitioner for further investigation and management.

Body composition measurements

Table 6 presents the classification of body composition measurements for 120 participants of Pacific and Māori descent. Full body composition data were unavailable for 18 out of 138 participants due to physical limitations: inability to stand on the bioimpedance scale or presence of a limb cast that interfered with scanning. Approximately 71.7% (n=86) of participants had a very high body fat percentage, followed by 16.7% (n=20) with a high body fat percentage. Utilising standard BMI thresholds, about two-thirds of participants (60.8%, n=73) were classified as obese, while 28.3% (n=34) were categorised as overweight. In contrast, the ethnicity-adjusted thresholds indicated that 53.3% (n=64) were obese and 31.7% (n=38) were overweight. Using the ethnic-specific adjusted cutoffs, 69.4% (n=59) of participants categorised as obese and 15.3% (n=13) as overweight were consistent with their body fat percentage categories. Additionally, 14.1% (n=12) of those with a BMI indicating a healthy weight were similarly aligned with normal body fat percentage.

Discussion

This study assessed 138 youth aged 16–31 years, primarily of Tongan ethnicity, across several Auckland suburbs, and it identified one previously undiagnosed diabetes case. About two-thirds of participants reported awareness of T2D, mainly from family members. Generally, knowledge of T2D was good, with females demonstrating better understanding than males. Participants' attitudes towards T2D were predominantly positive.

Dietary risk factors revealed that many participants frequently consumed high amounts of sugary drinks. Non-dietary risk factors included about a third confirming a family history of T2D, and nearly half reported ever smoking, with a third as current smokers. Approximately two-thirds reported alcohol consumption, with most being current drinkers.

Despite regular participation in moderate and vigorous physical activities, most showed a high or very high body fat percentage, aligning with overweight and obese BMI categories. Higher BMI and body fat may increase the likelihood of developing T2D and other chronic conditions.[23] Perng et al. identified obesity as a significant factor for early-onset T2D in young people, noting that most classified as "obese" may develop T2D within 10 years.[24] This trend disproportionately affects First Nations and minority populations.[25]

The number of young people categorised as overweight and obese was underestimated using ethnicity-adjusted BMI and better approximated by the standard BMI. Even though the body fat percentage threshold for obesity presented by Macek et al.[19] aligns with that of Rush et al.,[26]

Table 5: Description of non-dietary risk factors for T2D, Auckland, 2024.

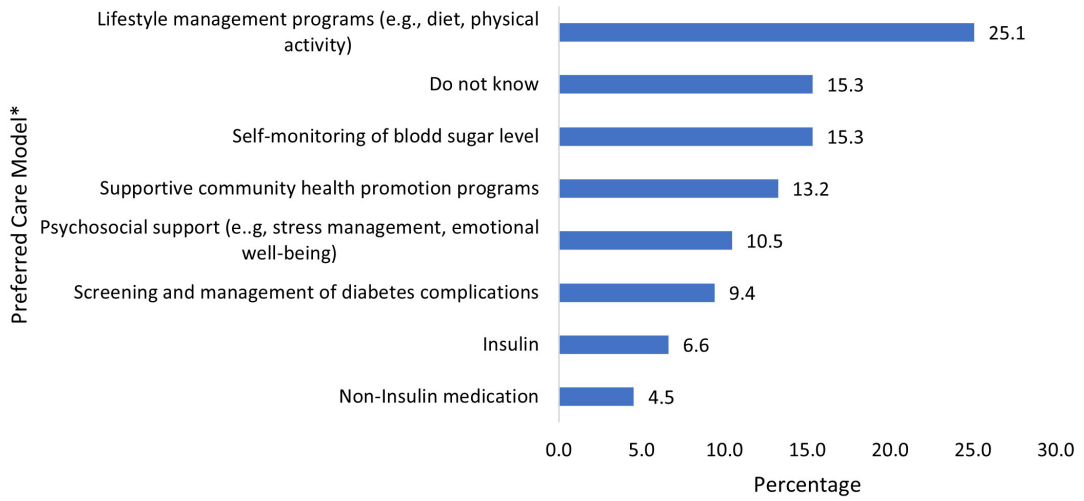
Variable	Frequency (n)	Percent (%)
Blood relative (e.g., parents, siblings) with T2D (n=138)		
Yes	50	36.2
No	44	31.9
Do not know	44	31.9
Physical activity (n=137)		
Yes	97	70.8
No	40	29.2
Duration of physical activity (in minutes) (n=88)		
30–59 minutes	10	11.5
60–89 minutes	12	13.6
90–120 minutes	28	31.8
>120 minutes	17	19.3
I don't remember	21	23.8
Method(s) of physical activity* (n=129)		
Rapid pace walking	36	27.9
Moderate exercise (e.g., bicycling, cardio)	42	32.6
Vigorous exercise (e.g., heavy weightlifting workouts, rugby)	51	39.5
Frequency of physical activity 1 week before assessment (n=96)		
None	5	5.2
Once a week	9	9.4
Twice a week	22	22.9
Several days of the week, but not everyday	33	34.4
Every day of the week	20	20.8
I don't remember	4	4.2
Do not know	3	3.1
Ever smoked cigarettes or tobacco (e.g., pipes, cigars and vape with nicotine) (n=138)		
Yes	65	47.1
No	57	41.3
I don't remember	3	2.2

Table 5 (continued): Description of non-dietary risk factors for T2D, Auckland, 2024.

Variable	Frequency (n)	Percent (%)
Do not wish to answer	13	9.4
Current smoker (n=65)		
Yes	25	38.5
No	40	61.5
Current smoker at home (not the respondent) (n=137)		
Yes	65	47.5
No	57	41.6
Do not know	6	4.3
Do not wish to answer	9	6.6
Ever drunk alcohol (n=136)		
Yes	80	58.8
No	44	32.4
Do not wish to answer	12	8.8
Currently drink alcohol (n=80)		
Yes	36	45.0
No	37	46.2
Do not wish to answer	7	8.8

T2D = type 2 diabetes.
*The question for method(s) of physical activity was designed for multiple responses.

Figure 1: Preferred care model for T2D recommended by participants, Auckland, 2024.



*The question for the preferred care model for T2D was designed for multiple responses. Hence, some participants identified with more than one care model, except when selecting "do not know".

Table 6: Classification of participants' body composition measurements, Auckland, 2024.

Classification	Pacific/Māori (n=120)	BF-concordant by standard BMI categories (n=84)	BF-concordant by ethnicity-adjusted BMI categories (n=85)
BF (%)[19]			
Low (<=12, male; <=19, female)	1 (0.8%)	Underweight 1 (1.2%)	1 (1.2%)
Normal (12–18.9, male; 20–29, female)	13 (10.8%)	Healthy weight 9 (10.7%)	12 (14.1%)
High (19–24, male; 30–35, female)	20 (16.7%)	Overweight 10 (11.9%)	13 (15.3%)
Very high (>=25, male; >=35, female)	86 (71.7%)	Obese 64 (76.2%)	59 (69.4%)
Standard BMI (kg/m²)[18]			
Underweight (<18.5)	1 (0.8%)	All concordant[¥] with BF% category	
Healthy weight (18.5–24.9)	12 (10%)	**3** discordant* with BF% category (overestimating BF% in 2 participants and underestimating in 1)	
Overweight (25–29.9)	34 (28.3%)	**24** discordant with BF% category (underestimating BF% in 3 participants and overestimating BF% in 21)	
Obese (>=30)	73 (60.8%)	**9** discordant with BF% category (overestimating BF% in 9 participants)	
Ethnicity-adjusted BMI (kg/m²)[17]			
Underweight (<18.5)	1 (0.8)	All concordant with BF% category	
Healthy weight (18.5–25.9)	17 (14.2%)	**5** discordant with BF% category (underestimating BF% in 5 participants)	
Overweight (26–31.9)	38 (31.7%)	**25** discordant with BF% category (underestimating BF% in 24 participants and overestimating in 1)	
Obese (>=32)	64 (53.3%)	**5** discordant with BF% category (underestimating BF% in 5 participants)	

BF = body fat; BMI = body mass index.
*Discordance = total classified by BMI − concordant BF% number:
- Overestimation = body fat percentage is lower than BMI classification.
- Underestimation = body fat percentage is higher than BMI classification.

[¥]Concordance = BMI = BF% category (e.g., normal BF% = health weight BMI).

generally non-ethnic-specific body fat percentage thresholds may explain the significant discordance. Our findings reveal the discrepancies between the two approaches and highlight the importance of ethnicity-adjusted thresholds for BMI and body fat percentage concordance, particularly for Pacific and Māori participants to accurately estimate obesity.

Participants favoured lifestyle management, blood sugar self-monitoring, community health promotion and psychosocial support for T2D care. These suggested interventions align with a randomised controlled trial by Peña et al., which demonstrated that lifestyle interventions, including nutrition and health education, can improve outcomes among young participants with T2D and prediabetes.[27] Furthermore, Eva et al. documented the positive impact of self-care activities and supportive networks in improving health outcomes for young people with T2D.[28]

Though our findings indicated low T2D prevalence, various risk factors—including family history, alcohol consumption, dietary habits and high body fat—pose substantial risks for developing T2D. Individuals with high body fat and BMI are at greater risk for chronic health issues, including T2D and its complications.[23] Furthermore, increased intake of sugary beverages has also been correlated to T2D risk.[29,30]

Our study's limitations include its cross-sectional design, which provides only a "snapshot" of the situation. Meanwhile, our sampling technique limits our ability to estimate T2D prevalence among the study population. However, these findings accurately reflect real-world T2D conditions in the population and can guide policy for T2D prevention and management. Additionally, physical issues limited full-body measurements for all participants, though complete data were collected for HbA_{1c} and surveys.

This research demonstrates several strengths. Firstly, this research contributes to the growing scientific evidence documenting the knowledge, attitude, practice and risk for T2D among young people of Pacific and Māori descent in Auckland, Aotearoa New Zealand. Secondly, it identifies and builds an understanding of the knowledge and attitude toward T2D and its risks among the study participants by measuring their HbA_{1c} levels, BMI, body fat percentages, survey responses and preferences for T2D management. Even though the findings cannot be generalised due to the non-probabilistic nature of the sample, they can inform policies to address existing risks to prevent T2D among young people. Thirdly, through working with a Pacific primary care provider with strong ties to Pacific community groups, this research ensured that cultural considerations in the responses to the questionnaire were maintained and accurately communicated.

This study indicates a relatively high awareness about T2D among our study participants, yet significant risks exist. It underscores the necessity for regular T2D screening and targeted prevention strategies to mitigate T2D development, particularly among youth. The evidence gathered serves as a baseline for future screenings and research on risk factors, guiding T2D prevention and management policies for youth, particularly those of Pacific and Māori descent.

COMPETING INTERESTS
RM has received honoraria from Lilly, Novo Nordisk and Boeringer Ingelheim for providing educational sessions, and support from Novo Nordisk to attend a metabolic summit weekend in Melbourne in June 2025. RM participates in advisory boards for Lilly and Novo Nordisk New Zealand; is a Pharmac Diabetes Advisory Committee member; is a NZSSD monogenic diabetes guidelines group chair; is a NZSSD diabetes management guidelines group member; and is a Cardiac-Kidney-Metabolic management guidelines group member.

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A comparative assessment of AI and manual transcription quality in health data: insights from field observations

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ABSTRACT

AIM: This study explores the semantic similarities between qualitative research transcripts produced by artificial intelligence (AI) and those transcribed manually, with a particular focus on challenges encountered when working with multicultural participants in health science research who are non-native English speakers.

METHOD: The analysis is based on an audio file from one representative participant in a qualitative study involving 20 participants. It compares transcripts generated by a professional audio transcriptionist with those produced by two AI platforms, Otter.ai and Avidnote.

RESULTS: Findings reveal that while AI transcription has advantages in speed and cost-effectiveness, it can struggle with speaker differentiation and punctuation accuracy, necessitating manual review. Both platforms faced challenges with cultural terminology and accented speech, but Avidnote showed better performance in word recognition and comprehension. Limitations were primarily in the transcription of te reo Māori.

CONCLUSION: The study highlights the critical role of culturally competent researchers in reviewing transcripts to ensure accuracy and clarity. These findings contribute to a deeper understanding of the benefits and limitations of AI transcription tools in qualitative health research, especially when working with linguistically and culturally diverse populations.

Transcription is an important, but often under-acknowledged, aspect of both qualitative research and clinical documentation. In research contexts, transcribing interview data from audio files is a fundamental step for generating high-quality transcripts for qualitative analysis.[1,2] It enables researchers to develop a deep familiarity with the data and facilitates the methodological and theoretical interpretation of spoken language.[2] Transcription is widely used across various academic, applied research and professional practice fields and is also necessary for natural language processing applications such as text summarisation, document clustering, question answering, essay grading and more.[3]

Because spoken language differs structurally from written text, when oral communication is transcribed into written form, readers interpret it based on their understanding of written language. Since the relationships between language and meaning are inherently contextual, rhetorical and constructed, these principles also apply to transcriptions of spoken discourse.[1,4] Transcripts should, therefore, be viewed as contextual constructions rather than objective representations of reality, acknowledging the limitations of capturing all aspects of a speech event.[5]

In qualitative research, transcription is not just a technical step but part of the analytic process,[6] so accuracy and transparency are essential to maintain the trustworthiness of the data. Errors such as missing or incorrect words can significantly alter the meaning and compromise the validity of findings.[7] Different transcription strategies may be used for specific research purposes to capture intonation, false starts, overlaps, speaker positioning and turn-taking.[2] Standard punctuation and spelling also improve the ease of reading by eliminating dysfluencies and accidental starts. Maintaining transcription quality, therefore, is critical for the rigour and reliability of qualitative research.[8]

Some studies have suggested that a combination of manual and automated transcription methods may be the most effective approach, capitalising on the strengths of each to produce the most accurate and comprehensive transcripts.[9,10] With the rapid expansion of artificial intelligence (AI), transcription tools have evolved to support both research and healthcare applications.

AI-driven speech recognition now plays a pivotal role in medical transcription, allowing clinicians to efficiently dictate patient notes and medical records, improving productivity, allowing

for faster and more accurate record-keeping and reducing the risk of manual errors. The ability of speech recognition systems to adapt to medical jargon and nuances makes them increasingly important tools in healthcare documentation.[11] These platforms integrate core technological components, including automatic speech recognition (ASR) engines, natural language processing (NLP), algorithms and user interface systems, although they differ in their underlying architecture, training datasets and performance across diverse linguistic contexts.[12]

Each platform employs distinct methodological approaches to speech recognition: some use proprietary ASR models trained on domain-specific datasets, others support cloud-based application programming interfaces (APIs) from major technology providers, while newer systems incorporate transformer-based architectures and large language models (LLMs) to enhance contextual understanding and accuracy.[12]

In healthcare settings, specialised medical transcription software is often incorporated into patient management packages, such as indici,[13] and these are now becoming widely used in general practices across New Zealand. These platforms offer integrated clinical documentation features tailored to the needs of primary care providers, including voice-to-text capabilities.

As AI transcription tools become increasingly popular in research and clinical contexts, understanding their capabilities, limitations and implications is increasingly important. Despite these advantages, human review is often necessary to ensure clinical safety,[11] especially when working with clients with accented English, different cultural expressions or specialised terminology. Given the critical importance of transcription quality for interpretation of data, there is a paucity of literature examining the accuracy, efficiency, reliability and usability of transcripts generated by AI compared with those produced manually by human transcribers.

The expanding field of AI-based transcription technologies includes a diverse range of platforms, ranging from research-oriented tools like Avidnote, to general-purpose transcription tools such as Otter.ai and Fireflies.ai, as well as enterprise-level solutions like Sonix and TurboScribe. Many of these platforms use advanced speech recognition models to transcribe audio, including in multiple languages. One such model is OpenAI Whisper,[14] which is open source and widely used behind the scenes in platforms such as TurboScribe and the ChatGPT mobile app. While OpenAI Whisper performs the transcription, other tools may use LLMs for downstream tasks such as summarisation or note generation. Similarly, enterprise services like Microsoft Azure AI Speech and Google Cloud Speech-to-Text are widely used in professional settings, employing their own proprietary speech recognition technologies that support transcription in many languages.[15,16] Given the challenges in accurately transcribing accented English, multilingual speech and culturally specific expressions, we identified a need for a more systematic examination of different tools using representative audio files from target populations.

After an initial assessment of widely available AI transcription tools (see Table 1), Avidnote and Otter.ai were selected for comparative analysis. This selection was informed by practical relevance and ethical considerations. Avidnote was chosen for its research focus, multilingual capability and explicit commitment to ethical data handling practices, specifically compliance with the European Union's General Data Protection Regulation (GDPR). Otter.ai, although more limited in its language capabilities, was included due to its widespread use within our university context. The professional subscription versions of both platforms were used in this study, as these provide better data security and privacy compared with free versions.

Table 1 summarises some common AI tools used for transcription, with a particular focus on their ability to transcribe audio in multiple languages. While many tools perform well in English, their accuracy with non-English words and multilingual speech varies significantly.

Research context

This study emerged from a broader qualitative research project examining dual relationship roles for Muslim professionals who provided services to a community impacted by a terrorist attack on two mosques in Christchurch, New Zealand. Although interviews were conducted in English, participants frequently used Islamic and Arabic terminology, and many spoke English with an accent as it was their second language. An audio transcriptionist was initially engaged and provided with contextual information and a list of commonly used terms. However, she reported difficulty understanding accented English and unfamiliar terminology, which prompted the trial

Table 1: Common AI tools for transcription.

AI tool	Primary function	Languages supported	Standalone tool
Alrite AI https://alrite.io/ai/	Transcription, subtitle generation	Major Indo-European languages	Yes
Avidnote https://avidnote.com/	Transcription, note taking, qualitative analysis support	Multiple languages	Yes
Beey AI https://www.beey.io/en/	Transcription, captions for media content	Major European languages	Yes
Cockatoo https://www.cockatoo.com/	Transcription, meeting summarisation	Mostly European & Asian languages	Yes
Deciphr https://www.deciphr.ai/	Podcast transcription, summarisation	English	Yes
Fireflies.ai https://fireflies.ai/	Transcription, meeting summarisation	Mostly English	Yes
Otter.ai https://otter.ai/	Transcription (real time), summarisation, note taking	English	Yes
Sonix https://sonix.ai/	Transcription, translation subtitles	Major European & selected Asian languages	Yes
TurboScribe https://turboscribe.ai/	Transcription (Whisper)	Multiple languages	Yes
Whisper (OpenAI) https://openai.com/index/whisper	Automatic speech recognition (used in other platforms like TurboScribe & ChatGPT mobile app)	Multiple languages	No (back-end model integrated into other platforms)
Microsoft Azure AI speech services https://learn.microsoft.com/en-us/azure/ai-services/speech-service/overview	Transcription, summarisation	Multiple languages & dialects	No (integrated in Microsoft 365 apps)
Google Cloud Speech-to-text https://cloud.google.com/speech-to-text/docs	Transcription, speaker separation	Multiple languages & dialects	Yes (Google Cloud API*)

*API = application programming interface.
Note: Descriptions of platform capabilities are based on publicly available documentation and may vary depending on subscription level, integration settings or usage context.

of Otter.ai and Avidnote to assess their potential for research with multicultural participants.

The primary aim of this study was to evaluate discrepancies between AI-generated and human-generated transcripts, while also exploring how cultural comprehension may help researchers interpret nuanced contexts within the transcripts. This evaluation focussed on the semantic relationships among words, sentences and concepts, using semantic similarity metrics.[3] These metrics have rarely been used to assess the fundamental differences between AI-generated and manually processed transcripts. In this paper, we report sentence-to-sentence semantic similarity analysis to evaluate the potential qualities of both AI and manual transcription methodologies.

This analysis was guided by the following research questions:

1. Does the involvement of culturally competent researchers as transcribers impact the accuracy and quality in qualitative research transcripts?
2. What are the potential challenges and benefits of using AI transcription tools compared with human transcribers to accurately capture cultural nuances and context?
3. How can researchers effectively integrate AI-generated transcripts into their qualitative research process to maintain rigour and accuracy?

Methodology

The comparative analysis utilised an audio file from a single participant, coded as DR06 to ensure anonymity. This participant was part of a larger sample, and the issues discussed in the interview, as well as the transcription concerns identified by the human transcriber, were representative of the broader dataset. The participant provided informed consent for their data to be used in this analysis, including further transcription by AI systems. The audio file was recorded during a semi-structured interview aimed at exploring the participant's experiences and perspectives on their professional role working in a Muslim community after the terrorist attack. The interview lasted 21 minutes and was conducted in a private setting to ensure confidentiality and encourage candid responses. The audio file size was 216MB and was recorded as part of a study approved by the University of Otago Human Ethics Committee (Health), approval number 22/153. Prior to data collection, participants received comprehensive information about the study and provided written consent.

Manual transcription

The audio file was first transcribed manually by an experienced, professional transcriptionist. She produced a verbatim transcript, capturing spoken words, fillers and pauses.

AI transcription

Two AI platforms, Otter.ai and Avidnote, were used to generate automated transcriptions of the same audio file. Both platforms are designed for academic and research purposes, with features that include transcription, annotation and organisation of notes.

- **Otter.ai:** the audio file was uploaded directly to the program, and the default settings were used to generate the transcript.
- **Avidnote:** this AI-driven transcription program is designed for academic use. The DR06 file was uploaded and transcribed using standard settings. Avidnote supports files of up to 500MB; however, larger files require splitting into smaller segments using additional software.

Culturally responsive review

Two research team members, with expertise in the subject matter and familiarity with the participants' cultural context, thoroughly reviewed all transcripts, comparing them against the audio file. They noted whether cultural nuances, idiomatic expressions and context-specific terminologies were accurately captured. The annotated and reviewed transcript produced through this process was then used as the reference standard for subsequent comparisons between manual and AI-generated transcriptions.[17]

Comparative analysis

A semantic similarity approach was used to compare the different transcript versions and identify the strengths and limitations of each method.

Lexical and morphological differences

The primary focus of the comparative analysis was on lexical and morphological differences. Lexical differences refer to variations in word choice, while morphological differences relate to

the structure and form of the words. This analysis involved several steps:

1. Initial review: each transcript was reviewed independently to identify obvious differences.
2. Lexical analysis: a detailed comparison was conducted to identify differences in vocabulary used across the transcripts. This included noting different words or phrases used to convey the same meaning, as well as omissions or additions of words.
3. Morphological analysis: comparing the structure of words and their grammatical forms. Special attention was paid to foreign language words and expressions.
4. Quantitative measures: the number of lexical and morphological discrepancies in each transcript was counted, providing a numerical basis for comparing the accuracy of the different transcriptions.

Findings

Distinct patterns of errors were observed across the different transcription methods. The distribution and types of errors for each transcription method are detailed in Table 2.

For the manual transcription, the main sources of error stemmed from the transcriptionist's inability to accurately capture foreign terminology and non-English words, combined with her difficulty understanding diverse accents. A total of 17 errors were recorded. In contrast, for Otter.ai, a total of 84 errors were identified. The majority of these were morphological and lexical, with a significant number also related to inaccurate punctuation. Although Otter.ai performed reasonably well in recognising and transcribing words, it struggled with the finer details of language structure and punctuation. It also had trouble with foreign terms. Avidnote, on the other hand, produced the most accurate transcript, with 16 errors detected. These were predominantly lexical and could likely be attributed to the software's challenges in accurately processing accented pronunciation.

Challenges with non-English terminology and accents

The professional transcriber faced challenges in identifying cultural words and understanding certain accents. Words such as *Masjid*, *Qadar* and *Shahada*, which are commonly used in this

Table 2: A list of errors (morphological,[1] lexical,[2] non-English & punctuation) compared with the reference version.

Manual transcription	Otter.ai-generated transcript	Avidnote-generated transcript
Errors found: 17	Errors found: 84	Errors found: 16
Types of error: Morphological = 2 Lexical = 1 Non-English words = 11 Punctuation errors = 3	Types of error: Morphological = 35 Lexical = 21 Non-English words = 5 Punctuation errors = 23	Types of error: Morphological = 4 Lexical = 7 Non-English words = 3 Punctuation errors = 2
Examples: Non-English words ***Masjid*** or ***Madrassa*** were missed.	Examples: Morphological, e.g., "…he was present in the ***material*** know, the whole thing…" instead of "…he was present ***and he*** know the whole thing…" Lexical, e.g., "…it was an evolving ***road***" instead of "…it was an evolving ***role***" Non-English words, e.g., "…see them in the ***dresser***" instead of "…see them in the ***Madrassa***"	Examples: Morphological, e.g., "…offering them support ***in like*** letting them…" instead of "…offering them support ***and*** letting them…" Lexical, e.g., "***stuff***" instead of "***staff***"; "***rules***" instead of "***roles***"; "***dual rooms***" instead of "***dual roles***"

[1] A type of error that occurs when the rules of word formation in a language are not followed correctly.
[2] A type of error that is associated with the incorrect use of vocabulary and collocation.

community, were not accurately transcribed (see Table 3). She also had difficulty with the accent of DR06, who speaks English as a second language, failing to capture phrases like "*I actually didn't really have a profession, even though I'm an MBA in…*", the transcriber failed to perceive "an MBA in". As a native English speaker, she had limited familiarity with diverse accents. External factors like audio quality may have also impacted her comprehension. In contrast, the multicultural research team had no trouble understanding the participant.

Although Avidnote, and to a lesser extent Otter.ai, correctly identified many cultural and religious terms, they both struggled with te reo Māori words. The manual transcriptionist accurately captured the Māori content, despite not being fluent in the language. Though the speaker is not Māori, they, like many New Zealanders, have a basic understanding of te reo Māori terminology. This suggests that the broader implications of the transcriber's linguistic background and competency are important to consider.

Punctuation errors

Another issue relates to punctuation accuracy, particularly for Otter.ai, which had 23 errors detected. Punctuation often relies on understanding the context of a sentence,[18] and while AI may excel in transcribing speech, it can have difficulty in

Table 3: A semantic comparison between AI-generated and manually processed transcriptions.

Professional transcriber	Otter.ai-generated	Avidnote-generated	Culturally informed researcher
1. I was volunteering with the **01:32** Council with Sister…	I was volunteering with the **nice Asherah council with system**…	I was volunteering with the (correctly identified organisation) **Council** with sister…	I was volunteering with (correctly identified organisation) **Council** with sister…
2. And as you know the … community suffered the largest numbers of **02:20**.	And as you know, the, the … community suffered the largest numbers of **Shahada**.	And as you know, the, the … community suffered the largest numbers of **Shahada**.	And as you know, the, the … community suffered the largest numbers of **Shahada**.
3. …when the teams of community support workers **at Purapura Whetu** was being established…	…when the teams of community support workers, **a political figure** was being established…	…when the team of community support workers **at Poro Poro 52** was being established…	…when the teams of community support workers **at Purapura Whetu** was being established…
4. I'm not a very religious person but I'm very spiritual and I believe in all **07:48** and destiny.	I'm not a very religious person, but I'm very spiritual, and I believe **of all in all, color** and destiny	I'm not a very religious person, but I'm very spiritual, and I believe in all **Qadar** and destiny.	I'm not a very religious person, but I'm very spiritual, and I believe in all **Qadr** and destiny.
5. He was present **06:13** and the whole thing and he came back.	He was present in **the material know**, the whole thing. And he came back.	He was present **in Masjid Al Noor**, the whole thing, and he came back.	He was present **in Masjid Al Noor**; the whole thing and he came back.
6. I would do it again because I feel like **Allah's 12:27** has bigger plans, I am just one small piece in that.	I will do it again. Because I feel like **Allah Subhanaw taala** has bigger plans.	I will do it again, because I feel like **Allah subhanahu wa ta'ala** has bigger plans.	I will do it again because **Allah Subhanahu Wa Ta'ala** has bigger plans.
7. I actually didn't really have a **profession**, even though I'm **4:36**…	I actually didn't really have a **question**, even though I'm **an MBA** in…	I actually didn't really have a **profession**, even though I'm **an MBA** in…	I actually didn't really have a **profession**, even though I'm **an MBA** in…

accurately interpreting the context and appropriately inserting punctuation marks. Like any technology, AI may face challenges in accurately capturing the nuances of spoken language, including pauses and intonations that indicate where punctuation should be placed.

Cost and time savings

Manual transcription generally involves a turnaround time of 2 to 3 days. In contrast, Otter.ai and Avidnote provided significantly faster processing times, completing transcriptions in 7.56 minutes and 3.42 minutes, respectively. In addition to improving workflow efficiency, they also offer potential cost savings, with the annual subscription fees for these AI-transcription software services being approximately equivalent to the cost of a single manual transcription.

Discussion

This study investigates the advantages and limitations of two AI-based transcription platforms, Otter.ai and Avidnote, compared with traditional manual transcription methods. The findings suggest that while AI transcription tools have the potential to significantly enhance workflows in research and healthcare settings, they are not without limitations. Key benefits of these AI platforms include significant time and cost savings, as well as the ability of Avidnote to process files in multiple languages. However, several challenges were identified. For instance, although Otter.ai has a user-friendly interface with a streamlined process for uploading large audio files, the transcript it generated contained numerous morphological, lexical and punctuation errors. Avidnote, on the other hand, is limited to processing audio files no larger than 500MB, necessitating the manual segmentation of larger files before uploading. This step introduces additional technical complexity and software requirements.

Both AI platforms encountered difficulties in accurately transcribing New Zealand Māori words, highlighting a potential bias in transcription algorithms towards more widely spoken languages. Avidnote demonstrated superior accuracy in transcribing multilingual content, a task that presented challenges for the manual transcriptionist, especially with non-English terminology and diverse accents.

Despite the rapid transcription capability of AI platforms, human oversight remains crucial. Conversations are inherently complex, built upon multiple layers of context, shared understandings and cultural assumptions.[2] Staff with cultural expertise or insider perspectives are better equipped to identify and interpret these nuances, which may be overlooked by professional transcribers or AI-based systems, and this can significantly enhance transcription quality.[8] In clinical practice, this suggests that healthcare providers should prioritise involving professionals who understand the cultural backgrounds of their patients. Such an approach can improve communication, build trust and ensure that healthcare interventions are appropriately tailored to meet the needs of linguistically diverse groups.

While AI transcription tools can improve efficiency, it is essential to thoroughly review and edit AI-generated transcripts to preserve the rigour and trustworthiness of research. Existing literature indicates that AI-generated transcriptions are susceptible to bias, which highlights the necessity of human intervention to maintain research integrity.[19] Given that preliminary verbatim transcripts require verification, revision and elaboration by researchers,[2] it is crucial that AI-generated transcripts also undergo meticulous examination and refinement to ensure their accuracy. Our findings recommend a hybrid approach, where AI is used to rapidly generate initial transcripts, followed by thorough review and refinement by culturally competent researchers. Particular attention should be given to accurately transcribing and interpreting linguistic nuances, especially for individuals with accents or who use nonstandard language. Collaboration with language experts or consultation with interview participants, when necessary, will effectively preserve the richness and authenticity of participants' voices, thereby improving the overall quality of the transcripts.

Implications of transcription quality in clinical practice and healthcare

The findings from this study have significant implications for clinical practice and healthcare. AI transcription tools, while offering substantial benefits for efficiency and cost-effectiveness, do have some limitations, especially in accurately transcribing culturally specific terminology and accented speech. In healthcare settings, where understanding patient narratives is crucial for diagnosis and treatment, inaccuracies in transcripts may lead to misinterpretations of patient needs and cultural contexts, potentially resulting in inappropriate clinical decisions or harm.

These issues could significantly affect the quality of healthcare and clinical practice provided to culturally and linguistically diverse patients.[20,21]

Limitations of this research study

This research is limited by the analysis of a single audio file from one participant, which may not fully represent the broader dataset or the diversity of linguistic and cultural experiences across all contexts or populations, nor does it explore the full range of factors that could influence transcription accuracy, such as the specific training of human transcribers. The comparison was also restricted to two AI transcription platforms, Otter.ai and Avidnote, as well as manual transcription, which limits the generalisability of the findings. While the findings offer useful insights into the capabilities and limitations of AI transcription tools, it does not include the full range of technologies available, especially those specifically designed for clinical use.

Future studies should consider evaluating additional AI transcription tools, including healthcare-specific platforms that are becoming increasingly common in New Zealand. Expanding the sample to include multiple participants with varied linguistic backgrounds would also provide a more comprehensive understanding of transcription accuracy and cultural sensitivity in different contexts. Future research could also explore how the training, experience and cultural competence of human transcribers influence transcription accuracy.

Conclusion

This study compared transcriptions generated by two AI platforms, Avidnote and Otter.ai, with those produced by a professional human transcriptionist. Culturally knowledgeable researchers reviewed the original transcripts and created a reference transcript that served as the benchmark for evaluating the others.

Overall, AI transcription tools offer greater speed and cost-effectiveness than manual methods. Avidnote successfully transcribed an interview conducted in English with a non-English accent and accurately captured Arabic phrases used within this context. However, its inability to process files larger than 500MB necessitated manual segmentation. Otter.ai was also fast, cost-effective and capable of managing large audio files, but it was less accurate with non-English terminology and introduced multiple other errors, potentially requiring substantial correction time. Manual transcription, while slower and more costly, benefits from the cultural knowledge and contextual understanding of the transcriber, which can be critical for accurately capturing nuanced or culturally specific language. In this study, the human transcriber encountered challenges in accurately capturing certain elements, such as the participant's accent and Arabic terminology, although Māori terminology was transcribed successfully.

Despite the efficiency gains offered by AI-powered transcription tools, thorough review by culturally competent researchers remains necessary to ensure the accuracy and cultural relevance of the final transcripts. These findings have implications for clinical practice, particularly when documenting consultations from individuals from diverse cultural backgrounds or with varying levels of English proficiency. Transcripts, or any summaries produced, could be compromised if there are errors and should therefore be carefully reviewed.

The findings indicate that while AI-powered tools can expedite the transcription process, they still lack the cultural sensitivity and nuanced understanding necessary to produce high-quality transcripts, particularly within the diverse cultural contexts encountered in clinical practice and health science research. A hybrid approach, using AI for initial transcription followed by culturally informed human review, is recommended to ensure accuracy and contextual relevance.

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Capacity to manufacture key pharmaceuticals in New Zealand after a global catastrophe

Nick Wilson, Peter Wood, Matt Boyd

ABSTRACT

INTRODUCTION: Human civilisation faces global catastrophic risks such as: nuclear war, bioengineered pandemics, major solar storms and a volcanic winter. For some of these catastrophes, island nations may have relative survival potential but any collapse in international trade could also end critical imported goods such as pharmaceuticals. We aimed to explore the latter in New Zealand, a highly trade-dependent island nation.

METHODS: We identified the 10 most extensively prescribed pharmaceuticals in New Zealand that can be used for acute treatment (by annual prescription numbers). Based on modern synthesis pathways for these pharmaceuticals in the literature, we identified ingredients and then determined if these ingredients were currently produced in New Zealand.

RESULTS: The results suggest that none of these 10 pharmaceuticals could be produced in New Zealand in a trade-ending catastrophe: paracetamol, omeprazole, amoxicillin, ibuprofen, aspirin, metoprolol succinate, salbutamol, prednisone, cetirizine hydrochloride and amlodipine. This is primarily because New Zealand does not refine petrochemicals. For seven of these 10 pharmaceuticals the relevant catalysts or other specific chemical ingredients are also not mined or otherwise produced in New Zealand. There may, however, be some scope for the post-catastrophe scavenging of minerals for producing some catalysts.

CONCLUSIONS: This preliminary analysis suggests that none of the 10 most extensively prescribed pharmaceuticals that can be used for acute treatments could be manufactured in New Zealand after a trade-ending global catastrophe. To address this and other domains lacking in resiliency (e.g., liquid fuel supply), planning for building shared resiliency with other neighbouring nations (e.g., Australia) could be considered.

There is concern among experts about global catastrophic risk,[1] and the United States (US) Government recently requested a report that has detailed the following threats: "*artificial intelligence; asteroid and comet impacts; sudden and severe changes to Earth's climate; nuclear war; severe pandemics, whether resulting from naturally occurring events or from synthetic biology; and supervolcanoes*."[2] The risk of some of these may also be increasing, including for pandemics[2,3] and nuclear war. In particular, there have been repeated implied threats around nuclear weapons by the Russian leadership[4] and deteriorating international relations between some of the nuclear weapon states (e.g., the US and Russia; and the US and China). There is also the possible expiration of a key nuclear weapons treaty in 2026[5] and a general lack of meaningful progress with nuclear disarmament in recent years.[6] Furthermore, nuclear weapon states are typically either modernising and/or expanding their arsenals (e.g., China,[7] North Korea[8] and Pakistan[9]).

Some island nations may be better placed than other nations to survive catastrophes such as a nuclear winter or a volcanic winter.[10–12] But major challenges would likely include maintaining key aspects of modern society that depend on international trade (e.g., food, liquid fuels and industrial supplies), given that such trade could be severely disrupted or end entirely. In this study, we look at just one such aspect: the supply of key pharmaceuticals.

In recent years, high-income nations have recognised the vulnerability of their pharmaceutical supply chains. These concerns were particularly highlighted by the COVID-19 pandemic, with nations discovering high-level dependencies on both imported active pharmaceutical ingredients (APIs) and finished medications. In response, the US in 2021 announced establishing public–private partnerships to identify and domestically manufacture 50–100 critical medications.[13] Furthermore, the European Union (EU) has proposed a *Critical Medicines Act* to address severe shortages.[14] Some countries within the EU have

taken more concrete steps, with France implementing a "Pharmaceutical Sovereignty" initiative that includes restarting domestic paracetamol production (with production due to start in 2026).[15] Similarly, Sweden in 2024 proposed state-run pharmaceutical manufacturing for essential medicines.[16] Nevertheless, the dependency on international trade for APIs remains very high with Europe, for example, obtaining 60–80% of its APIs for generic medicines from China.[17] For the US, local manufacture of active ingredients is only 15% for its brand medicines and 12% for its generic medicines (the rest come from the EU, India, China and other countries).[18] With much smaller countries, such as New Zealand, the economic barriers to any significant level of pharmaceutical independence are particularly substantial.

Previous work by government agencies in New Zealand has considered the threat of such catastrophes as nuclear war,[19,20] pandemics[21] and, more recently, severe space weather events that could damage the national electrical grid.[22] But this country still remains extremely unprepared for such catastrophes as recent studies on nuclear war/winter indicate.[23,24] Although in some global catastrophe scenarios it is plausible that some level of trade between New Zealand and Australia might continue, this is far from guaranteed given New Zealand's complete dependence on imported liquid fuel for aircraft and cargo shipping.[23] Furthermore, this country may have relatively little to offer Australia in terms of critical trade (that Australia doesn't already produce), and it is also relatively far away from all other trading partners.

One of the major threats to health of New Zealanders from a global catastrophe could be in terms of food security, given the extreme dependency of industrial agriculture on imported liquid fuels.[24] This is despite the apparent current national self-sufficiency in food.[25] New Zealand research has started to consider this threat in terms of estimating local biofuel production to keep agricultural machinery running,[24] optimal crop selection[26] and optimal use of urban and near-urban agriculture.[27] But other threats to health from such global catastrophes have only been explored in relatively outdated work from the 1980s.[19,20,28] In particular, the topic of key pharmaceuticals has not been studied in detail, even though this is a likely area of high vulnerability since:

- The existing pharmaceutical industry in New Zealand does not currently produce major pharmaceuticals from source ingredients. Instead, it is focussed on secondary manufacturing and formulation, packaging of imported active ingredients and quality control and testing.
- The recent ending of oil refining in the country[29] (despite continuing to produce and export crude oil extracted in Taranaki), has curtailed potential domestic production of petroleum-derived ingredients for pharmaceutical manufacture. There are also no industrial plants using coal-to-chemicals or coal-to-liquids technologies. Methanol is, however, manufactured from natural gas in Taranaki,[30] and there is a wood pyrolysis plant in Timaru.[31] However, the latter only produces charcoal and not chemical by-products potentially relevant to pharmaceutical production (e.g., phenolics and furans).
- Industrial production of other chemicals relevant to the pharmaceutical industry is also relatively limited. Nevertheless, hydrogen gas is produced at various sites (e.g., from a geothermal plant[32]), and sulphuric acid is produced as part of fertiliser production (superphosphate).[33]

Methods

The most extensively used pharmaceuticals in New Zealand by annual numbers of dispensed prescriptions[34] were first selected for consideration. These were then categorised to produce a list of 10 that can be used for acute treatment, as opposed to just chronic disease management (Table 1). Our particular focus on pharmaceuticals relevant to acute treatment was to reflect two potential post-catastrophe factors: 1) a likely greater focus by clinicians on potentially life-saving treatments as opposed to chronic disease management and 2) difficulties with manufacturing that could limit the volume of any locally produced pharmaceuticals (given that courses for acute treatment typically involve lower per person volumes than for chronic disease management). We did not consider the "essential medicines" in the World Health Organization's list[35] as this is very extensive (591 drugs and 103 therapeutic equivalents) and has no prioritisation within the listed medicines.

Table 1: Most extensively prescribed medicines in the 2022/2023 financial year in New Zealand[34] used to identify the 10 most relevant medicines for treating acute conditions (ranked by annual number of prescriptions dispensed according to the national Pharmaceutical Management Agency of the New Zealand Government [Pharmac]).

Medicine	Therapeutic group (Pharmac)	Prescriptions (annual number)	Included in this study if relevant to acute treatment (even if also used for chronic disease management)
Paracetamol	Analgesics	3,460,000*	Yes—for acute pain relief; fever reduction (suitable for children)
Atorvastatin (statin)	Cardiovascular	1,840,000	No—since used for the prevention of cardiovascular disease (CVD)
Omeprazole (proton-pump inhibitor for heart burn/acid reflux)	Alimentary	1,690,000*	Yes—for acute gastritis and treating gastric ulcers
Amoxicillin (antibiotic)	Anti-infectives	1,230,000	Yes—for infections (potentially also life-saving e.g., severe bacterial pneumonia)
Ibuprofen (anti-inflammatory)	Analgesics	1,200,000*	Yes—for acute pain relief
Cholecalciferol (vitamin D)	Musculoskeletal	1,110,000*	No—typically used for prevention of osteoporosis
Aspirin	Antithrombotics	1,100,000*	Yes—for managing a heart attack or stroke (potentially life-saving); also (in adults) acute pain relief and fever control (low-dose aspirin is also used in non-acute disease management, i.e., for the secondary prevention of CVD)
Metoprolol succinate (an antihypertensive)	Cardiovascular	920,000	Yes—for managing acute cardiac conditions such as arrhythmias and heart failure (potentially life-saving); and for managing angina (it is also used in non-acute disease management, i.e., for treating high blood pressure, a risk factor for CVD)
Salbutamol (a bronchodilator)	Respiratory	860,000	Yes—for acute asthma attacks (potentially life-saving)
Levothyroxine (thyroid hormone)	Hormones	710,000	No—typically used for managing hypothyroidism. It is only life-saving in extremely rare forms of hypothyroidism, i.e., myxedema coma.
Prednisone (steroid)	Hormones	700,000	Yes—for severe allergic reactions, autoimmune crises and asthma attacks (potentially life-saving); acute management of chronic obstructive pulmonary disease, rheumatological conditions and other diseases
Cetirizine hydrochloride (antihistamine)	Antihistamines	690,000*	Yes—for allergic reactions; urticaria
Amlodipine (calcium channel blocker)	Cardiovascular	680,000	Yes—for certain types of angina (it is also used in non-acute disease management, i.e., for treating high blood pressure, a risk factor for CVD)

*Actual usage will probably be higher than suggested in this table as these particular pharmaceuticals are also sold over the counter in New Zealand, e.g., in pharmacies and/or supermarkets.

We then conducted Google Scholar searches in December 2024 to identify modern methods of synthesis and the associated ingredients for each of the 10 selected pharmaceuticals. These ingredients were then assessed in terms of the New Zealand capacity to supply them (e.g., if particular minerals that are used for ingredients or catalysts are mined in the country[36]).

Results

Results for each of the 10 most extensively prescribed pharmaceuticals that can be used for acute treatment in New Zealand are shown in Table 2 and Table 3. These 10 covered the therapeutic groups (as classified by the national Pharmaceutical Management Agency of the New Zealand Government [Pharmac]) of: analgesics (n=2), alimentary (n=1), anti-infectives (n=1), antithrombotic (n=1), cardiovascular (n=2), respiratory (n=1), hormones (n=1) and antihistamines (n=1). Of note, however, is that some of these pharmaceuticals have roles in multiple groups (e.g., aspirin also for analgesia and prednisone also for the respiratory group and for rheumatological conditions, etc.).

The median year at which these pharmaceuticals were first available in the market anywhere in the world was 1971 (Table 3). But the range for these years was wide, at 1874 for aspirin in powder form and 1998 for omeprazole.

A summary of the results in Table 2 suggests that none of these 10 pharmaceuticals could probably be manufactured using modern synthesis methods after a trade-ending catastrophe since New Zealand has no petrochemical refining capacity (other than methanol production). In addition, the modern synthesis of seven of the 10 pharmaceuticals would also probably not be possible due to catalysts or other specific chemical ingredients not being mined or otherwise produced in New Zealand (Table 2). Nevertheless, some of the catalysts may only be required in small amounts and so could potentially be scavenged in the post-catastrophe period within New Zealand, e.g., from vehicle catalytic converters.

Discussion

Main findings and interpretation

This study suggests that after a trade-ending catastrophe, none of these 10 pharmaceuticals

Table 2: Summary results relevant to potential New Zealand production capacity for the 10 selected pharmaceuticals after a trade-ending global catastrophe (see Table 1 and Table 3 for additional details).

Medicine (ranked as per Table 1)	Modern synthesis requires products from petrochemical refining that does not occur in New Zealand*	Modern synthesis requires other chemicals from compounds not produced in New Zealand	Modern synthesis requires catalysts from minerals not mined in New Zealand**
Paracetamol	Yes	No	Yes (platinum)
Omeprazole	Yes	No	Yes (molybdenum)
Amoxicillin	Yes	No	No
Ibuprofen	Yes	Yes (fluorite)	Yes (nickel, bauxite, palladium)
Aspirin	Yes	No	No
Metoprolol succinate	Yes	No	No
Salbutamol	Yes	Yes (lithium, bauxite)	Yes (palladium)
Prednisone	Yes	Yes (bauxite, chromite)	Yes (nickel, bauxite)
Cetirizine hydrochloride	Yes	Yes (borax)	No
Amlodipine	Yes	No	Yes (palladium)

*Excluding the production of methanol, which does occur in Taranaki.
**However, there could be scope for some minerals to be scavenged in a post-catastrophe environment, e.g., platinum and palladium from vehicle catalytic converters.

Table 3: More detailed results relevant to potential New Zealand production capacity for the 10 selected pharmaceuticals in a trade-ending global catastrophe situation (see Table 1 for additional details).

Medicine (ranked as per Table 1)	Year first produced commercially (globally)	Capacity to produce the necessary chemical ingredients and catalysts in New Zealand without trade
Paracetamol	1952[37]	We considered the modern continuous flow method for the synthesis of paracetamol involving hydrogenation, Bamberger rearrangement and amidation.[38] The raw materials for this synthesis (using the intermediate of p-aminophenol) mainly include nitrobenzene, p-nitrophenol and p-nitrosophenol.[38] These are all typically derived from petroleum products (i.e., benzene). The ingredient tetrahydrofuran is also typically derived from petroleum products, although it can also be made from furfural, a biomass-derived compound. Another ingredient, acetic anhydride,[38] is also typically derived from petroleum products, although methanol (which New Zealand produces) could in theory be used to produce it instead. While some ingredients could probably continue to be produced in New Zealand without trade (e.g., hydrogen gas and sulphuric acid), platinum (for the catalyst) is not mined in New Zealand. **Assessment:** Probably no capacity due to there being no petrochemical refining in New Zealand and no mining of platinum in New Zealand. However, for this catalyst (and some others in this table), post-catastrophe scavenging might be possible, e.g., from vehicle catalytic converters.
Omeprazole	1998 (Omeprazole was the first proton pump inhibitor to market)	Modern synthesis[39] of omeprazole involves the starting materials of: 1) chloromethyl-4-methoxy-3,5-dimethylpyridine hydrochloride and 2) 5-methoxy-1H-benzimidazole-2-thiol. While the former might be feasible to produce in New Zealand (it is not dependent on petroleum products), the latter is typically derived from benzene or toluene (both petroleum-derived products and not produced in New Zealand). Also, the molybdenum catalyst may not be available as this mineral is not mined in New Zealand. However, other ingredients are produced in New Zealand (i.e., methanol) or could probably be readily produced (i.e., hydrogen peroxide and sodium hydroxide). **Assessment:** Probably no capacity due to there being no petrochemical refining and no mining of molybdenum in New Zealand.
Amoxicillin	1972[40]	Modern amoxicillin production typically involves fermentation of *Penicillium chrysogenum* to produce penicillin G (Pen G), followed by the enzymatic conversion of Pen G to amoxicillin.[41] Here we considered those ingredients detailed for one well-described modern method (albeit for after the glucose production phase—which can use corn starch, wheat starch and even waste paper).[42] Of the other ingredients, some could probably be produced in New Zealand, e.g., ammonium hydroxide, butyl acetate, *P. chrysogenum* (sourced from the environment, if not laboratories), potassium acetate and sulphuric acid (with the latter already produced in New Zealand). The enzyme penicillin G acylase (PGA) could also be produced via fermentation (with *E. coli* representing the most common host for the production of recombinant PGA[43]). The feedstock p-hydroxyphenylglycine methyl ester (PHPGME) is derived from p-hydroxybenzaldehyde and glycine methyl ester as key precursors. Of these, the former is derived from phenol, which is mainly produced via the cumene process starting from benzene and propylene (both of which are derived from petroleum). **Assessment:** Probably no capacity due to there being no petrochemical refining in New Zealand.

Table 3 (continued): More detailed results relevant to potential New Zealand production capacity for the 10 selected pharmaceuticals in a trade-ending global catastrophe situation (see Table 1 for additional details).

Medicine (ranked as per Table 1)	Year first produced commercially (globally)	Capacity to produce the necessary chemical ingredients and catalysts in New Zealand without trade
Ibuprofen	1969[44]	The modern Boots-Hoechst-Celanese process for manufacturing ibuprofen was considered.[45] This starts with a skeleton of aromatic acetic acid or propionic acid. Both of these are typically derived from petroleum products, i.e., benzene and ethene respectively. Some ingredients could probably be produced in New Zealand: acetic anhydride (from methanol), carbon monoxide and hydrogen gas (already produced). But other ingredients that would probably not be available in New Zealand without trade include: • Hydrogen fluoride (the source of the fluoride is the mineral fluorite, which is not mined in New Zealand). • Raney nickel catalyst (which is derived from a nickel and aluminium alloy, with neither nickel nor bauxite mined in New Zealand). • Palladium catalyst (palladium is not mined in New Zealand). **Assessment:** Probably no capacity due to no petrochemical refining in New Zealand, no mining of three minerals for catalysts and no mining of a mineral for producing hydrogen fluoride.
Aspirin	1874 (powder) and 1904 (tablet form)[46]	The key chemical feedstock for modern aspirin (acetylsalicylic acid) production is sodium phenoxide[47] (synthesis can also involve a yeast-derived enzyme[48]). The sodium phenoxide is derived from phenol,[47] which itself comes from petroleum-derived feedstocks (benzene and propylene). Other ingredients could all probably be produced in New Zealand, i.e., sulphuric acid (already produced) or phosphoric acid, and acetic anhydride (from methanol). **Assessment:** Probably no capacity due to no petrochemical refining in New Zealand. But in the Discussion (below) we consider potential plant-sourced production using much less efficient historical methods.
Metoprolol succinate	1978[49]	We considered the modern four-step chemo-enzymatic protocol to achieve (S)-metoprolol with 99% enantiomeric excess and high yield.[50] The core chemical building block in this process is 4-(2-methoxyethyl)phenol. This is derived from petroleum, typically benzene derivatives. This is also the case for one ingredient: the solvent vinyl butanoate (which is normally made from the petroleum-derived ethylene). Some ingredients in the production of methanol could probably be produced in New Zealand, i.e., potassium hydroxide and isopropylamine (e.g., if an acid catalyst was used for the latter instead of a metal catalyst). The specific enzyme catalyst *Candida antarctica* lipase B (CALB) could probably be produced in New Zealand if the relevant recombinant production methods were set up. **Assessment:** Probably no capacity due to no petrochemical refining in New Zealand (relevant for two ingredients).

Table 3 (continued): More detailed results relevant to potential New Zealand production capacity for the 10 selected pharmaceuticals in a trade-ending global catastrophe situation (see Table 1 for additional details).

Medicine (ranked as per Table 1)	Year first produced commercially (globally)	Capacity to produce the necessary chemical ingredients and catalysts in New Zealand without trade
Salbutamol	1966[51]	All the four general modern pathways for salbutamol production[51] require petroleum-derived chemicals. That is: using acetophenones (derived from benzene), using salicylic acid derivatives (derived from benzene—see above for aspirin), using benzoic acid derivatives (derived from toluene) and using benzaldehyde (derived from toluene). If the salicylic acid pathway utilised New Zealand-based plant sources instead of petroleum-derived products (see as for aspirin in the Discussion), then the following ingredients would be required: • Bromine (potentially could be produced in New Zealand from brine evaporation ponds). • Hydrogen gas (is produced in New Zealand). • Tetrabromobisphenol A (TBBA), which ultimately is synthesised from the petroleum-derived products benzene and propylene (used to produce phenol). • Lithium aluminium hydride (which requires sources of lithium and aluminium [bauxite], and neither are mined in New Zealand). • Palladium catalyst (palladium is not mined in New Zealand). **Assessment:** Probably no capacity due to no petrochemical refining in New Zealand, no mining of one metal for a catalyst and no mining of two metals used for one ingredient.
Prednisone	1955	When considering modern prednisone synthesis,[52] many of the required materials could probably be produced in New Zealand (e.g., acetic acid, acetic anhydride [from methanol], calcium chloride, calcium oxide, DMF [dimethylformamide], ethanol, iodine [I^2], methanol, potassium acetate, potassium hydroxide and sodium hydroxide). The starting material (diosgenin) could be derived from soya beans (which are grown in New Zealand), and the fungus *Rhizopus nigricans* used in the fermentation process is readily accessible in the natural environment. (Also, instead of soya beans, lanolin from wool grease is a source of cholesterol, which can be a starting point for steroid synthesis.) The specific strain of *Corynebacterium simplex* (ATCC 6946) that produces a key enzymatic system could probably be produced in New Zealand if the relevant recombinant production methods were set up. Hydrobromic acid could be produced using bromides extracted from brine evaporation ponds. But materials that would probably not be produced in New Zealand include: • Cyclohexanone (derived from petroleum products, e.g., benzene). • Toluene (a petroleum product). • Aluminium isopropoxide (Al[iPrO]$_3$) (since no bauxite is mined in New Zealand). • The oxidising agent chromium trioxide (CrO3) (chromite is no longer mined in New Zealand[36]). • Raney nickel catalyst (which is derived from a nickel and aluminium alloy, with neither nickel nor bauxite mined in New Zealand). **Assessment:** Probably no capacity due to no petrochemical refining in New Zealand (two ingredients), no mining for two metals for a catalyst and no mining for two other metals needed for two ingredients.

Table 3 (continued): More detailed results relevant to potential New Zealand production capacity for the 10 selected pharmaceuticals in a trade-ending global catastrophe situation (see Table 1 for additional details).

Medicine (ranked as per Table 1)	Year first produced commercially (globally)	Capacity to produce the necessary chemical ingredients and catalysts in New Zealand without trade
Cetirizine hydrochloride	1987[53]	Of the various modern processes for producing cetirizine, we considered the one described by Reiter et al. (specifically the more modern "Scheme 3").[54] Some of the ingredients could probably be produced in New Zealand: hydrochloric acid, sodium hydroxide, thionyl chloride and the phase transfer catalyst, which is the quaternary ammonium salt: methyltrioctylammonium chloride. Two ingredients could probably be produced using New Zealand-produced methanol: 1) sodium methoxide and 2) N,N-dimethyl-2-chloroacetamide. But the following would probably not be able to be produced in New Zealand: • A starting ingredient: 4-chlorobenzophenone (it is derived from the petroleum product benzene). • An additional starting ingredient: N-(2-hydroxyethyl)piperazine (it is derived from the petroleum product ethylene). • The reducing agent sodium borohydride (which requires the metalloid boron from borax, which is not mined in New Zealand). • The solvent toluene (which is derived from petroleum products). **Assessment:** Probably no capacity due to no petrochemical refining capacity in New Zealand (relevant for three ingredients), and there being no borax mining in New Zealand.
Amlodipine	1990[55]	A review article[56] covering the modern synthesis of amlodipine (to amlodipine besylate) was considered. Some of the required materials could probably be produced in New Zealand (e.g., the source of the heterocycle ring: 1,4-dihydropyridine [and its precursors], ammonium acetate and hydrogen gas [which is already produced in New Zealand]). But materials that would probably not be available include: • Benzenesulphonic acid, which requires benzene to produce (a petroleum product). • The catalyst "palladium on calcium carbonate" (palladium is not mined in New Zealand). Another path to amlodipine synthesis is via the aza-Diels-Alder approach.[56] But this also depends on a petroleum product: toluene. **Assessment:** Probably no capacity due to no petrochemical refining in New Zealand and there being no mining of palladium in New Zealand.

relevant for acute treatment could be manufactured using modern synthesis methods in New Zealand. This is primarily because this country has no petrochemical refining capacity, but also because it does not produce all the necessary catalysts or other specific chemical ingredients. Therefore, after such catastrophes, and once imported pharmaceutical stocks had run out, there would probably be increased deaths from infections, heart disease, stroke and asthma as well as increased morbidity (e.g., from pain and prolonging the relevant illnesses detailed in Table 1). In terms of the health loss from untreated infectious disease, this burden would probably disproportionately fall on Māori, Pacific peoples and socio-economically deprived New Zealanders (who already have higher current relative burdens[57]). Such inequities also exist for Māori and Pacific peoples for cardiovascular disease burdens.[58] Furthermore, the infectious disease burden could be worse after catastrophes if there were major disruptions in: reticulated chlorinated water, sewerage systems and food supplies to urban areas (i.e., if there was malnutrition).

It is conceivable that New Zealand, after a trade-ending catastrophe, could attempt to produce some of its own ingredients for pharmaceutical production. For example, it could modify the current wood pyrolysis plant in Timaru to produce phenols and furans; or modify the Glenbrook steel plant to produce benzene/phenol from coke gas. Even more expensive options would be building a micro-refinery for oil extracted in Taranaki or from coal tar using coal from West Coast mines. But all these actions could be very difficult to achieve if there was some level of societal collapse associated with an end of New Zealand's export economy. In any such a collapse, the central government might be too pre-occupied with addressing basic needs (e.g., food and energy supply), and there may be shortages of parts for converting existing infrastructure and shortages of relevant experts (e.g., if industrial chemists and chemical engineers could not be paid or had left the cities).

Nevertheless, one possibility for relatively simple post-catastrophe production is aspirin given that alternative (non-petroleum) sources for salicylic acid include plants containing salicin e.g., willow (*Salix* species) and meadowsweet (*Filipendula ulmaria*),[46] with the former commonly found in New Zealand. Aspirin manufacture is relatively simple once salicylic acid is available (at about high-school student level).[59] But if manufacturing involved plant-sourced salicylic acid, it would probably be far less efficient and much more expensive than modern-day synthesis methods. For example, there was a drop to a "tenth of the price" with industrial synthesis in 1874, relative to when extraction from willow was used.[46]

Other options for producing pharmaceuticals in New Zealand could include growing opium poppies (*Papaver somniferum*) for manufacturing morphine and codeine (although re-establishing trade with Australia might be more feasible as its opium poppy farms are already the source of 37% of the world's licit morphine supply[60]). Another option is growing the Madagascan periwinkle (*Catharanthus roseus*) in frost-free areas for the production of vinca alkaloids (from which chemotherapy agents such as vinblastine and vincristine can be derived). Also extracting animal glands at freezing works for producing hormones (adrenal, parathyroid, pituitary, thyroid and pancreas [for insulin], etc.) is a possibility, as done in New Zealand[61] prior to more modern synthesis methods. However, these processes typically need high levels of organisation for production at scale and potentially complex processes for purification and product standardisation.

Study strengths and limitations

Although preliminary in nature, a strength of this study is that it is the first to look in any detail at the issue of pharmaceutical production after trade-ending global catastrophes (to our knowledge). Nevertheless, the following limitations apply:

- The 10 selected pharmaceuticals were based on the number of prescriptions dispensed for medicines that had roles in treating acute conditions. But this was simplistic given that: 1) prescriptions numbers are only a crude indicator of volume and also do not account for non-adherence and other wastage; 2) some of the selected pharmaceuticals are also used for non-acute treatments (e.g., aspirin, metoprolol and amlodipine—see Table 1) and 3) some of them can be purchased over-the-counter (e.g., six of those in Table 1) and so are not counted in the "prescription data" that we considered. There was also no quantified consideration of life-saving potential as opposed to ongoing management for non-fatal conditions.

- As discussed for aspirin, this study focussed on modern synthesis methods for these pharmaceuticals and did not systematically explore alternative less efficient methods and historic methods. In particular, although some catalysts can be considered indispensable, substitute catalysts for many chemical reactions are often possible with trade-offs in terms of reaction efficiency.[62] Also of note is that artificial intelligence is assisting with chemical substitution,[63] as are "green chemistry" developments.[64] Indeed, a recent study reports that *E. coli* can be adapted to convert plastic waste into paracetamol.[65]
- Options for the post-catastrophe scavenging of minerals not mined in New Zealand were not fully explored, and yet this might be feasible if only small amounts of catalysts are required. For example, platinum and palladium could potentially be scavenged from vehicle catalytic converters (and platinum also from electrical equipment and jewellery). Nickel could be scavenged from stainless steel items and various industrial equipment. Also, where relevant minerals had previously been mined in New Zealand (e.g., bauxite, chromite and platinum[66]), mining operations could potentially be restarted if some ores still existed at recoverable levels. There may also be stockpiles of imported bauxite available if these were diverted from those held by the Tiwai Point aluminium smelter in Southland (relevant for ibuprofen, prednisone and salbutamol production). Similarly, stockpiles of imported fertiliser could be used as a source of boron (for cetirizine production) and stockpiles of imported fluoride, used for water fluoridation, could be used to produce hydrogen fluoride (for ibuprofen production). Even then, the capacity to turn such minerals and chemicals into usable ingredients in pharmaceutical manufacture would depend on the available expertise, refining capacity and manufacturing capacity, all of which could be severely limited in a post-catastrophe environment.
- This analysis did not consider alternative treatments to modern pharmaceuticals. For example, rongoā Māori (traditional healing system) provides a range of alternative treatments based on rākau (plants).[67] Also, in the European tradition, an example is the use of "medicated cigarettes" containing plants in the nightshade family (*Solanaceae*) for treating asthma, as used in the nineteenth and twentieth centuries.[68] Indeed, a review published in 2013 considered the effectiveness of *Datura stramonium* in treating asthma.[69] However, such plants have toxicity risks[69] and misuse potential,[70,71] so might need medical supervision with administration.

Potential further research and planning responses

In this unfunded research we took a fairly simple approach to pharmaceutical selection that involved prescription numbers of medicines that can be used for acute treatments. If there was government-funded research in the future, then a more sophisticated approach could prioritise a larger number of commonly prescribed pharmaceuticals (along with anaesthetics, etc.). Possible prioritisation could be informed by modelling the annual deaths prevented or annual quality-adjusted life years (QALYs) saved by different pharmaceutical treatments. If input from a citizens' panel/assembly was included in the prioritisation process, then it could start to capture societal values, e.g., perhaps prioritising the production of antibiotics for saving the lives of essential workers over production of statins to manage risk factors such as elevated blood lipids.

All the issues raised in this preliminary analysis would suggest that one of the best approaches to resilience in this area might be for the New Zealand and Australian governments to jointly plan for shared post-catastrophe production of key pharmaceuticals and the ability to trade them between each other by ship or aircraft. This trans-Tasman approach has already been suggested in terms of mRNA vaccine development for responding to future pandemics.[72]

Australia is much better positioned than New Zealand for pharmaceutical production since it has a pharmaceutical industry that produces some vaccines and generic medicines[73] (albeit still importing 90% of its medicines[74]), it still has oil refining capacity and it mines a wider range of minerals (including three critical ones listed in Table 2: bauxite, lithium and nickel). The New Zealand government could contribute funding for any Australia-based preparations and potentially provide some ingredients, but it could also focus on ensuring the viability of post-catastrophe trans-Tasman trade. For example, New Zealand-

produced biofuels (e.g., from canola cropping)[24] could be used to keep cargo ships functioning in the absence of imported liquid fuels.

If the Australian government was not interested in such joint planning, the New Zealand government could still explore working with other Southern Hemisphere countries with pharmaceutical industries, e.g., Indonesia[75] and Brazil.[76]

Going it alone would be very expensive for New Zealand, but if so, the government could explore domains where some local production may be more feasible (e.g., aspirin and morphine production from locally grown plant-based sources). However, all these responses would need to be balanced relative to other post-catastrophe priorities: keeping agriculture functioning for food security, maintaining reticulated water and sewerage systems and keeping basic preventive medicine and primary healthcare working.

Conclusions

This preliminary analysis suggests that none of these 10 extensively used pharmaceuticals could be produced using modern synthesis methods in New Zealand after a trade-ending catastrophe. This is primarily because the country does not refine petrochemicals. To address this and other domains lacking in resiliency (e.g., liquid fuel supply), planning for building shared resiliency with other neighbouring nations (e.g., Australia) could be considered.

COMPETING INTERESTS
Nil.

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New Zealand Chronic Obstructive Pulmonary Disease Guidelines: 2025 update

Robert J Hancox, Stuart L Jones, Christina Baggott, Sarah Candy, Nicola Corna, Cheryl Davies, James Fingleton, Sandra Hotu, Syed Hussain, Wendy McRae, Murray Moore, Betty Poot, Jim Reid, Sarah Rhodes, Justin Travers, Joanna Turner, Robert Young

ABSTRACT

This update revises the Asthma and Respiratory Foundation NZ's Chronic Obstructive Pulmonary Disease (COPD) Guidelines in line with the latest national and international evidence. The aim is to provide simple, practical, evidence-based recommendations for the diagnosis, assessment and management of COPD in clinical practice in an Aotearoa New Zealand context. The intended users are health professionals responsible for delivering acute and chronic COPD care in community and hospital settings, and those responsible for the training of such health professionals.

In February 2021, the New Zealand Chronic Obstructive Pulmonary Disease (COPD) Guidelines were published in the *New Zealand Medical Journal*.[1] These were the first ever COPD guidelines for Aotearoa New Zealand and were based on the comprehensive evidence reviews from the Australian COPD-X guidelines and the international Global Initiative for Chronic Obstructive Lung Disease (GOLD) Report, supplemented with additional evidence specific to Aotearoa New Zealand. They also included several innovations, such as strategies for managing breathlessness and algorithms for managing COPD exacerbations in the community and in hospital.

Uptake of the guidelines has been substantial. Around 7,000 print copies of the guidelines and Quick Reference Guide and over 22,000 COPD Action Plans have been distributed to health professionals across Aotearoa New Zealand. Many more copies of the guideline resources have been accessed digitally. Although we do not have data back to 2021, in the past year alone there were nearly 7,000 downloads of the COPD resources. The downloadable breathlessness strategies and a COPD patient handbook based on the guidelines have been particularly popular. We believe that these resources are helping to improve COPD management and patient experiences across Aotearoa New Zealand.

The 2021 guidelines will expire in 2025. To update them, a review has been undertaken by a multidisciplinary team of health professionals with expertise in COPD, and a patient representative. The updated version was published on the Asthma and Respiratory Foundation NZ website in October 2025 (see: www.asthmafoundation.org.nz/resources). As before, the main sources of evidence were the latest COPD-X guidelines (2024)[2] and the GOLD Report (2025),[3] with additional references as required. Peer review was sought from key professional organisations.

Although a line-by-line review has been undertaken, readers of the new guidelines will notice evolution rather than revolution. The structure of the guidelines is similar and much of the evidence and many of the recommendations remain unchanged. Some key messages and highlights are:

- Although we have updated the numbers with the latest data, the unacceptable reality is that major health disparities persist, with COPD among Māori and Pacific people remaining more common, severe and fatal than among other New Zealanders.[4] Reduction and elimination of these inequities requires an approach that begins with addressing the basic causes of inequities, stemming from colonisation and racism. We highlight ways in which healthcare services can be delivered in a culturally safe way that promotes equity.
- We note emerging evidence from several

studies that vaping may be a cause of COPD, even in people who have never smoked, and emphasise our concerns about young people vaping and dual use of cigarettes and vaping.
- We have added a section on the initial assessment of COPD and reiterate the essential role of spirometry in diagnosis. We highlight the fact that traditional reversibility testing (spirometry before and after a bronchodilator) is not usually necessary—diagnostic spirometry can be done even if the patient has been using a bronchodilator.
- Non-pharmacological management of COPD remains essential, with a greater potential for impact on outcomes than drug therapy. Important measures include smoking cessation, pulmonary rehabilitation and promotion of physical activity, techniques to manage breathlessness and clear sputum, optimising nutrition and improving housing.
- Self-management is optimised when patients and whānau are empowered to manage the medical (taha tinana), social (taha whānau), psychological (taha hinengaro) and spiritual (taha wairua) aspects of their health, in alliance with healthcare providers. Education and support for patients undertaking health promoting activities can be optimised when delivered within a therapeutic alliance that is based on trust.
- Disease education and personalised action plans (self-management plans) should be offered to all people with COPD. The action plans have been updated with this version of the guidelines and include spaces to record the patient's normal oxygen saturation (SpO2), the distance a patient can walk when they are well and a QR code to scan for the Breathlessness Quick Reference guide.
- Changes to pharmacological management recognise increasing understanding of the effectiveness of combinations of long-acting antimuscarinics, long-acting beta-agonists and inhaled corticosteroids.
- Regular use of short-acting bronchodilators is not recommended—these are for short-term relief of breathlessness as-required only. Most patients with symptomatic COPD will benefit from long-acting bronchodilators: either a long-acting antimuscarinic (preferred) or a long-acting beta-agonist. Many patients will need both and we recommend rapid titration to combination therapy (noting the current Pharmac restrictions around funding).
- Inhaled corticosteroids should be added to the regimen of patients who exacerbate more than once a year (or one exacerbation needing hospital admission). We recommend that these are prescribed as a single inhaler triple therapy to improve adherence. Inhaled corticosteroids are particularly important for patients who have eosinophilic inflammation measured on peripheral blood counts.
- We note that dry powder and soft mist inhalers have a substantially lower impact on greenhouse gas emissions than pressurised metered dose inhalers.
- Sadly, we note that several evidence-based medications are either unavailable or unfunded in Aotearoa New Zealand. These include alpha-1 antitrypsin augmentation therapy, phosphodiesterase 4 (PDE4) inhibitors, biologic drugs for those with type 2 inflammation and mucolytic treatments.
- Based on recent evidence, we note that using long-term oxygen therapy for 24 hours a day has no advantage over 15 hours a day.
- Viral and bacterial infections are major causes of COPD exacerbations and vaccinations can help prevent these. Adding to existing recommendations for influenza (funded) and pneumococcal vaccinations (unfunded), we now recommend COVID-19 (funded) and respiratory syncytial virus (RSV) vaccine (unfunded).
- We have kept the algorithms for managing COPD exacerbations, with minor modifications to emphasise the importance of considering advance care plans when managing patients with severe exacerbations.
- Consistent with the earlier guidelines, we have kept the diagnosis of asthma–COPD overlap as an option. Although some international guidelines no longer refer to this, we believe this remains a useful term when it is unclear whether the patient has COPD or asthma. As before, the recommendation is to treat for asthma in the first instance.
- Recommendations for pharmacological management of dyspnoea have changed. While managing dyspnoea is a major goal of COPD care, few pharmacological agents

have been shown to have a role. Recent studies indicate that neither opioids, benzodiazepines nor antidepressants reduce breathlessness or improve quality of life in COPD.[5,6] They also have significant side effects and, in contrast to GOLD and COPD-X, we no longer recommended them outside of palliative, end-of-life care.

- We emphasise that many (perhaps most) patients with COPD have important comorbidities. Lung cancer, bronchiectasis, cardiovascular disease, diabetes, anxiety, depression, gastro-oesophageal reflux and osteoporosis are all common among people with COPD. These conditions impair the management of COPD. Assessing and managing comorbidities can have substantial benefits for patient wellbeing.

These updated guidelines and the associated resources are available online and free of charge on the Asthma and Respiratory Foundation NZ website. Printed copies can be ordered (for the cost of postage). We hope that they will continue to help health practitioners improve outcomes for patients with COPD. The next planned review of the guidelines is in 2030. If major new evidence emerges in the meantime, they will be reviewed earlier.

COMPETING INTERESTS

R J Hancox reports grants and speaker fees from AstraZeneca, and grants and speaker fees from GlaxoSmithKline, and honoraria from Pharmac, outside the submitted work. RJH is the medical director of the Asthma and Respiratory Foundation NZ.
S L Jones reports receiving honoraria from GlaxoSmithKline and AstraZeneca for speaking at education events and attending advisory meetings, outside the submitted work.
C Baggott reports honoraria and personal fees from AstraZeneca and GlaxoSmithKline for giving educational talks and attending advisory meetings, outside the submitted work. CB reports participation on advisory boards for AstraZeneca and GlaxoSmithKline.
S Candy reports honoraria for attending advisory meetings for AstraZeneca, outside the submitted work.
N Corna reports receiving honorarium from AstraZeneca and GlaxoSmithKline for providing educational talks on airways disease and attending advisory boards, outside the submitted work. NC has also received honoraria from Boehringer Ingelheim as a panellist at a Boehringer Ingelheim–sponsored event, and travel and accommodation to that event. NC reports fees paid to their organisation and to them for educational presentations from Mobile Health NZ. NC has participated in the GlaxoSmithKline advisory board; is TSANZ Nursing SIG co-convenor; is an Asthma and Respiratory Foundation Scientific Advisory Board member; and is an ALINA steering group member.
J Fingleton reports grants, personal fees and non-financial support from AstraZeneca; grants from Chiesi; grants, personal fees and non-financial support from GlaxoSmithKline; grants from Sanofi; all outside the submitted work. JF is previous president of Thoracic Society of Australia and New Zealand (New Zealand branch) and NZ Director, TSANZ Ltd; and an Asthma and Respiratory Foundation Scientific Advisory Board member.
S Hotu received support from Te Toka Tumai Auckland City Hospital, Health New Zealand – Te Whatu Ora and The University of Auckland for this manuscript.
S Hussain reports honoraria from GlaxoSmithKline for giving educational talks on COPD management or attending advisory meetings, and support for attending meetings/travel from AstraZeneca and GlaxoSmithKline, outside the submitted work.
B Poot is a member of the Asthma and Respiratory Foundation Scientific Advisory Board and a member of the Respiratory Specialist Advisory Committee PHARMAC.
S Rhodes is president of the Thoracic Society of Australia and New Zealand (New Zealand branch).
J Turner is a member of the Asthma and Respiratory Foundation Scientific Advisory Board.
R Young reports honoraria from GlaxoSmithKline and AstraZeneca for educational talks on COPD management or attending advisory meetings outside the submitted work. RY holds stock in Synergenz BioScience.
C Davies, W McRae, M Moore, J Reid, J Travers have no competing interests.

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Digital contact tracing in Aotearoa New Zealand: a scan in the right direction, or a digital dead-end?

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ABSTRACT

AIM: With the phase one Royal Commission COVID-19 report published, it is an opportune time to reflect on the various public health interventions used to consider if they were effective and how they could be improved. As we look to the future, it is important to understand if digital contact tracing (DCT) was an effective public health intervention during the COVID-19 pandemic and how it could be improved.

METHOD: We summarise a series of articles detailing the population and public uptake of the various DCT technologies implemented in Aotearoa New Zealand during the COVID-19 pandemic.

RESULTS: New Zealand had one of the highest population uptakes of DCT in the developed world. However, there were additional barriers to the full implementation of these tools that likely reduced their efficacy.

CONCLUSION: DCT was just one of many interventions aiming to eliminate, and then suppress, COVID-19. This context makes it difficult to isolate and conclude that the efficacy of DCT during this pandemic would translate to future pandemic conditions, especially if there is improved design and implementation. However, this research shows that the self-service survey approach worked better than expected, and that there is some promise in automating notification processes.

The Royal Commission COVID-19 Lessons Learned has focussed on the experiences of people involved in responding to the COVID-19 pandemic to help prepare for future outbreaks. With the phase one report published,[1] it is an opportune time to reflect on the various public health interventions used to consider if they were effective and how they could be improved. The *Australian and New Zealand Journal of Public Health* has recently published the final in a set of articles related to a significant research project investigating digital contact tracing (DCT) in Aotearoa New Zealand. As we look to the future, it is important to understand if DCT was an effective public health intervention during the COVID-19 pandemic and how it could be improved.

At the beginning of the COVID-19 pandemic, DCT was seen as a promising tool to help control the spread of the SARS-CoV-2 virus.[2] For respiratory infectious diseases transmitted between people, isolating cases then tracing and quarantining their contacts is a key public health measure that can potentially control or even eliminate an outbreak, potentially without vaccines and effective treatments. It stood to reason that with modern technology, we could significantly improve the speed and coverage of contact tracing. Consequently, many jurisdictions developed DCT solutions, from smartphone apps to customised hardware.[3] But no one really knew if theory would translate to meaningful impact on reducing pandemic harms.

DCT was adopted in various ways across the world, with an estimated 171 implementations globally (including some at the state and city level), particularly in wealthier jurisdictions across Europe, Asia and the Americas.[4] These implementations had different characteristics, such as choice of technology (Bluetooth, GPS, QR codes and others), varied in their data architecture (centralised and decentralised) and had disparate levels of compulsion (from fully voluntary to mandatory in some conditions to fully mandatory).[5] This makes it challenging to fairly compare DCT implementations between jurisdictions, especially in the context of multiple complex public health interventions and policy settings also influencing outcomes. However, a scoping review found that 60% of studies found DCT implementations to be effective either epidemiologically, technically or with end-users.[4] Some of these studies showed that DCT was competitive against manual contact tracing methods in iden-

tifying high-risk contacts and disrupting chains of transmission, although the overall effectiveness varied depending on the presence of other interventions.

In New Zealand, DCT was implemented through the "NZ COVID Tracer" application (app), and later "My Covid Record". These digital tools offered mechanisms for collecting information about a person's contacts, providing that information to contact tracers and notifying those contacts that they were proximate to an infected person. At different times during the pandemic, those contacts were asked to monitor their symptoms, get tested or self-isolate, thus reducing the likelihood of them passing SARS-CoV-2 onto others.

Which technology worked?

There were three main mechanisms of DCT used in New Zealand: QR code scanning, Bluetooth tracing and an online self-service survey. These tools were available and promoted during different phases of the pandemic, so it can be difficult to make a fair comparison. New Zealand achieved very high rates of public participation (~60%)[6–8] in comparison to other countries with voluntary systems (~15–30%).[3] However, we found that both QR code scanning and Bluetooth likely did not make a significant impact in the New Zealand context due to the low number of close contacts notified with meaningful calls to action (e.g., to self-isolate).[6,7]

One of the main reasons for the low notification rates was a lack of utilisation of the technologies by contact tracers, who had discretion to choose whether to use the information from these systems. Despite a ~60% public uptake, only small proportions of cases were provided with an opportunity to upload their QR code (18.7%) and Bluetooth data (1.3%) by clinically trained contact tracers.[6,7] In contrast, National Case Investigation Service staff (generally non-clinically trained individuals in a call centre following a script) provided a higher proportion of COVID-19 cases the opportunity to upload their QR code (45.5%) and Bluetooth data (31.4%) during similar periods in the pandemic. In focus groups, clinically trained contact tracers told the researchers that they had reservations about the technology's effectiveness and criticised the belief that an app would solve the challenges of contact tracing.[9,10] In particular, there were reservations about the accuracy of the technology itself, the reductive interpretation of contact tracing process and the increased workload imposed on an already stretched workforce.

However, the self-service survey, which was introduced in early 2022 and allowed people to complete an online form to provide contact tracing information, had high utilisation.[8] At least two-thirds of people who reported testing positive for COVID-19 during the study period completed the self-service survey, with a median completion time of 1.8 hours from case notification.[8] As the contacts of these people were automatically notified, this approach achieved significant speed improvements in comparison with manual contact tracing. Bluetooth integration into the self-service survey also showed promise, with 111,000 cases (13.4% of survey completers) uploading Bluetooth data alongside the survey, resulting in a total of 496,592 contacts being notified with an average of 4.5 notifications per case, despite a substantial decrease in communication about Bluetooth tracing and de-prioritisation of the Bluetooth component within the self-service survey user journey. The combination of high public uptake and rapid response time suggests that the self-service survey approach, potentially with other tools such as Bluetooth tracing integrated, could be a useful tool for future pandemics.

Was the technology equitable?

Through focus groups and interviews with Māori, Pacific, and disabled people, the researchers found that people were generally willing to use DCT tools like NZ COVID Tracer and support its adoption in their communities.[11] However, one shortcoming was that the design of the tool did not sufficiently account for accessibility issues, such as for people with low vision or blindness, limited English fluency or intellectual impairments. Secondly, participants indicated that members of priority communities may have higher levels of distrust of the government's COVID-19 interventions, which challenged participation. However, while Māori had far lower participation in the QR code and Bluetooth systems overall than other ethnicities, the majority of this difference was due to prioritised allocation of Māori cases to clinically trained staff who systematically underutilised these tools compared to the National Case Investigation Service,[6] which was reinforced by high Māori participation rates in the self-service survey.[8] Participants in focus groups also expressed concern that elderly people may be one priority group excluded from DCT technologies.[11] However, in New Zealand, those aged 60+ had greater

uptake of the QR code, Bluetooth and self-service systems than those aged 15–24.[6–8]

Findings also highlight the "digital divide" within these communities, which was not adequately addressed in the government's response to COVID-19. An additional intervention, such as providing free or discounted smartphones capable of running NZ COVID Tracer or offering different contact tracing options to accommodate diverse user needs, may have helped bridge the digital divide.

A confronting finding is that overcoming these issues is not achievable within the confines of a single-issue marketing campaign. For example, distrust can be influenced by a disordered information ecosystem, and this barrier goes beyond the privacy concerns that most research has focussed on, as technical solutions to improve privacy are insufficient to address the root issues of distrust. The researchers found that systemic injustices eroded trust within communities, which contributed to inequitable participation in digital COVID-19 interventions.

The researchers also conducted a Māori data governance (MDG) assessment of NZ COVID Tracer and the overall DCT programme.[12] While MDG[13] was not an explicit design consideration when NZ COVID Tracer was developed, some choices such as the decentralised architecture, data minimisation and opt-in voluntary participation meant that some of the principles of MDG were fully met, with many others partially met. However, there is much room for improvement, and the researchers encourage the use of MDG assessment tools to help those in the public sector uphold Māori data sovereignty and address systematic barriers to genuine partnership with Māori.[13]

Considerations for DCT utilisation for future pandemics

DCT tools should be considered in the context of the infectious disease strategy and the characteristics of the pandemic disease.[14] An essential condition for any contact tracing tool is the ability to isolate cases, as well as trace and quarantine their contacts to control the infection. Table 1 provides an overview of the different manual and DCT tools used in New Zealand, their relative strengths and limitations, and which ones could be considered in future pandemic scenarios.

The main advantages of the DCT tools used in New Zealand were the ability to: 1) rapidly conduct contact tracing (QR code slowest, self-service survey fastest); 2) identify potential contacts of an infected case who had not been recalled via traditional methods (QR code had the least specificity/greatest sensitivity, while self-service survey had the most specificity while retaining reasonable sensitivity for close contacts); 3) supplement traditional contact tracing methods (QR codes allowed automatic entry of locations of interest; Bluetooth recorded proximity; self-service surveys documented information about contacts).

There were also several limitations of these DCT tools to varying degrees. For the QR code and Bluetooth systems, there were several manual touchpoints for Ministry of Health staff and the public, which decreased the speed and extent of their integration. Arguably, some of these limitations could be engineered out in a future system. The self-service survey demonstrated the speed and uptake possible without some of these manual steps. The QR code system notified far more people than other systems as it had the lowest threshold for contact definition, likely resulting in large numbers of false positives, i.e., decreased specificity. The self-service survey facilitated a similar process to the manual system (self-reported contact histories with contact information), also with Bluetooth integration, and was completed faster.

DCT tools may be more useful in a pandemic situation where transmissibility (the reproduction number) is higher, where manual contact tracing capacity is more likely to be overwhelmed. In New Zealand, manual contact tracing for non-household contacts was abandoned during the Delta wave, while it was largely abandoned for all contacts during the Omicron phase. Throughout the pandemic there were widespread reports of contact tracer burnout, raising questions of the sustainability of manual approaches, even if it were logistically possible to scale it. In our focus groups with contact tracing staff, the need for increased training and support during this period was highlighted.[6]

Clinical severity relates to the outcome of infection, including case fatality risk and risk of long-term morbidity and disability. When the clinical severity is high, each missed contact (false negative) has a greater impact (more hospitalisations or deaths). Thus, the marginal cost of additional false positive contacts is less when the clinical severity is high. Even if DCT tools have lower specificity and positive predictive value than manual systems, the identification of each additional contact not found through manual

systems could have a substantial benefit.[3] However, DCT tools can require a major and sustained effort to increase population uptake and use. If the clinical severity is low, then it may not be justified to implement and maintain DCT tools.

Controllability can be thought of as a joint property of the infection dynamics (such as transmissibility, incubation period and level of asymptomatic transmission), the availability of effective and acceptable interventions and the resources and infrastructure to deliver them. Pathogens with higher transmissibility or a short incubation period can hamper efforts to control the outbreak when relying on isolation, contact tracing and quarantine. The incubation period (the time from a person being exposed to developing illness) is longer for COVID-19 than many viruses, but also decreased with successive variants (Alpha, Beta, Delta and Omicron variants were 5.00, 4.50, 4.41 and 3.42 days, respectively).[15] DCT tools may be more effective than manual systems when incubation times are shorter.

Presymptomatic or asymptomatic transmission, a non-specific syndromic profile and social stigma may reduce the visibility of infections at a system level. For example, for sexually transmitted diseases including HIV, a major barrier to disease control is visibility as stigma can impact contact tracing effectiveness. If visibility is lower, DCT tools may become more useful, for example by anonymously notifying potential contacts of a case without the need for potentially stigmatising interactions with health officials. With COVID-19 there was a substantial proportion of asymptomatic transmission, which decreased visibility of the disease. In the Netherlands, 3–5% of cases detected via the Bluetooth notification system were also asymptomatic, while 77% of contacts booking a diagnostic test because of the Bluetooth notification had not been contacted by manual contact tracers.[3]

Recommendations

- DCT tool selection should be influenced by the context of the infectious disease strategy and the characteristics of the disease.
- Development and implementation of DCT tools (and alternative strategies) need to more effectively work with priority communities including Māori, Pacific, and disabled communities.
- Any future use of DCT tools requires high levels of support from contact tracers and other public health officials.
- DCT tools should be implemented with minimum necessary reliance on manual processes.
- DCT tools need to be developed and used for managing selected infectious diseases during non-pandemic periods so that the systems and technology can be scaled up when needed.

Conclusions

DCT was just one of many interventions aiming to eliminate, and then suppress, COVID-19. This context makes it difficult to isolate and conclude that the efficacy of DCT during this pandemic would translate to future pandemic conditions, especially if there is improved design and implementation.

However, this research shows that the self-service survey approach worked better than expected, and that there is some promise in automating notification processes. This also has potential for wider use in non-pandemic periods for supporting contact tracing of other infectious diseases.

A stronger emphasis on equity is needed in future digital health interventions to ensure that people are not left behind. Addressing communication inequality is an important component of that, including during the development of these systems, to increase the likelihood that interventions are both effective and equitable.

Table 1: An overview of the different contact tracing tools used throughout the pandemic and scenarios in which they could be considered in future pandemics.

	Manual contact tracing	**Digital contact tracing**		
		Self-service survey	**NZ COVID Tracer app (QR code)**	**NZ COVID Tracer app (Bluetooth)**
Method of contact identification	Self-reported contacts and locations of an identified case	Manual entry by case of known contacts via online platform, plus Bluetooth contacts	QR code entry of place(s) visited by case when infectious	Bluetooth record of contacts in proximity of case when infectious
Contact follow-up	Contact contacted by phone or other means	Electronic notification of reported contacts plus Bluetooth contacts	Electronic notification of those matching location and time of case	
Advantages/strengths	- Established and legally supported response for notifiable diseases - Clinical input into contact determination and case support	- Could be implemented as a simple extension of existing manual contact tracing - Potential to increase sensitivity by adding Bluetooth contacts - High speed to notify contacts from case ascertainment	- Wide net of potential contacts identified - More easily scalable	- Tighter contact definition than QR code approach - No active participation required - More easily scalable
Disadvantages/limitations	- Human (and clinical) capacity limitations - Case recall bias - Difficulty identifying unknown contacts	- Requires access to internet service and digital literacy	- Large numbers of false positives (low specificity) - Required active participation (high compliant adoption) - Required multiple manual steps to process data	- Required manual steps to be implemented (contact tracer approvals) - Does not facilitate clinical judgement - Cannot follow-up contacts as they are anonymous

Table 1: An overview of the different contact tracing tools used throughout the pandemic and scenarios in which they could be considered in future pandemics.

	Manual contact tracing	**Digital contact tracing**		
		Self-service survey	**NZ COVID Tracer app (QR code)**	**NZ COVID Tracer app (Bluetooth)**
Pandemic scenarios most suited for	- Transmissibility is relatively low - Controllability is high because of visibility of infection and relatively long incubation period	- Transmissibility is relatively high - Controllability using conventional public health approaches is relatively low because of low visibility of infection or short incubation period - If clinical severity is high or if pursuing an elimination strategy, then it is justifiable to invest more effort in high sensitivity of contact tracing even at the expense of low specificity		
Other relevant features influencing future use	- Alignment with pandemic characteristics and response strategy - Capacity of the health sector to implement - Likely to remain important for well-circumscribed outbreaks within wider pandemics	- There must be sufficient social license to implement the tool - A sufficient proportion of the population needs to be digitally included with a response for those who are not - Support from public health officials is needed - Likely to become more effective as rapid point-of-care diagnostics and digital health surveillance tools improve - The self-service survey method could be introduced for selected non-pandemic infectious diseases following careful design and evaluation with patients, communities and system operators		

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Penetrating glass injury leading to brachial artery pseudoaneurysm: a rare case with early onset symptoms

Vasu Kamboj, Anand L Acharya, Tarun Goyal, Divakar Goyal

ABSTRACT

Pseudoaneurysms of the brachial artery have been reported in the literature, with aetiologies including iatrogenic causes, trauma and intravenous drug use. Among traumatic causes, blunt trauma is the most common, and the incidence of brachial artery pseudoaneurysms due to penetrating injuries is approximately 0.04%. The presentations are usually late, mainly after months or years, but the presentation within a week is rare. The management includes computed tomography (CT) angiography as the modality for diagnosis and endovascular or surgical approaches—the surgery is either graft or end-to-end repair. However, well-defined protocol-based management, as well as the keen suspicion of such a rare entity, is necessary for trauma or vascular surgeons to prevent further morbidities or mortality.

Pseudoaneurysms of the brachial artery have been reported in the literature, with aetiologies including iatrogenic causes, trauma and intravenous drug use.[1] Among traumatic causes, blunt trauma is the most common and is often associated with humerus fractures.[2] The incidence of brachial artery pseudoaneurysms due to penetrating injuries is only around 0.04%.[3] These cases typically present months or even years after the initial injury.[3]

We present a case of a penetrating injury to the right upper limb in a male patient in his mid-30s. The injury occurred when the patient sustained a laceration from a glass window while working. He presented to us 1 week later with pulsatile swelling and complaints of paresthesia in the affected limb.

Case report

A young male in his mid-30s presented to the Department of Trauma and Emergency, AIIMS Bathinda, with an alleged history of a glass-cut injury to the right antecubital fossa sustained 6 days prior. He complained of numbness in his right upper limb, associated with excruciating pain and a pulsatile swelling in the same region.

He reported receiving initial treatment from a local practitioner, where temporary bleeding control was achieved by an attempt of arterial ligation and suturing.

On examination, the patient appeared pale. A pulsatile swelling measuring approximately 4x3cm was noted in the right cubital fossa, with an overlying wound (Figure 1).

The limb was warm to touch; however, the hand and fingers were relatively cold. Capillary refill time (CRT) was delayed (>3 seconds), although oxygen saturation in all fingers remained between 97 and 98%.

Blood investigations revealed a haemoglobin level of 6g/dL, for which the patient received a blood transfusion. He was managed according to the advanced trauma life support (ATLS) protocol.

Imaging

The patient underwent CT angiography of the right upper limb, which revealed a large pseudoaneurysm measuring 6.2x5.1x6cm arising from the distal part of the brachial artery proximal to its bifurcation in the cubital fossa. The periphery of the pseudoaneurysm sac showed signs of thrombosis (Figure 2).

Surgical management

The patient was planned for surgical exploration. Intraoperatively, the pseudoaneurysm was ligated, and a 5mm tear was identified in the brachial artery (Figure 3 and Figure 4).

Due to the fragile condition of the vessel wall, approximately 3cm of the artery was excised, and end-to-end anastomosis was performed (Figure 5).

Figure 1: The figure shows skin erythema around a brachial artery pseudoaneurysm.

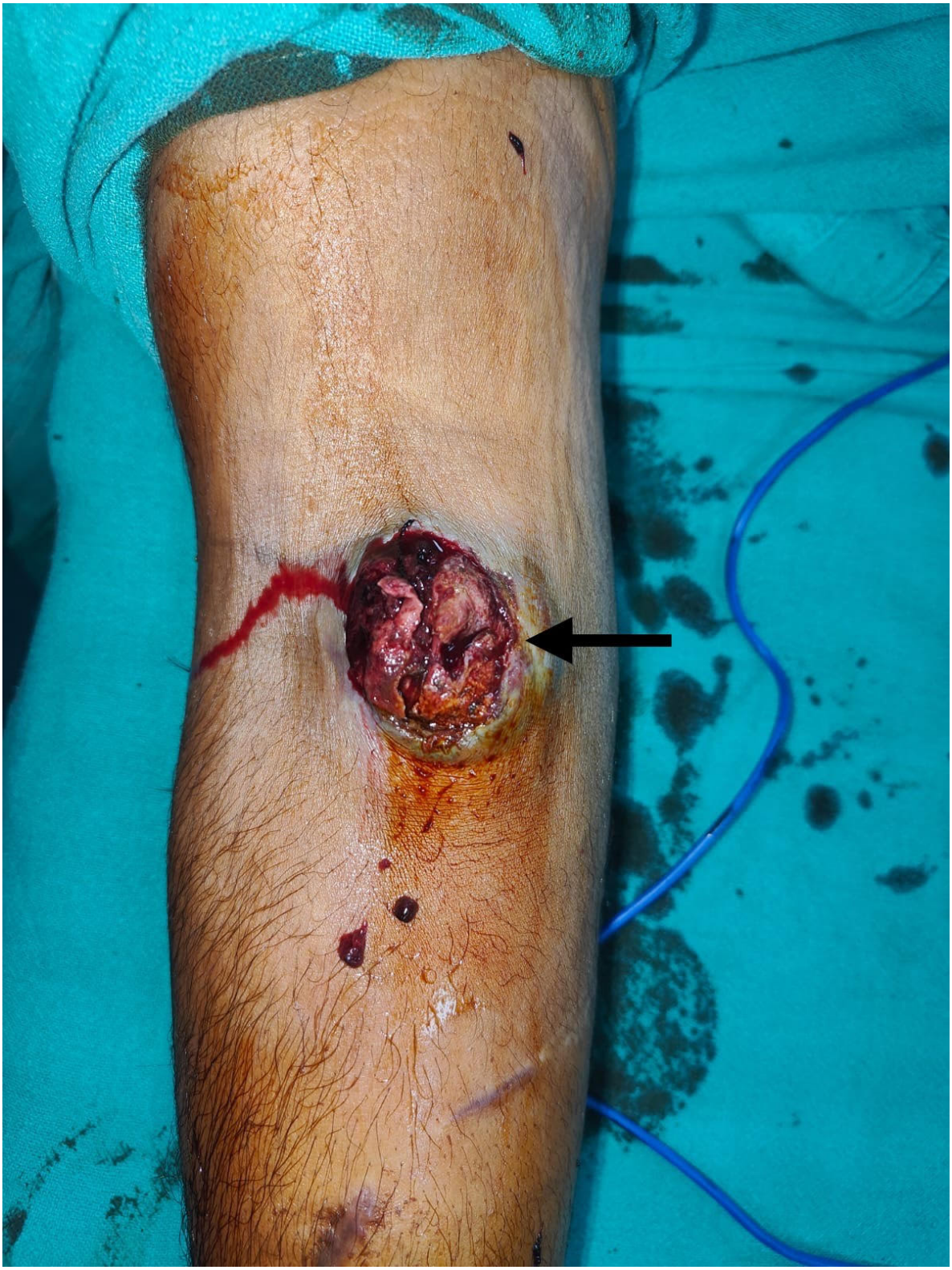


Figure 2: CT image showing the pseudoaneurysm.

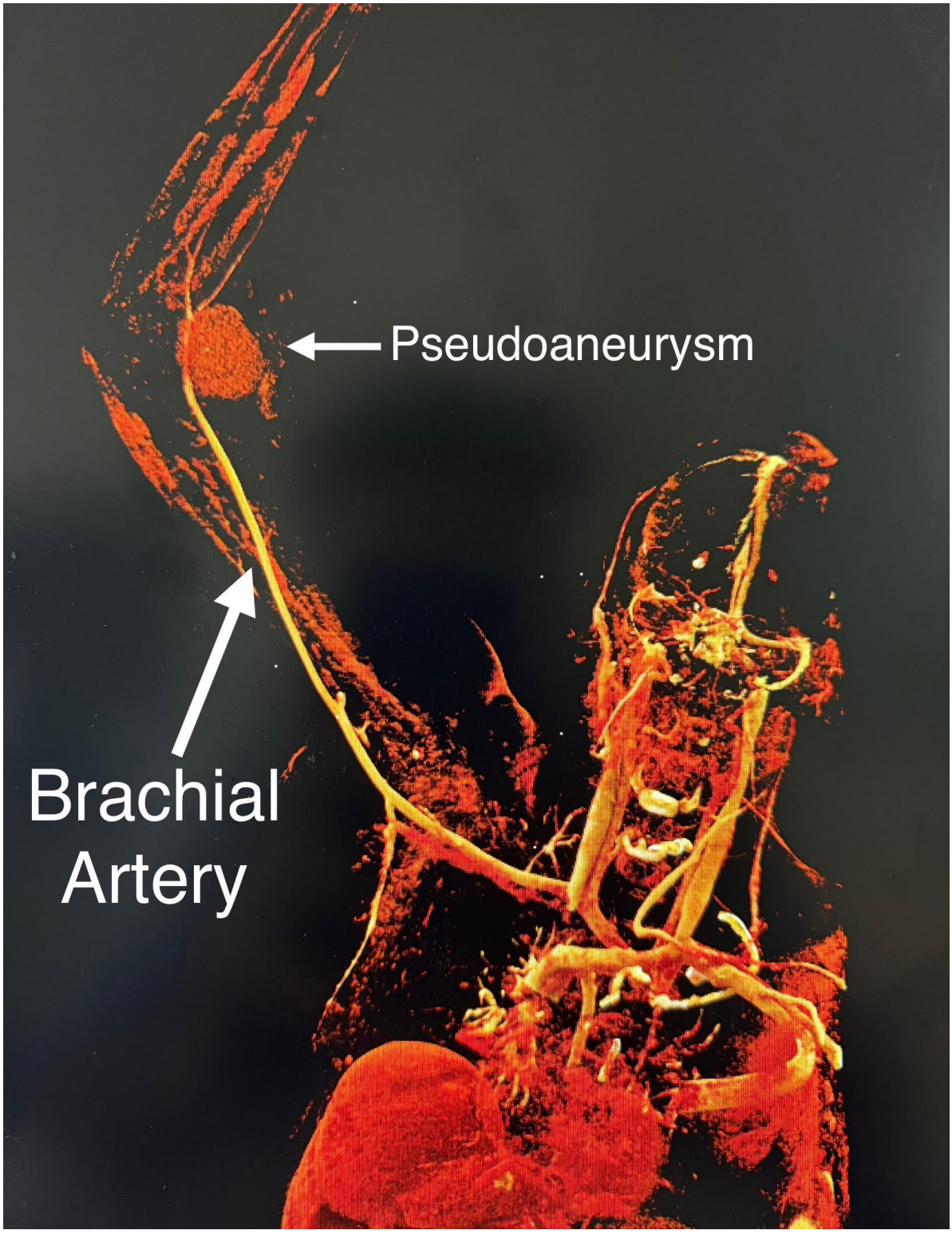


Figure 3: The figure shows tear in the brachial artery after excision of pseudoaneurysm.

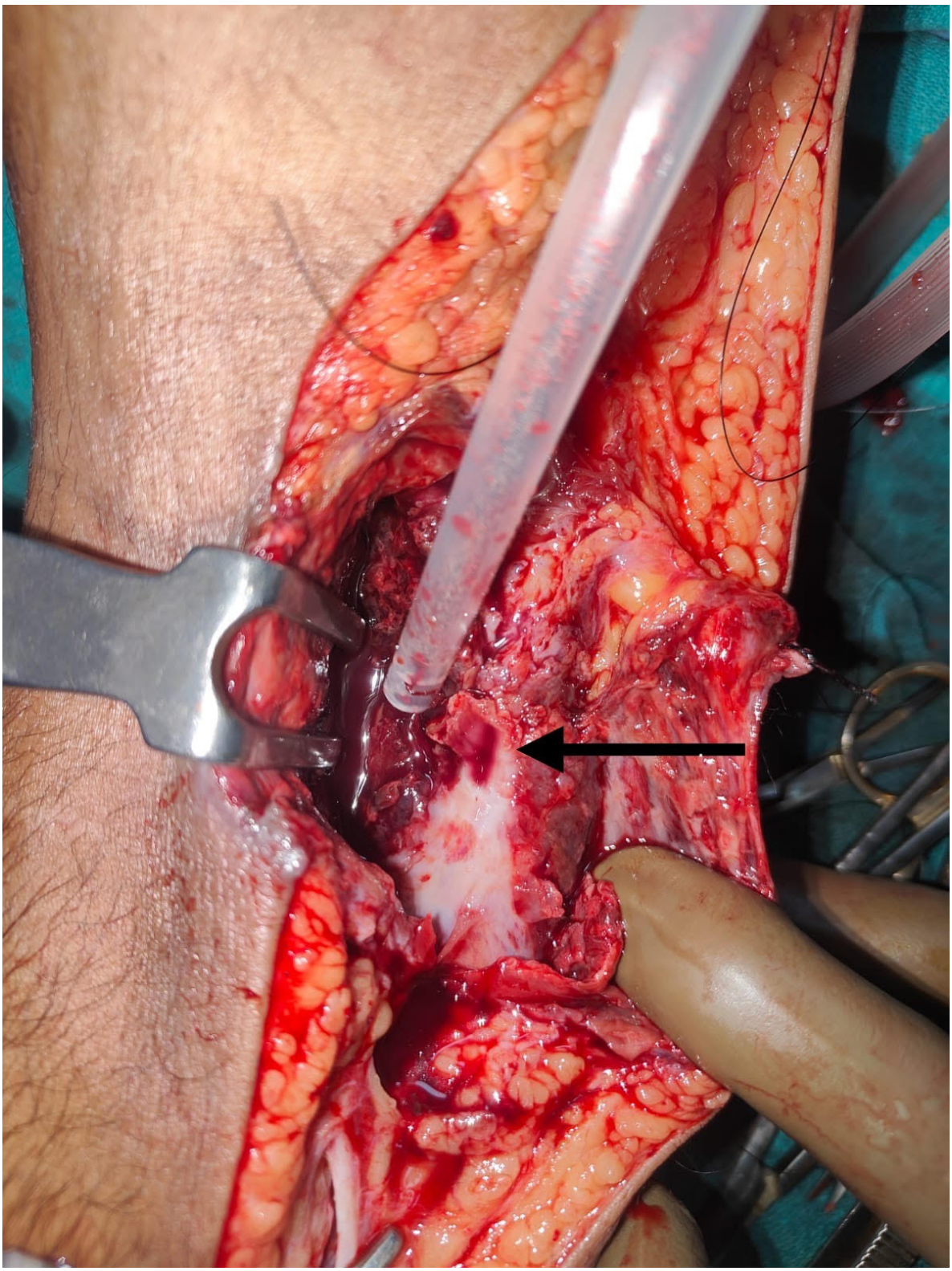


Figure 4: The figure shows the cut pieces pseudoaneurysm.

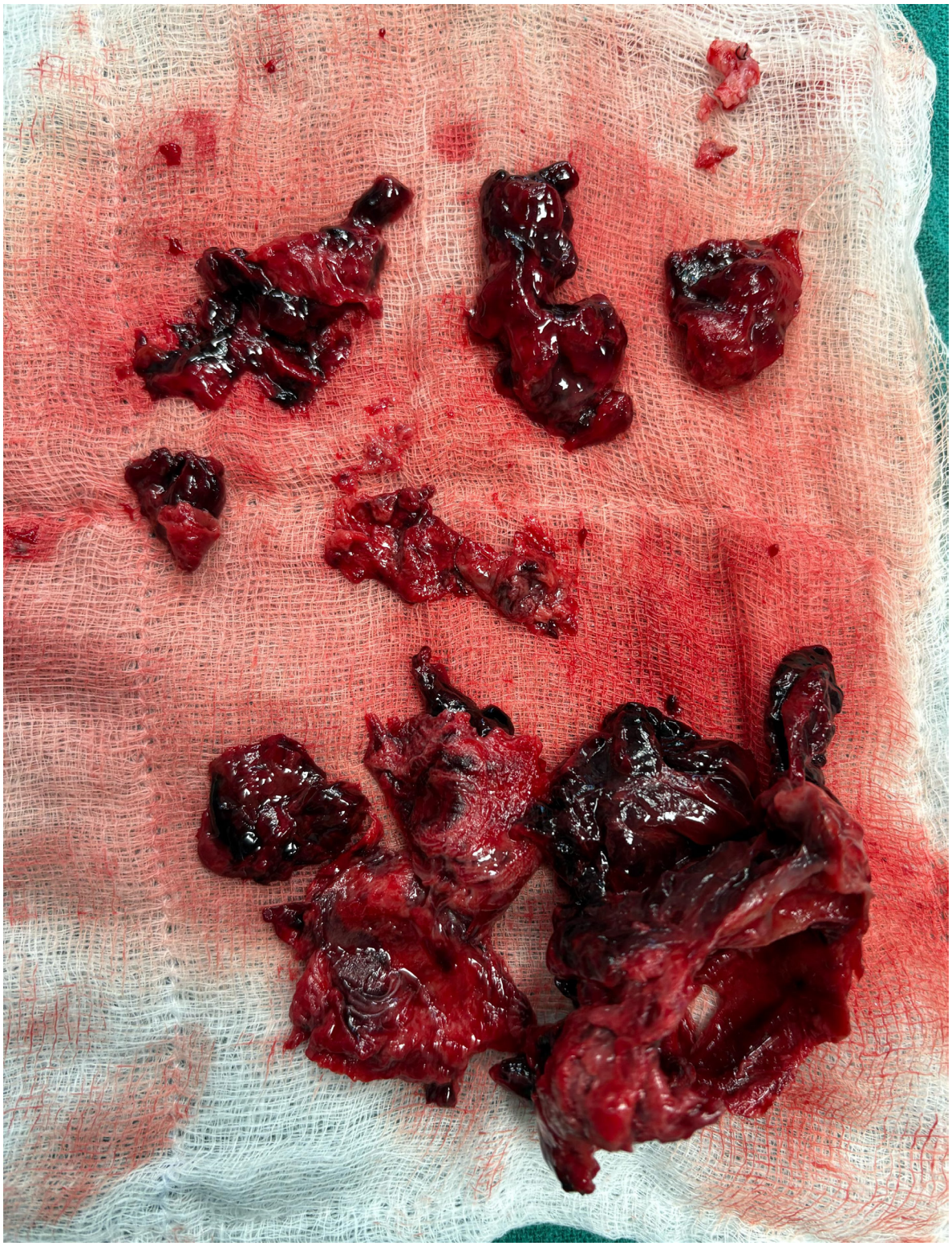
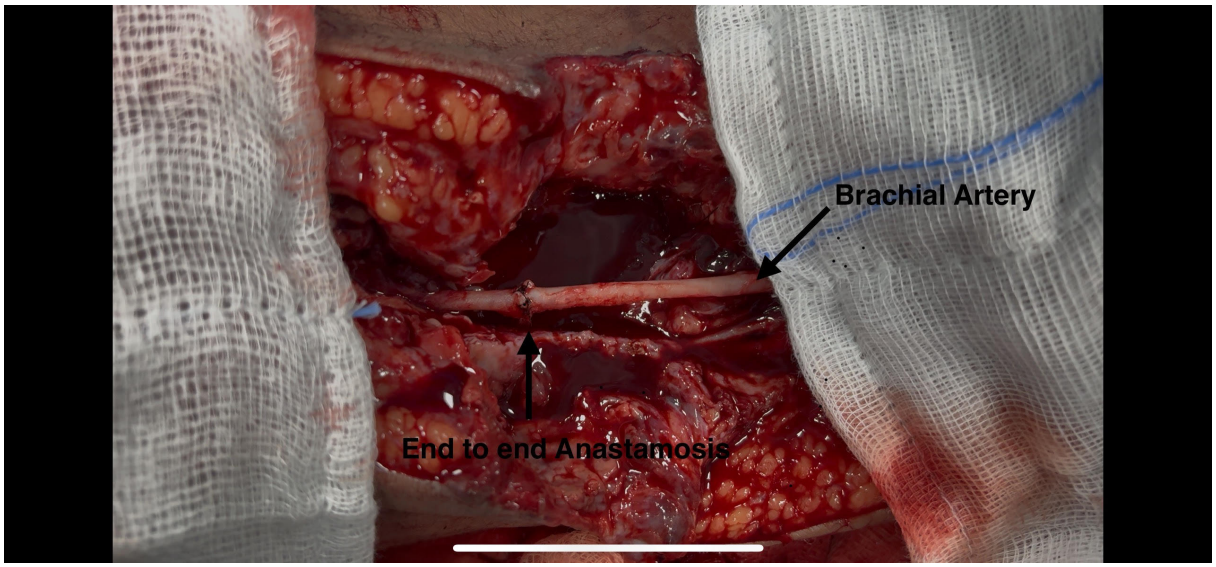


Figure 5: The figure shows end-to-end repair of brachial artery.



Post-operative course

Post-operatively, the affected limb was warm, with a CRT of less than 3 seconds. Both radial and ulnar pulses were palpable. Follow-ups at 2 weeks, 2 months and 6 months demonstrated good recovery. The patient regained full range of motion at the elbow and wrist joints with no numbness after 6 months.

Discussion

Pseudoaneurysms of the brachial artery are a rare phenomenon, with few cases reported in the literature following penetrating injuries. The most extensive series to date was described by Yetkin et al., who reported nine cases—four resulting from gunshot wounds and five from stab injuries.[4] In contrast, our case represents an occupational hazard, where the patient sustained a penetrating injury from a glass window while working.

The patient presented within 1 week of injury, whereas the reported cases of brachial artery pseudoaneurysms present months to years after the initial insult. To the best of our knowledge, we could not find any article where the patient presented with brachial artery pseudoaneurysms within a week of initial injury.[4–8] A few cases of traumatic femoral artery pseudoaneurysm have been reported at an early age, but these too did not present within a week.[9]

Several risk factors have been associated with developing pseudoaneurysms, including anticoagulant or antiplatelet therapy, arterial calcification, obesity, diabetes mellitus and haemodialysis. However, in our case, none of these risk factors were present. The patient also had no history of smoking or intravenous drug use.[10]

Pseudoaneurysms can pose serious threats to both limb and life. Common complications include haemorrhage, nerve injury and venous oedema of the distal extremity. Median nerve paraesthesia has been documented, notably by Esteban et al., and may result from either direct nerve injury or the mass effect of the pseudoaneurysm.[7] Our patient's paraesthesia was due to mass effect, as no nerve injury was observed intraoperatively. Additionally, thromboembolic events may lead to limb ischemia, amputation or, in rare cases, rupture—an event associated with high mortality.

CT angiography remains the gold standard for diagnosis, while Doppler ultrasonography is frequently used during follow-up. Management depends on the size, location and aetiology of the pseudoaneurysm. Endovascular techniques such as coil embolisation or stenting are increasingly employed. However, open surgical intervention is indicated in cases of rapidly expanding aneurysms, distal ischemia or compressive neuropathy.[2]

Surgical repair is generally recommended for lesions exceeding 2cm in diameter.[11] Options include ligation or revascularisation, with reported 50% and 6% amputation rates respectively. Among revascularisation techniques, both primary repair and interposition using saphenous vein grafts

have been described. Yetkin et al. highlighted the superiority of venous grafts in lesions proximal to the brachial artery bifurcation.[4] In our case, however, the lesion was amenable to primary repair, which was successfully performed.

We hereby in Table 1 present the articles of post-traumatic penetrating injury leading to brachial artery pseudoaneurysm with brief details of their time of presentation and the management.

Conclusion

Brachial artery pseudoaneurysm, though rare, is a well-recognised complication following penetrating injuries. Clinicians should maintain a high index of suspicion during both the initial management and follow-up periods. This is an individualised approach for the management of this particular case. More such cases in the future will guide us to develop a protocol for the management of such injuries. Furthermore, continued research and exploring alternative therapeutic approaches are warranted to enhance our understanding and improve management strategies for this uncommon but potentially serious complication.

Table 1: Articles with post-traumatic brachial artery pseudoaneurysm.

S.No.	Author details	Year	Journal	Age/sex	Object	Time of presentation	Surgical approach	Associated injury
1	Mannava et al.[5]	2023	*Cureus*	73/M	Bullet injury	25 years	End-to-end anastomosis	Not mentioned
2	Berrio-Caicedo et al.[6]	2022	*Trauma Case Reports*	18/M	Bullet injury	2 months	Brachial vein graft	Median nerve
3	Forde et al.[8]	2009	*Turkish Journal of Trauma and Emergency Surgery*	23/M	Knife stab injury	3 months	Long saphenous vein graft	Not mentioned
4	Esteban et al.[7]	2006	*Emergency Radiology*	25/M	Glass cut injury	22 days	Excision of pseudoaneurysm	Median nerve
5	Yetkin et al.[4]	2003	*Texas Heart Institute Journal*	33/F 26/M 44/M 46/M 38/F 44/M 43/M 41/M 29/M	Stab Gunshot Stab Stab Gun Stab Gunshot Stab Gunshot	17 months 20 months 2 years 1.5 years 1.5 years 19 months 21 months 20 months 7 years	Long saphenous vein graft	Not mentioned

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Pseudoaneurysm of the lateral circumflex femoral artery following direct anterior approach total hip arthroplasty—a case report

Poasa Cama, Georgina Chan

Total hip arthroplasty (THA) is a well-established procedure for end-stage hip osteoarthritis, with the direct anterior approach (DAA) gaining popularity among surgeons and patients alike. Given the close proximity of important vessels during this approach, vascular injury, including pseudoaneurysm formation, remains a rare but potentially serious complication. A systemic literature review by Alshameeri et al. showed two-thirds of vascular injuries were diagnosed intraoperatively or within the first post-operative week, and none were associated with the DAA.[1]

However, there was one reported case of DAA THA with a pseudoaneurysm of the distal third of the external iliac artery and active bleeding of the proximal common femoral artery.[2] A separate article reported three cases of vascular injury of the common femoral artery following THA with DAA. It also highlighted that penetration or laceration was the most common form of vascular injury during THA, with the common femoral artery being the vessel most often affected.[3]

In both case reports they describe all patients undergoing open surgical repair of their common femoral artery injuries.[2,3]

We report the case of a lateral circumflex branch of the profunda femoris artery pseudoaneurysm following DAA THA, managed by endovascular intervention with embolisation.

Case report

We present the case of an 88-year-old male who underwent primary left THA for osteoarthritis via DAA, with a background of peripheral vascular disease. The operation was uneventful, with an estimated blood loss of 150mL. He was mobilised post-operatively with routine venous thromboembolism prophylaxis and discharged.

He re-presented on day 5 post-surgery with thigh swelling and symptomatic anaemia, with haemoglobin dropping from 112 to 85g/L. He remained haemodynamically stable on initial review and throughout his hospital admission. Following full workup to rule out other causes, further imaging was organised. Initial ultrasound revealed a 19x4x9cm haematoma in the anterior compartment of the thigh. Subsequent computed tomography angiogram (CTA) showed contrast pooling, suggesting ongoing arterial bleeding with the possibility of a pseudoaneurysm. A further ultrasound was then obtained to better evaluate and differentiate the CTA findings. This showed bidirectional flow on colour Doppler imaging with swirling of blood, also known as the yin-yang sign.[4] The ultrasound scan suggested that the pseudoaneurysm was most likely arising from the lateral circumflex branch of the profunda femoris artery.

On day 10 the patient underwent embolisation. Live fluoroscopy confirmed that the pseudoaneurysm was indeed arising from the lateral circumflex artery. The pseudoaneurysm was embolised with two coils. Following this intervention he made a full recovery with no further concerns and subsequently had an uneventful contralateral THA, also utilising the DAA.

Discussion

During superficial dissection for the anterior approach, the plane between the sartorius and tensor fascia latae is developed. The ascending branch of the lateral circumflex artery is consistently found through the bed of rectus femoris following superficial dissection. This is often ligated with surgical hand ties and diathermy.

In this case there was no apparent intra-operative vascular injury, and blood loss was within the expected range. The delayed presentation of this case suggests possible failure of ligation to

the vessels as the cause of his pseudoaneurysm or inadvertent injury with medial retractor placement on pre-existing atherosclerotic vessels.

Those undertaking the DAA must be cognisant of the close proximity of the femoral neurovascular bundle. Meticulous superficial and deep dissection with haemostasis is paramount. Ligation of vessels done adequately and careful retractor placement during surgery can minimise vascular injuries during or post-THA.[3] Noting the patient's pre-existing atherosclerosis as part of their medical history is also vital in peri-operative planning and vascular assessments post-operatively. DAA THA is not contraindicated in patients with pre-existing vascular disease; they may need to be closely monitored in the post-operative period.

This case underscores the importance of monitoring for vascular complications following DAA THA, even in the absence of intraoperative concerns. Although vascular complications post-THA are rare, with a reported incidence of <0.2%,[5] healthcare professionals should maintain a high suspicion for pseudoaneurysm formation in patients with unexplained post-operative pain, haematoma or haemoglobin decline. This case shows that endovascular embolisation remains a safe and effective treatment, enabling excellent recovery and functional outcomes. Endovascular embolisation is the preferred treatment modality for artery pseudoaneurysms, offering a minimally invasive approach with excellent outcomes. Early detection and intervention are crucial to prevent complications such as haematoma expansion, neurovascular compromise or limb ischaemia.

COMPETING INTERESTS
GC is an NZOA Council Member and a LIONZ Committee Member/past President.

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The immunological impostor: Kikuchi-Fujimoto disease vs systemic lupus erythematosus

Akram Shmendi

Kikuchi-Fujimoto disease (KFD), or histiocytic necrotising lymphadenitis, is a rare, benign, self-limiting inflammatory disorder of uncertain aetiology. Initially described in Japan in 1972, it has since been reported globally across ethnicities.[1] KFD typically affects young adults and often mimics more serious conditions such as systemic lupus erythematosus (SLE) and lymphoma, leading to diagnostic delays.[2]

We report the case of a 29-year-old woman of Samoan descent who presented with fever, malaise and painful cervical lymphadenopathy. She was initially discharged from the emergency department with presumed viral illness and a 7-day course of Augmentin. When she re-presented twice over the following days with persistent fever and lymphadenopathy, further investigations were prompted.

Examination showed bilateral tender cervical lymph nodes and a papular rash on the forearm and back. Blood tests revealed mild pancytopenia (haemoglobin 107g/L, white blood cell count $1.4x10^9$/L, platelets $107x10^9$/L) and elevated C-reactive protein (CRP; 30mg/L) and lactate dehydrogenase (LDH; 1,109U/L). Computed tomography (CT) scan of the neck, chest, abdomen and pelvis showed widespread lymphadenopathy and splenomegaly, raising concern for lymphoma. Autoimmune screening demonstrated antinuclear antibody (ANA titre of 1:320), but negative anti-double stranded DNA antibody (anti-dsDNA), extractable nuclear antigen (ENA) and antiphospholipid antibodies. Serum complement levels and urinalysis were normal.

A bone marrow biopsy showed reactive trilineage haematopoiesis without malignancy. Lymph node biopsy demonstrated histiocytic necrotising lymphadenitis consistent with KFD. Skin biopsy showed non-specific inflammation and mucin deposition, raising differential of lupus. Given the ANA positivity and systemic features, hydroxychloroquine was initiated and rheumatologist review arranged.

At rheumatology clinic follow-up she reported gradual resolution of symptoms, including rash and lymphadenopathy. Two months from the initial hospital presentation she remained clinically well, except for diffuse alopecia, which was later explained by long-standing iron deficiency secondary to menorrhagia. She reported occasional use of tranexamic acid during her periods and intermittent use of oral iron supplementation. Review of her records showed that her serum ferritin levels had ranged between 6 and 13µg/L. ANA titre had decreased to 1:80, with negative dsDNA, normal serum complements and CRP 3mg/L. The rheumatologist concluded the presentation was most consistent with KFD rather than SLE. Hydroxychloroquine was tapered and ceased. Eight months from the initial hospital presentation she remained asymptomatic, with no fever, fatigue or painful neck lumps. Her laboratory findings were normal, and she was discharged from follow-up. A repeat CT scan was not performed as her symptoms had fully resolved and it was considered unnecessary given her return to baseline health. The patient had two CT scans during her inpatient stay. The first, a contrast-enhanced CT of the neck and chest, was performed on 5 August 2024 due to neck lumps and fever. Two days later, on 7 August, she underwent a contrast-enhanced CT of the abdomen and pelvis to complete evaluation, as lymphoma was suspected.

Discussion

KFD commonly presents with fever and cervical lymphadenopathy in young women.[2–4] While initially thought to predominantly affect Asian populations, it occurs in diverse ethnic groups.[1] In Aotearoa New Zealand, data on incidence among Pacific peoples are limited, but clinicians should be aware of its presentation.

Laboratory findings in KFD are variable. Leukopenia is reported in up to 43% of cases, with occasional thrombocytopenia or pancytopenia.[5,6]

Elevated LDH and transient ANA positivity may occur, sometimes mimicking early SLE.[7] Biopsy is essential to confirm diagnosis and exclude malignancy or autoimmune disease. Histologically, KFD shows patchy necrosis with abundant histiocytes and karyorrhectic debris, with absence of neutrophils.[8]

Management is supportive. Most cases resolve within weeks to months. Non-steroidal anti-inflammatory drugs (NSAIDs) may help with symptoms, while corticosteroids or hydroxychloroquine are reserved for severe or persistent disease.

Conclusion

This case highlights KFD as an important differential in young women with fever and lymphadenopathy, even among Pacific populations. It underscores the need for tissue diagnosis, awareness of potential overlap with autoimmune disease and the importance of multidisciplinary input for optimal care.

Figure 1: Haematoxylin and eosin (H&E) stain, skin biopsy, low-power general view.

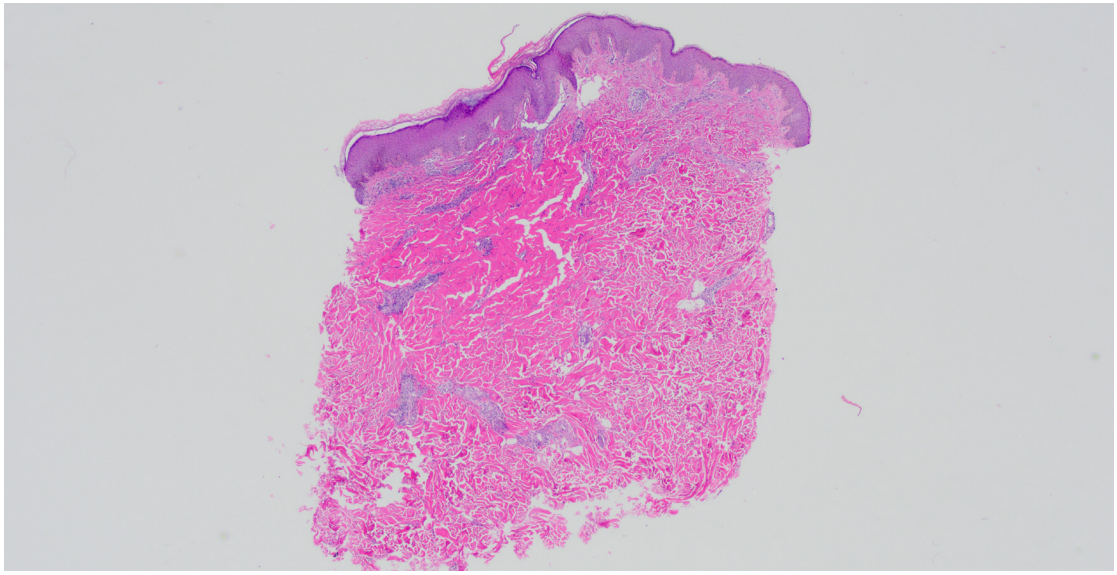


Figure 2: Alcian blue periodic acid-schiff (ABPAS) stain, skin biopsy, high-power general view.

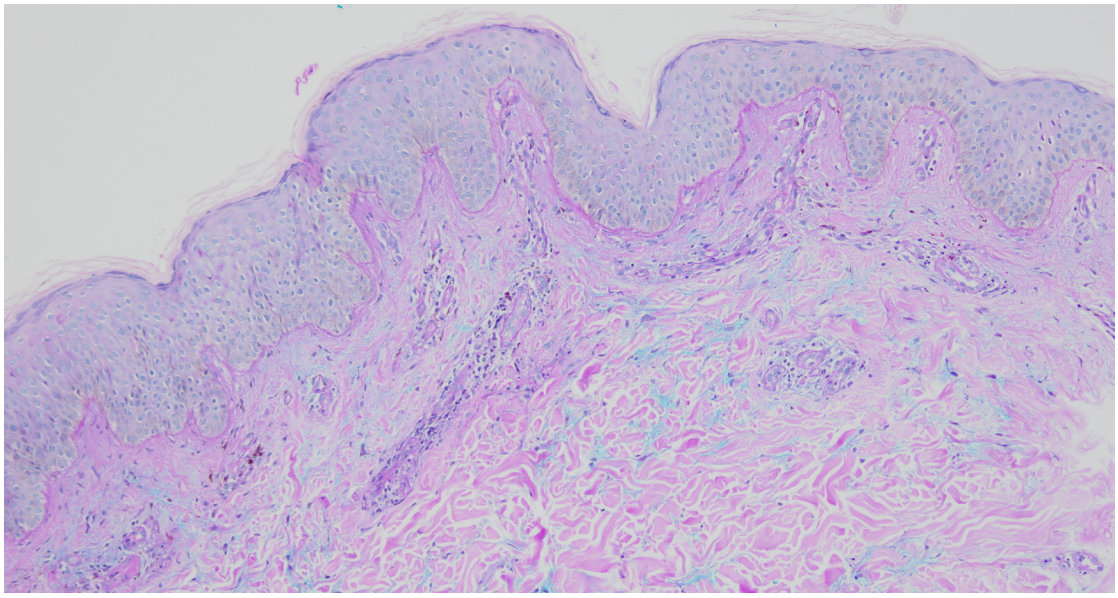


Figure 3: CT neck with contrast, coronal view.

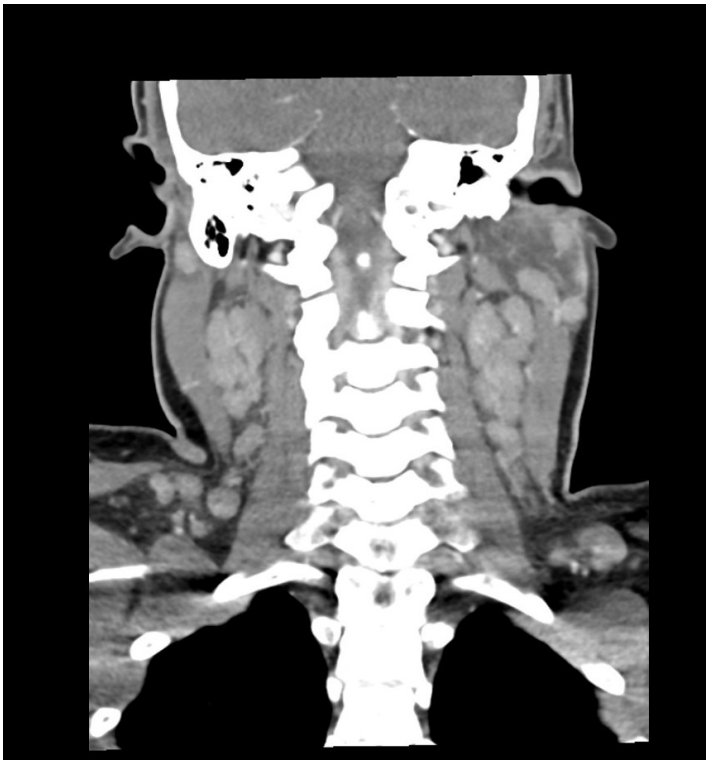
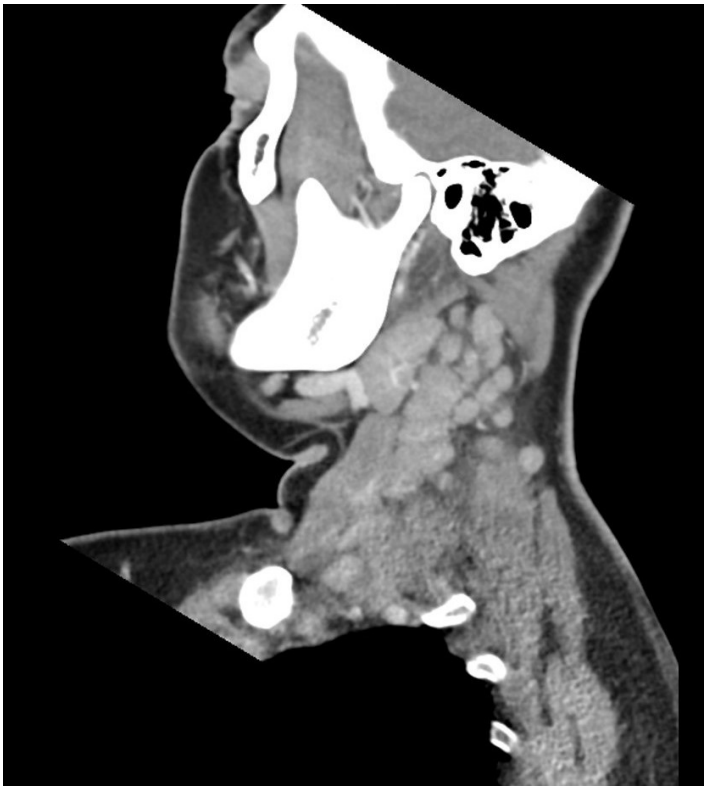


Figure 4: CT neck with contrast, sagittal view.



COMPETING INTERESTS
None declared.

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Clinical Aspects of Allergy

NZMJ, 1925
By I. M. Allen, M.D.

Introduction.—The group of diseases now recognised to have some relation to allergy, or sensitivity, has for many years baffled all attempts of clinicians to relieve or cure them. At the very best they were relieved, and the measure of relief was problematical. It was recognised that any treatment applied to them was purely empirical, and was in no way specific or curative. It was understood that, however many theories of their causation were formulated, the essential underlying cause was missing, and, until that could be discovered, any scheme of diagnosis and treatment must be imperfect. As a result, the sufferer from hay fever looked forward to a martyrdom of from six weeks to six months each year, the sufferer from eczema was exposed to constant irritation, and the asthmatic acquired his enemy in early childhood and had it with him for the rest of his days—and nights.

In the middle of the nineteenth century, Salter, basing his conclusions upon purely clinical observations, gave some indication of the direction in which the specific causation of such conditions might be sought, but, apparently, his work was lost sight of, and, as late as ten years ago, writers were laying particular stress upon the so-called neurotic element as the essential factor in their etiology. The growth of bacteriology and the discovery of a specific microbic cause for such diseases as tuberculosis, anthrax and cholera developed the theory that all diseases were due in some measure to infection. Bacteriology has helped to determine the specific cause, and, in many cases, the specific prophylaxis and treatment of the large group of infectious and contagious diseases, but there for the time is ended its work in the development of the history of medicine. Endocrinology, investigations into metabolism, and dietetics are all adding something to the sum of specific etiology.

There is a risk, however, that, in attempting to fit in conditions with the main thesis of the prevailing theory, an important side-issue may be overlooked. The discovery of specific microbic causes for diseases led to an attempt to develop immunity to the offending organisms and, incidentally, to other types of poisons as well. This resulted in the accidental discovery of the phenomenon of anaphylaxis by Richet in 1902, and the explanation that it was due to the same mechanism as immunity, though producing and opposite result. However, in 1903, it was shown by Arthus that the phenomenon was produced by ordinary horse serum, and it was then explained that it had no connection with the specific poisons employed, but was due to the protein contained therein. The classical symptoms of anaphylaxis —asthma, vomiting and diarrhoea, and those of serum sickness—rashes, vomiting and joint pains—suggested some resemblance to well-known diseases, and the possibility that they might be anaphylactic phenomena.

There, for some twenty years, the matter rested, until the American school of investigators brought the suggestion into the realm of practical diagnosis and treatment. Though the cutaneous test was first mentioned by Blackley in 1873, to Chandler Walker and his school is due the credit of formulating a practical method of investigating the sensitivity of an individual to the various proteins to which he is exposed in the ordinary rough and tumble of life. The elaboration of the cutaneous test for sensitivity has provided a convenient method of finding the irritant or irritants responsible for the individual's symptoms. This, in turn, has cleared the way for the specific treatment of such conditions as asthma, and, although, at present, the methods are not perfect, they show promise of success.

Proceedings from the Health New Zealand – Te Whatu Ora Waitematā, The University of Auckland and Auckland University of Technology Collaborative Research Symposium, on 26 August 2025

ORAL PRESENTATIONS

SAVING LIVES ON THE SPECTRUM: EXPLORING THE EXPERIENCES OF NEURODIVERGENT PROFESSIONALS IN HIGHLY REGULATED HEALTHCARE ENVIRONMENTS

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[1]Manatū Hauora – Ministry of Health
[2]Auckland University of Technology, Psychology and Neuroscience

BACKGROUND

Neurodivergent individuals—those with autism, ADHD or related conditions—are increasingly represented in the Aotearoa New Zealand healthcare workforce. However, little research exists on how these professionals experience the demands of highly regulated clinical environments. Definitions of professionalism, shaped by neurotypical norms, may unintentionally disadvantage neurodivergent staff and impact wellbeing, performance and retention.

AIMS

This research aimed to explore the workplace experiences of neurodivergent professionals in regulated healthcare settings, identify systemic barriers and enablers, and offer practical recommendations for inclusion and workforce sustainability.

METHODS

A qualitative approach was used. Semi-structured interviews were conducted with neurodivergent professionals working across various healthcare roles in Aotearoa. Data were thematically analysed to identify recurring challenges, coping strategies and systemic patterns.

RESULTS

Participants reported high levels of stress, masking, executive dysfunction and burnout. Many felt misunderstood by colleagues and managers due to different communication styles, sensory needs or work pacing. Workplace policies and cultural expectations often clashed with their neurodivergent needs. Few reported access to formal support or safe disclosure pathways.

DISCUSSION

The findings reveal that current healthcare systems may be inadvertently disabling for neurodivergent staff. However, small systemic adjustments—such as clearer communication, sensory-friendly environments, flexible expectations and leadership education—could significantly improve retention and staff safety.

CONCLUSION

Creating neurodivergent-affirming workplaces supports both staff wellbeing and patient care. This research contributes to the growing evidence base for inclusive healthcare practice, with relevance to workforce equity strategies at Health New Zealand – Te Whatu Ora Waitematā and beyond.

ACKNOWLEDGEMENTS

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A QUALITATIVE STUDY OF PRE-DIAGNOSTIC EXPERIENCES AND AWARENESS OF ENDOMETRIAL CANCER AMONG WĀHINE MĀORI AND PACIFIC WOMEN IN AUCKLAND HEALTH DISTRICTS

Georgina McPherson,[1] Sarah Herbert,[2] Suneela Mehta,[3,4] Julea Dalley,[5] Karaponi Okesene-Gafa,[4,6] Maryann Heather,[4,7] Lois Eva,[4,8] Phyu Sin Aye,[3,4] Karen Bartholomew[3]

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BACKGROUND

Endometrial cancer (EC) burden is rising in Aotearoa New Zealand, particularly among wāhine Māori and Pacific women.

AIMS

To explore pre-diagnostic experiences and awareness of EC among wāhine Māori and Pacific women with EC.

METHODS

One-on-one semi-structured interviews were undertaken with wāhine Māori and Pacific women who had undergone EC treatment across Waitematā, Te Toka Tumai Auckland and Counties Manukau (01/09/2022–30/06/2024). Kaupapa Māori and talanoa research approaches were used to ensure cultural responsiveness, with thematic analysis of data.

RESULTS

Interviews with 12 wāhine Māori and 13 Pacific (4 Tongan, 7 Samoan and 2 Cook Island Māori) women revealed themes of symptom awareness, navigating the diagnostic pathway and cultural influences. There was low awareness of EC among women. Some women normalised EC symptoms. Premenopausal women recognised their symptoms were abnormal and experienced repeated GP visits resulting in diagnostic delays. While many participants cited positive interactions with clinicians, some encountered challenges including poor communication and being treated differently due to their ethnicity. Participants valued empathy and culturally safe care. Wāhine Māori reported restricted access and whānau support during COVID-19. Pacific women emphasised the importance of faith, family support and the availability of Pacific health providers.

DISCUSSION

Improving early diagnosis of EC requires better awareness and improved access to timely diagnosis. Addressing ethnic bias and ensuring culturally appropriate care are crucial for equitable EC diagnostic experiences and outcomes.

CONCLUSION

Improved EC awareness and strengthened diagnostic pathways through culturally safe approaches are essential for achieving equitable EC outcomes for wāhine Māori and Pacific women.

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SWALLOW SCREENING OF OLDER ADULTS AT HOSPITAL ADMISSION

Jacqui Allen, Anna Miles, Amanda Sextus, Becca Hammond

Health New Zealand – Te Whatu Ora Waitematā, Speech-language Therapy, Otolaryngology
The University of Auckland

BACKGROUND

Swallowing difficulties are associated with pneumonia, malnutrition, poor quality of life and longer, more costly hospitalisations. Risk of swallowing difficulties increases in older adults due to a combination of factors including multiple comorbidities and may be further destabilised by onset of acute illness. At hospital admission, identifying those at risk through a simple screening tool holds merit.

AIMS

This prospective quasi-experimental non-controlled cross-sectional study aimed to screen hospitalised adults over 75 years (>65yr for Māori and Pacific peoples) for swallowing risks, regardless of reason for admission, to North Shore Hospital.

METHODS

Six hundred and forty-four participants were screened with the Eating Assessment Tool (EAT-10) self-report questionnaire (August 2021–December 2023). Clinical outcomes were monitored for 30 days post-discharge, and EAT-10 scores and

subsequent clinical management were explored.

RESULTS

Age and ethnicity were not correlated with increased EAT-10 ($p>.05$), but comorbidity and number of medications on admission were correlated with higher EAT-10 ($p<.001$). There were associations between elevated EAT-10 scores and readmission, pneumonia and mortality ($p<.01$).

DISCUSSION

Elevated EAT-10 scores were associated with increased comorbidities and polypharmacy as well as increased readmissions, pneumonia and mortality. Screening for swallowing difficulties in at-risk older patients adds valuable information that allows teams to take action to prevent adverse health outcomes. Further investigation is required to explore optimal clinical pathways for those identified at risk.

CONCLUSION

Routine screening for swallowing difficulties in older patients is quick and low cost and should be considered in general emergency and acute admission settings to ensure equitable services and better health outcomes for all.

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GOLD LASER MYECTOMY FOR CRICOPHARYNGEAL DYSFUNCTION

Jacqui Allen, Brian Yeom, Shakeela Saleem, Rebecca Hammond, Anna Miles

Health New Zealand – Te Whatu Ora
Waitematā Otolaryngology
The University of Auckland

BACKGROUND

Swallowing difficulties are often due to upper oesophageal sphincter pathology such as cricopharyngeal (CP) bar or Zenker's diverticulum (ZD). Surgery is the treatment of choice, previously a midline CP myotomy. However moderate recurrence rate is seen following myotomy. We developed laser myectomy to remove muscle and reduce risk of recurrence.

AIMS

Describe cricopharyngeal myectomy (CPMec) with Gold laser for treatment of CP bar with ZD and evaluate long-term outcomes, using quantitative fluoroscopic and patient-reported metrics.

METHODS

All patients undergoing CPMec over 14 years were evaluated. Division and removal of approximately $1cm^2$ of CP muscle was performed with laser. Demographic data, EAT-10 scores and VFSS parameters were compared pre- and post-myectomy.

RESULTS

Eighty-four patients underwent 90 successful CPMec. EAT-10 scores decreased from 20 to two ($p<0.00$), and mean opening of the pharyngoesophageal segment improved from 0.56cm to 0.85cm ($p<0.007$). Pharyngeal constriction ratio improved from 0.15 to 0.09 ($p<0.00$) and bolus clearance from 16% to 4% residue ($p<0.00$). Six recurrences (6.7%), all treated with further CPMec, and four post-operative leaks occurred (4.4%), all managed conservatively.

DISCUSSION

CPMec addressed symptomatic and physiologic changes caused by obstructive UES pathology. Long-term follow-up demonstrated lower recurrence rate than current literature reports, and revision endoscopic surgery was successful in recidivistic cases. Few complications were experienced, and these were managed conservatively.

CONCLUSION

CPMec with Gold laser is safe, achievable and provides significant symptomatic and objective improvement in swallowing for those with CP bar and Zenker's diverticulum. Removal of tissue reduced recurrence and did not increase risk of adverse events.

ACKNOWLEDGEMENTS

We acknowledge our Speech Language Therapy Department for conducting the videofluoroscopic studies.

PARENT PARTNERSHIP: CO-DESIGNING SLEEP SYSTEM CARE

Jane Hamer

Health New Zealand – Te Whatu Ora Waitematā,
Child, Women & Family, Community Child Health

BACKGROUND

Sleep systems are part of a 24-hour postural care approach providing support in lying for individuals with disability. However, caring for a child with complex neurodisability is challenging, with sleep systems frequently abandoned. Findings from a master's-level study exploring caregivers' experience of implementing sleep systems for children

with complex neurodisability identified multiple barriers that impact on implementing and sustaining use. The Enabling Good Lives (EGL) approach aims to shift authority towards disabled people and families. Integrating caregiver priorities and preferences provides opportunities for health services improve 24-hour postural care.

AIMS

To co-design night-time postural care recommendations in partnership with caregivers to address their priorities and improve sleep system experiences.

METHODS

Interviews of 12 caregivers across New Zealand, explored service attributes that support sleep system care provision. A co-design process guided this study. Thematic analysis identified proposed solutions and recommendations.

RESULTS

Recommendations: Co-produce and develop 24-hour postural care resources with caregivers; Develop a national Postural Care Pathway; Refine national clinician training process; Advocate for change.

DISCUSSION

IF we enact EGL principles and provide timely co-designed postural care services,

THEN caregivers capacity to implement night-time postural care will improve,

BECAUSE disabled people and caregiver needs will be prioritised, clinicians' skill will be addressed, thus supporting sustained implementation of recommended 24-hour postural care programmes.

CONCLUSION

Caregivers' perspectives offer valuable insights into practice change solutions. Enacting EGL principles is needed to transform services and the disability support system to improve care and well-being outcomes. Advocacy and cross-sector collaboration is required to implement change.

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TĀNGATA WHAI ORA EXPERIENCE OF AN OCCUPATION-FOCUSED COGNITIVE REMEDIATION THERAPY (CRT) PROGRAMME WITHIN AN AOTEAROA NEW ZEALAND MENTAL HEALTH SERVICE

Katrina Wallis, Margaret Jones, Kirk Reed

Health New Zealand – Te Whatu Ora Waitematā
Auckland University of Technology

BACKGROUND

People with lived experience of enduring psychotic illness and mental health/addiction issues face difficulties with attention, memory, information-processing speed, executive functioning and social cognition. Cognitive difficulties affect social and occupational functioning. Evidence shows that cognitive remediation therapy (CRT) addresses cognitive difficulties, but interventions lack an occupational focus. Secondary mental health services in New Zealand have started implementing CRT led by occupational therapists. However, little is known about the strategies needed to effectively implement and deliver this intervention, and even less is known from tāngata whai ora perspectives.

AIMS

This presentation reports research exploring the delivery of an occupation-focused CRT programme from tāngata whai ora perspectives, with an aim to innovate future implementation of the programme into services.

METHODS

The research used case study methodology. Themes were constructed from tāngata whai ora interview data using reflexive thematic analysis. Māori cultural support was provided by a Māori elder. One theme and five subthemes were co-constructed.

RESULTS

The theme "Making Way" describes an internal change process that occurred as tāngata whai ora journeyed through the programme. The subthemes, lifting the anchor, experiencing learning, enjoying the challenge, being at the helm and seeing new horizons describe how fusion of CRT and an occupation focus inspired change and moved them through their recovery journey.

DISCUSSION/CONCLUSION

Tāngata whai ora perspectives have provided vital information for occupational therapists and management, to guide implementation of occupation-focused CRT programmes that create engagement and facilitate a positive change in tāngata whai ora occupations and lives.

ACKNOWLEDGEMENTS

Waitematā PD Fund have provided some financial support for this Doctoral research.

PERCEPTIONS OF THE DIALECTICAL BEHAVIOUR THERAPY—SKILLS TRAINING FOR EMOTIONAL PROBLEM SOLVING FOR ADOLESCENTS (DBT STEPS-A) IN AOTEAROA NEW ZEALAND:

A THEMATIC ANALYSIS OF THE VIEWS OF SCHOOL STAKEHOLDERS

Liesje Donkin, Priya Thakral, Shelly Hindle, Kirstin O'Connor, Amy Wilson-Hughes, Evie Andres, Katie Lancaster, Susannah Limbrick, Jessica Klippenstein, Lauren Glass, Selena Griffith, Amy Kercher

Health New Zealand – Te Whatu Ora Waitematā, Marinoto Child and Adolescent Mental Health Service
Auckland University of Technology

BACKGROUND

Mental health issues among rangatahi have sharply risen over the previous decade in Aotearoa, including a marked increase in anxiety, depression and suicidal behaviour. Research has shown that school-based mental health programmes can decrease emotional distress and conduct issues.

AIMS

Evaluate school stakeholder views of a school-based social-emotional programme (STEPS-A) facilitated by Marinoto Child and Adolescent Mental Health Service across diverse school settings.

METHODS

Thirteen stakeholders from schools that delivered STEPS-A were interviewed about their views of the programme. Transcripts were analysed using Braun and Clarke's thematic analysis framework.

RESULTS

Several themes emerged: skill acquisition was evident in a number of settings; decreased resources required by skills to manage challenging behaviours; skill acquisition was perceived to lead to long term benefits; students perceived the programme to be valuable and became promoters of the programme; and schools hoped to continue the programme once support from Marinoto stopped. Several recommendations for adapting the programme were also made, including consideration for neurodiverse students, students from diverse cultural backgrounds and further adaptations for Aotearoa.

DISCUSSION

STEPS-A was considered to be widely acceptable for schools and a valuable part of the curriculum that benefits both rangatahi and the schools. Despite the considerable resources required to run the programme, the benefits outweighed these costs. Further adaptations could be made to make the programme more engaging for rangatahi, and more appropriate to the populations of Aotearoa.

CONCLUSION

School-based programmes adapted for Aotearoa may be key in reducing mental health distress and improving wellbeing.

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The Well Foundation with support from Rotary Club of Downtown Auckland, The Trusts, Lottery Community Grants, ProCare and Henderson Rotary fundraised NZ$275,000 of funding for the salaries of the STEPS-A clinical team as part of service delivery for STEPS-A.

THE EFFECTIVENESS OF DIALECTICAL BEHAVIOUR THERAPY—SKILLS TRAINING FOR EMOTIONAL PROBLEM SOLVING FOR ADOLESCENTS (DBT STEPS-A) IN AOTEAROA NEW ZEALAND: AN ANALYSIS OF PSYCHOMETRIC OUTCOMES FROM REAL-WORLD IMPLEMENTATION

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BACKGROUND

Rangatahi in Aotearoa face high rates of emotional distress, with limited access to early intervention services. Dialectical Behaviour Therapy – Skills Training for Emotional Problem Solving for Adolescents (STEPS-A) is a manualised school-based programme that aims to build emotion regulation and coping skills.

AIMS

This study evaluated the real-world effectiveness of STEPS-A across diverse school settings.

METHODS

STEPS-A was implemented across 14 schools and delivered to 262 students. Self-report psychometrics completed pre- and post-programme assessed emotion regulation (DERS-18), personal difficulties and strengths (SDQ), mindfulness (CAMM), life satisfaction (SLSS) and DBT skill use (DBT-WCCL). Changes were assessed after the programme. Effectiveness was assessed via clinically meaningful change thresholds benchmark (≥0.5 SD), band score shifts and subgroup analyses.

RESULTS

Significant improvements were observed in DBT skill use ($p<.0001$), emotion regulation strategies ($p<.01$), goal-directed behaviour ($p<.01$), mindfulness ($p=.02$) and life satisfaction ($p<.001$). Half of students improved their SDQ total difficulties band,

and among those in the borderline or abnormal range for emotional problems, 65.6% shifted to the normal range. The greatest benefits were observed among students with clinically elevated baseline scores. Exploratory analyses suggested differential effects by ethnicity and school equity index.

DISCUSSION

STEPS-A was associated with meaningful improvements in emotion regulation, wellbeing and psychological skills across a number of schools. Future research should explore long-term outcomes, cultural adaptation and implementation fidelity.

CONCLUSION

Findings support STEPS-A through schools as a feasible Tier 2 early intervention for youth with emerging emotional difficulties that may prevent future morbidity and mortality.

ACKNOWLEDGEMENTS

The Well Foundation with support from Rotary Club of Downtown Auckland, The Trusts, Lottery Community Grants, ProCare and Henderson Rotary fundraised NZ$275,000 of funding for the salaries of the STEPS-A clinical team as part of service delivery for STEPS-A.

THE UNSEEN RISK: UNDERDOSING DUE TO NON-FLUSHING OF IV ADMINISTRATION SETS

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BACKGROUND

Intravenous (IV) medications are commonly used in the hospital setting. A change in administration practice across Waitematā in 2024 led to concerns that administration sets were not always flushed and patients not receiving the full dose. Underdosing, particularly with antibiotics, can lead to treatment failure and the emergence of antimicrobial resistance.

AIMS

To quantify the frequency and type of drug discarded in administration sets across a range of clinical ward settings.

METHODS

All IV administration and sets were collected from eight different clinical areas, across North Shore and Waitākere Hospitals, over a 10-day period. The total number of administration sets were recorded along with the drug name and dose, diluent and volume of bag. The presence of a 50mL or 100mL bag of sodium chloride 0.9% attached to an administration set was considered to represent the use of a flush.

RESULTS

A total of 327 administration sets were collected and of these 230 (70%) were not flushed. The largest class of medication not flushed was antibiotics (152/230). The most frequent antibiotics were flucloxacillin (n=58) and piperacillin/tazobactam (n=33). All bags collected were 100mL, and the administration sets had an average volume of 20mL.

DISCUSSION

The non-flushing rate of 70% reflects the international literature. The high rate of antibiotics not flushed was unsurprising but concerning, given that up to 20% of the dose was left in the administration set.

CONCLUSION

The results show that many patients are not receiving the full dose of IV medication prescribed, particularly antibiotics.

ACKNOWLEDGEMENTS

Medication Safety Committee, Waitematā - for their support.

ENHANCING ICU NURSE REDEPLOYMENT PRACTICES: A QUALITATIVE IMPROVEMENT STUDY OF SUPPORT INTERVENTIONS

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BACKGROUND

Nurse redeployment is a common strategy employed to meet the dynamic staffing needs that has been occurring for a long period but was highlighted during the COVID-19 pandemic. A primary study that looked into ICU nurses' experiences showed negative perceptions and challenges. Given the significant impact of this practice for staff and the limited amount of research into this topic, this research was conducted to answer gaps in this practice.

AIMS

This study aims to explore and evaluate interventions made to improve the Intensive Care Unit (ICU) staff experience during redeployment to other clinical areas.

METHODS

A qualitative study design using purposive convenience sampling was employed following the implementation of interventions from the primary study. All participants who completed a buddy redeploy-

ment shift were eligible to participate in the interviews. An external qualitative nurse researcher conducted semi-structured interviews. Data were analysed using the inductive analysis method.

RESULTS

Data analysis showed major themes of communication challenges, risks, emotional burden and perspective. Subthemes included lack of communication, unclear instructions, escalation of concerns, safety concerns, task uncertainty, task division, negative comments, negative sentiments, feedback and suggestions.

CONCLUSION

The findings indicated that though efforts were made to improve the redeployment experience through information and education focused on exposure, preceptor and mentorship, the challenges and gaps between an exposure shift to gain a targeted understanding of the ward's workflow compared to a structured orientation process are significant. Further research on the feasibility of conducting a structured orientation process should be studied and analysed.

ACKNOWLEDGEMENTS

Peter Groom, nurse unit manager for support and approval of funding.

IMPACT OF POWER DYNAMICS ON COLLABORATIVE PRACTICE IN THE NICU

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BACKGROUND

Despite international initiatives to promote and encourage interprofessional collaboration in healthcare, barriers such as power dynamics can disrupt teamwork, hinder communication and influence clinical decision-making.

AIMS

To uncover dominant discourses that influenced power relationships, collaborative practices and clinical decision-making within an MDT in a Neonatal Intensive Care Unit (NICU) in New Zealand.

METHODS

Using a Foucauldian-informed discourse analysis, data were collected through semi-structured interviews, direct observations of team meetings and ward rounds. This allowed an in-depth examination of how language and discourses reflect and reproduce power structures in practice.

RESULTS

While analysis revealed four primary discourses—biomedical, culture of blame, sanctity of life and collaborative practice, none acted in isolation. Each discourse ascended to dominance as the situation required. Collaboration was viewed and enacted in different ways depending on multiple factors including patients' need for life-saving medical care, time constraints and how an individual views a given interaction. The shifting prominence of each discourse significantly shaped how power was exercised and negotiated among team members.

DISCUSSION

Collaborative practice in the NICU is guided by oscillating discourses that not only influences interpersonal skills and the way in which institutions are designed but also shapes MDT practice into what it is today. Recognising these discourses and power dynamics offers opportunities to foster more inclusive and participatory decision-making environments.

CONCLUSION

Understanding the flow of power and the interplay of discourses can empower staff to recognise and navigate power structures, fostering more effective collaborative decision-making thereby enhancing healthcare delivery.

ACKNOWLEDGEMENTS

Dr Rhona Winnington and Prof Clare Hocking.

SELF-REPORTED ANXIETY SYMPTOMS IN 8-YEAR-OLD CHILDREN IN AOTEAROA NEW ZEALAND AND ASSOCIATIONS WITH PARENTAL BIRTH REGION

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BACKGROUND

Childhood anxiety is a growing concern, with various factors influencing its development. The role of parental birth region in shaping anxiety symptoms in children remains an area of limited exploration.

AIMS

To describe the frequency of self-reported symptoms of anxiety in NZ children at age 8 years.

METHODS

The sample included 4,862 children from the Growing Up in New Zealand cohort who completed the 8-year wave and self-reported anxiety symptoms. Anxiety was measured using the 10-item Pediatric PROMIS Anxiety Short Form, covering fear, worry and hyperarousal. Each item is rated on a 5-point scale (0=never to 4=almost always). T-scores were derived using standard methods.

RESULTS

The PROMIS T-score had a mean (±s.d.) of 49 (10) and median (interquartile range) of 48 (41–56).

DISCUSSION

Anxiety symptom scores varied by parental birth region. Lower scores were observed in children of mothers from Europe, compared with those of New Zealand-born mothers. Higher scores were reported among children of mothers born in Pacific Island countries or in Malaysia, Indonesia, Philippines, SE Asia, Other Asia.

For paternal birth region, higher scores were seen for children whose fathers were born in Pacific Island countries, Korea or Japan, Malaysia, Indonesia, Philippines, SE Asia, Other Asia and in South America. These differences may reflect cultural influences and migration-related stressors affecting child emotional development

CONCLUSION

The observed differences in child anxiety symptom scores by parental region of birth suggest that cultural background and migration-related experiences may influence the emotional wellbeing of children in New Zealand. These findings reinforce the importance of incorporating culturally informed frameworks into early mental health assessment and support services to ensure they are responsive to the needs of diverse families.

ACKNOWLEDGEMENTS

This report is made possible with funding from the Ministry of Social Development using Growing Up in New Zealand (GUiNZ) data collected by The University of Auckland. The data have been accessed and used in accordance with the GUiNZ Data Access Protocol.

EVALUATING THE USE OF ULTRASOUND IN GRADING REFERRALS FOR PATIENTS WITH SUSPECTED GIANT CELL ARTERITIS IN HEALTH NEW ZEALAND – TE WHATU ORA WAITEMATĀ

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BACKGROUND

Non-invasive temporal artery ultrasound (TAUS) is increasingly used to support the diagnosis of giant cell arteritis (GCA). Since 2023, TAUS has been available at Health NZ – Te Whatu Ora Waitematā to assess patients referred to the rheumatology service for suspected GCA.

OBJECTIVES

The primary objective was to evaluate the performance of TAUS in excluding GCA among patients who were low risk for GCA. The reference standard was clinical diagnosis. Test performance was assessed in terms of sensitivity and specificity. The secondary objective was to compare the usefulness of TAUS in diagnosing GCA with the Southend GCA probability scoring model.

METHODS

This retrospective audit included patients with suspected GCA referred to North Shore or Waitākere hospitals between 1 March 2023 and 28 February 2025. Data were extracted from electronic medical records for individuals who underwent TAUS, temporal artery biopsy (TAB), or both.

RESULTS

A total of 110 patients were included; 87 underwent TAUS and 46 had a TAB. Fifty-two percent of the patients were aged >75 years. TAUS demonstrated a sensitivity of 15.8% and specificity of 98.5%, with a positive predictive value of 75% and a negative predictive value of 80.7%.

CONCLUSION

This audit highlights that TAUS can be a diagnostic tool with high specificity but limited sensitivity in a cohort of patients with low pre-test probability of GCA. The relatively high negative predictive value suggests that a negative TAUS would support the exclusion of GCA in low-risk patients, reinforcing its role as part of a multi-

modal diagnostic approach.

MĀORI AND PACIFIC WOMEN'S VIEWS ON ENDOMETRIAL CANCER MICROBIOME RESEARCH

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Health New Zealand – Te Whatu Ora Waitematā, Te Toka Tumai and Counties Manukau, Women's Health Services

BACKGROUND

Endometrial cancer (EC) is the most common gynaecological cancer and the incidence and mortality is increasing worldwide and in Aotearoa. EC is a significant health and equity issue for Māori and Pacific women. There is no current screening test; however, the microbiome has been identified as a potential marker of EC with research planned by our group to investigate this in Aotearoa. This study was conducted to explore Māori and Pacific women's perspectives on the acceptability and feasibility of the planned EC microbiome research.

AIM

Inform the culturally safe design, approach and methods for a planned EC microbiome study.

METHODS

Kaupapa Māori Research with kōrero and Pacific methodology with talanoa with women who have had a hysterectomy or who been treated for abnormal uterine bleeding. Reflexive thematic analysis was undertaken.

RESULTS

From 5 February 2024 to 7 July 2024, Māori MA rates fell: Allied Health (physio) from 26.5% to 10.5%, cardiology 9.2% to 8%, general surgery 14% to 9.6%, maternity 14% to 5.4%, orthopaedics 17.6% to 10.6%, renal 17.9% to 12.8%. After the pilot was terminated some rates rose again. By April 2025, Allied Health (physio) was 36.4%, maternity 20.6%, and renal 24.2%.

DISCUSSION

Participation in healthcare and research occurs when women trust the information and see its value and is often driven by collective cultural values like responsibility to family. Also, trust is built when healthcare practices and research align with cultural values and when beliefs are respected.

CONCLUSION

Recommendations have been made to inform the culturally safe design of the EC microbiome research based on the results of this study; the changes have been accepted by the research team and the microbiome research is now underway.

ACKNOWLEDGEMENTS

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SENIOR NURSES' PERSPECTIVES ON KAWA WHAKARURUHAU AND CULTURAL SAFETY FOR MĀORI ACCESSING MENTAL HEALTH SERVICES IN AOTEAROA NEW ZEALAND

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BACKGROUND

The recent New Zealand mental health Inquiry He Ara Oranga highlighted the poor experiences and outcomes for Māori accessing mental health services (MHS), including high rates of seclusion, compulsory treatment and the need to improve cultural responsiveness of services. Dr Irihapeti Ramsden highlighted similar issues of Kawa Whakaruruhau and Cultural Safety for Māori in nursing practice. There has been limited research in Aotearoa in the past 20 years on Kawa Whakaruruhau, Cultural Safety and adult MHS, particularly from a nursing perspective.

AIMS

To explore senior mental health nurses' perspectives on the status of Kawa Whakaruruhau and Cultural Safety for tāngata whaiora Māori and their whānau accessing adult MHS in Aotearoa.

METHODS

This qualitative research study followed a Māori centred approach within a Te Tiriti o Waitangi framework and involved interviews and a focus group with 10 Māori and non-Māori mental health nursing leaders from four Health New Zealand – Te Whatu Ora localities and Te Ao Māramatanga.

RESULTS

Key themes were: "Kawa Whakaruruhau and Cultural Safety for tāngata whaiora Māori is about cultural competence", also it's about "…power in

relationships" between nurses and tangata whaiora, and "…there are several opportunities for improving the status of Kawa Whakaruruhau and cultural safety in adult mental health services".

CONCLUSION

Many mental health nurses do not have a clear understanding of Kawa Whakaruruhau; training is limited and leadership needs strengthening. An initial model of Kawa Whakaruruhau is proposed that is aimed at improving service experiences and outcomes for Māori accessing adult mental health services across Aotearoa New Zealand.

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EVALUATING PRIMARY CARE PRACTICE'S LCS SMOKING HISTORY ACCURACY FOR MĀORI PATIENTS—IMPLICATIONS FOR A FUTURE LUNG CANCER SCREENING PROGRAMME

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BACKGROUND

Lung cancer is a leading cause of cancer death with significant ethnic inequities in incidence and mortality in Aotearoa. It is the largest contributor to the life expectancy gap between Māori and non-Māori. Developing a screening strategy that ensures benefit for Māori is crucial. Accurate smoking history is essential for identifying individuals eligible for lung cancer screening.

AIMS

As part of a broader lung cancer screening research programme in the Waitematā and Auckland districts, we evaluated primary care records to determine the extent of misclassification of smokers and former smokers as "never smokers".

METHODS

One thousand and thirty-three Māori participants from participating practices were recorded as "never smokers". After exclusions and non-responses, 571 participants completed a phone audit to verify their smoking history. Those reporting any smoking history were invited to undergo a lung cancer screening assessment.

RESULTS

Of the 571 participants, 476 (83.4%) were confirmed as never smokers, while 90 (15.8%) were ex-smokers and 5 (0.9%) were current smokers. Of those with a smoking history, 49 agreed to screening assessment. Twelve (12.6%) were eligible for a CT scan, and 11 completed the scan. Ten had no significant nodules (PC1) and one had a low-risk nodule (PC2).

DISCUSSION

Findings show that 16.7% of individuals recorded as never smokers were ex- or current smokers, revealing a gap in primary care data accuracy. This misclassification could lead to missed screening opportunities.

CONCLUSION

Improving the accuracy of primary care smoking records is essential to ensure equitable and effective implementation of a future lung cancer screening programme.

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A MULTIPLE CASE STUDY EXAMINING THE RISK FACTORS CONTRIBUTING TO AMIODARONE INFUSION RELATED PHLEBITIS IN A NEW ZEALAND CARDIAC CARE CENTRE

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BACKGROUND

The incidence of amiodarone infusion related phlebitis is common and can have ongoing implications for the patient and health care system.

AIMS

To investigate amiodarone infusion related phlebitis in a local cardiac centre focusing on assessing its incidence, contributing factors, treatment practices and uncovering policy gaps.

METHODS

Yin's multi-case analysis methodology was used

to analyse two cases: a seven-year clinical audit from March 2016 to June 2023 in the local cardiac centre and four local policies. Cross case analysis examined the two cases using triangulation to determine the gaps between practice reality and policy.

RESULTS

The incidence of amiodarone infusion related phlebitis was 8.4%. Contributing factors revealed that intravenous catheter locations were in the antecubital fossa (63%), a size 20 or larger cannula was used (90%). The visual infusion phlebitis scores for assessment were seldom used. Of the audit case 45% of phlebitis occurred during the amiodarone infusion and 55% after infusion. Seventy percent of patients were seen by a doctor and 54% were charted oral antibiotics.

DISCUSSION

The Infusion Nurse Society benchmark rate for amiodarone phlebitis is 5%; however, practice reality is significantly higher. In a systematic review, phlebitis rates were reported, ranging anywhere from 0 to 85%.

CONCLUSION

There is a need to promote nurses' awareness of amiodarone related phlebitis prevention, especially in relation to which site and gauge cannula should be used, increasing assessment frequency and scoring to assess phlebitis severity. It is recommended that local policies are updated to address the identified gaps.

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AUT: Postgraduate dissertation supervisor Dr Rebecca Mowat.

POSTERS

BEVERAGE CONSUMPTION PATTERNS OF 11–14-YEAR-OLD NEW ZEALAND CHILDREN IN SPORT

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BACKGROUND

Children spend a considerable amount of time in sporting environment in New Zealand (NZ). However, children's beverage consumption patterns in the sporting environment have yet to be investigated.

AIM

To assess the beverages 11–14-year-old NZ children consume before, during and after organised sport and the factors influencing beverage choice.

METHODS

Participants self-reported beverage intake at sporting events using a Qualtrics survey on iPads to report: the beverages they consumed before, during and after sport; the quantity of the beverage(s) consumed; who provided them with the beverage(s); the location they sourced the beverage(s) from; their preferred beverage and why and from whom they source nutritional information.

RESULTS

The mean age of the participants (n=1,339) was 12.1 (±0.9) years, 51.3% were female, 50.3% were European and 53.7% attended high-decile schools. The top three beverages consumed by participants were water (91.7%), sports drinks (25.7%) and milk (23.4%). Water was the leading beverage consumed before (67.3%), during (70.6%) and after (51.1%) sport. Water was also the most preferred beverage by participants (63.9%). The leading motivation for water preference was hydration (89.9%). Parents or guardians (81.4%) were the primary source of nutritional information for participants.

DISCUSSION

Gender, age and socio-economic differences were observed in water consumption. Males consumed more sugar-sweetened beverages (SSB) than females. School decile had a significant effect on SSB consumption ($p<.001$). Participants from low decile schools consumed more SSB than participants from medium-decile and high-decile schools.

CONCLUSION

Water was the most consumed and most preferred beverage. Gender, age and socio-economic status (SES) influenced water, milk and sport drink consumption in agreement with previous literature.

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Massey University School of Sport and Exercise Nutrition, Massey Human Ethics Committee Northern, and North Island regional sporting organisations

A PILOT STUDY TO ASSESS THE EFFECTIVENESS, ACCEPTABILITY AND FEASIBILITY OF TWO MODELS OF CONSENT FOR HEPATITIS C TESTING IN COMMUNITY LABORATORY COLLECTION CENTRES

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BACKGROUND

Hepatitis C (HCV) is a blood-borne virus affecting approximately 18,000 New Zealanders that may cause chronic infection, liver cirrhosis, failure and cancer. Māori are disproportionately impacted. Māori are diagnosed with liver cancer at three to five times the rate of non-Māori. Treatment is curable for 95% of those infected, improving quality of life and life expectancy.

AIMS

To assess the effectiveness, acceptability and feasibility of two models of consent for HCV testing in community laboratories.

METHODS

Four community labs were randomised to have an offer of testing by a phlebotomist working at the site or a research assistant embedded at the site for the recruitment period. Eligible adults were aged 35 years and older. Documented verbal consent was obtained for testing, HCV antibody tests were done, with reflex HCV PCR testing for confirmation of chronic infection.

RESULTS

Of 4,936 eligible attendees, 72% were offered HCV testing. Of those offered testing, 79% consented. The consent rate was 75% at research assistant sites compared with 80% at phlebotomist sites. The consent rate for Māori was 81%. Of 2,814 people tested, 14 people had a positive HCV antibody test only indicating past infection (0.5%) and two had a positive HCV PCR indicating chronic infection (0.07%) and completed curative treatment. Six people who consented were not tested.

CONCLUSION

The study determined that consenting people for HCV testing in community laboratory settings is acceptable and feasible. A larger national study powered to determine the comparative effectiveness of the consent models has subsequently been approved.

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MIGRANT NURSES' CULTURAL COMPETENCE IN NEW ZEALAND INTENSIVE CARE UNIT: A CROSS-SECTIONAL SURVEY

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BACKGROUND

Global migration has led to a diverse healthcare workforce in New Zealand, with migrant nurses or internationally trained nurses playing a vital role in intensive care units (ICUs). Cultural competence is essential for patient-centred care, yet migrant nurses often face adaptation challenges. Existing training programmes, such as the Competency Assessment Programme (CAP), may not fully address these needs.

AIMS

This study investigates the cultural competence of migrant ICU nurses in New Zealand.

METHODS

A cross-sectional survey (November 2023–February 2024) was conducted using the Healthcare Provider Cultural Competence Instrument (HPCCI), with a snowball sample of 61 nurses. The HPCCI evaluates five key cultural competence domains: awareness and sensitivity, behaviour, patient-centred communication, practice orientation and self-assessment. Descriptive and inferential analyses, including the Kruskal–Wallis test, were performed.

RESULTS

Participants demonstrated satisfactory cultural competence (mean score: 226.8, 77.14%). A positive correlation among HPCCI subscales was found, with significant differences based on age and ethnicity ($p<0.01$).

DISCUSSION

This first-of-its-kind survey in New Zealand highlights gaps in awareness, communication and behavioural adaptation. While self-assessed competence was high, behaviour-based evaluations showed challenges in applying cultural knowledge. Age and ethnicity influenced scores, with older and Asian nurses reporting lower competence.

CONCLUSION

Structured workplace interventions—mentor-

ship, interactive training and policy support—are crucial for enhancing cultural competence and ensuring inclusive, patient-centred care in ICUs. Addressing these gaps can improve care quality for diverse patient populations.

ACKNOWLEDGEMENTS

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CLINICAL OUTCOMES AND CARE PATTERNS IN ADVANCED PANCREATIC DUCTAL ADENOCARCINOMA—"DEFINING THE DEFAULT"

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BACKGROUND

Pancreatic ductal adenocarcinoma (PDAC) continues to have poor survival outcomes, with most patients presenting with incurable disease. These patients represent a large proportion of those seen by health professionals, where care focuses on quality of life.

AIMS

To characterise service requirements and care patterns for patients with palliative PDAC.

METHODS

A retrospective review was conducted of patients with a pathological diagnosis of PDAC treated with palliative intent at Waitematā (2014–2024). Patients were categorised into three groups: locally advanced, metastatic and those unsuitable for treatment due to comorbidities or personal choice. Analyses included survival, interventions, support service use, inpatient requirements and associated healthcare costs.

RESULTS

Four hundred and twenty-five patients with PDAC; 313 (74%) were treated palliatively. Two hundred and sixteen (69%) had metastatic disease, 69 (22%) locally advanced and 28 (9%) were unsuitable for treatment. Median survival was significantly shorter in the metastatic group (70 days, range 3–1,495) compared to those with locally advanced disease (220 days, range 13–960; p=0.001). Biliary interventions were more frequent in the locally advanced group (59% vs 38%, p=0.001). Inpatient admissions rose from 14% to 53% in the final 3 months. Most patients (84%) died outside hospital. Median inpatient care cost was NZ$12,695.12.

DISCUSSION

Locally advanced and metastatic PDAC patients have differing care trajectories, underscoring the need for tailored approaches to intervention timing, supportive services and end-of-life planning.

CONCLUSION

These findings inform efforts to improve quality of care, personalise management and support decision-making for curative treatments in borderline candidates.

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THE ROLE OF TE IRA KĀWAI, THE AUCKLAND REGIONAL BIOBANK (ARB) WITH WAITEMATĀ SUPPORTING ETHICALLY AND SCIENTIFICALLY APPROVED RESEARCH

Joe McDermott, Namrata Nancy Yuhanna, Bhavisha Solanki, Bernice Joy Maravilla, Karen Callon and the members of the scientific advisory board and the and core operations group of the Auckland Regional Biobank

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Auckland Regional Biobank

BACKGROUND

Biobanking is the collection of blood or tissue during routine clinical procedures, with patient consent and ethical approval, for use in research to better understand disease and improve future patient care.

AIMS

Providing essential support for researchers using state of the art storage facilities.

METHODS

We will describe the biobank and discuss two examples of projects in which Waitematā patients, clinicians and scientists have played/are playing a major role.

Project 1. Pancreatic cancer: Many tumours are more prevalent and have worse outcomes for Māori compared to non-Māori. The ARB and a clinical Waitematā team working together to better enable biobanking for Māori with pancreatic cancer.

Project 2. Circulating tumour DNA: This

study, part of NZ's National Science Challenges, implemented methods for DNA sequencing of blood plasma to enable better clinical decisions for advanced stage melanoma patients.

RESULTS

Exciting networking between the ARB, Hospital and Māori partners ensures a focus on improving communication for the benefit of facilitating research and enhancing the patient's journey.

DISCUSSION

The entire ARB team shares a passion for research. Based upon their personal health experience, each person has been supported by research that have led to medical advances.

CONCLUSION

I am eager to share and inspire others through a presentation covering the role of the Biobank in the patient's journey.

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FACTORS INFLUENCING CHANGE IN FRAILTY STATUS IN RETIREMENT VILLAGE RESIDENTS

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AIMS

Retirement villages (RV) residents are thought to live in relatively age-friendly environments. Many RVs have facilities and resources for healthcare, home-based supports and opportunities for physical and social activity. Living within such environments may influence changes in frailty.

METHODS

Longitudinal cohort study of 578 residents recruited from 33 RVs. Frailty by interRAI-derived frailty index (FI) was measured using resident data at baseline and 2.5 years later. Village-level data was collected at baseline. Analysis of factors associated with worsening frailty or death was performed with multivariable logistic regression.

RESULTS

Follow-up data was available for 525 residents: 289 (55.0%) stayed within same frailty category, 23 (4.4%) improved, 166 (31.6%) worsened in frailty category and 47 (9.0%) had died. Age >90 at baseline (OR=3.34, 95%CI=1.61–6.93, p=0.001), poor/fair quality of life (OR=2.94, 95%CI=1.35–6.40, p=0.007), participation in social activities of long-standing interest in the last 30 days (OR=1.99, 95%CI=1.06–3.71 p=0.03) and charitable trust-owned villages (OR=1.71, 95%CI=1.06–2.77, p=0.03) were associated with higher odds of worsening frailty category or death. There was borderline significance with not visiting a dentist in the past 12 months (OR=1.43, 95%CI=0.98–2.08, p=0.07), with significance found on sensitivity analysis (OR=1.51, 95%CI 1.05–2.17, p=0.03).

CONCLUSIONS

Individual and RV-level factors were associated with worsening frailty or death, some of which are potentially modifiable. Research addressing how differences between RV ownership models influences frailty is needed. Understanding how the wider social and physical environment influences frailty is essential for designing frailty prevention strategies at the neighbourhood level and in the creation of frailty-friendly environments.

STAKEHOLDER PERSPECTIVES ON THE CLINICAL UTILITY OF INTERRAI DATA

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BACKGROUND

In New Zealand, interRAI assessments are mandated to access government-funded home-based supports and residential care entry. Improving clinical utility of interRAI data is one of several national interRAI priorities.

AIMS

The aims here were to understand how clinicians and aged care service providers access and use interRAI currently and how clinicians and service providers, older people and family would like to access and use data in the future.

METHODS

Two mixed-methods online surveys were developed for aged care sector professionals and older people/their family and disseminated through researcher networks. Topics included: current access/use; barriers; content; delivery of content; perceptions of artificial intelligence (AI).

RESULTS

77 sector professionals participated: 48/71 (68%) use/would like to use interRAI data, predominantly for individual assessments and care planning.

Perceived lack of clinical usefulness, difficulty navigating system and time constraints were reasons identified by those not using interRAI data. Other concerns included: lack of real-time responsiveness, redundancy with other systems, preference for better data visualisation and concise summaries, lack of training or resources to use data. A high degree of uncertainty about AI-generated summaries was identified. Eighty-nine older people/family participated; mean age 69 years. Thirty-one out of fifty (62%) thought information was useful, 34/56 (61%) wished for more information following assessment, 28/53 (53%) thought information provided informed actions/access to support, 13/55 (24%) were comfortable with AI generated summaries.

CONCLUSIONS

Overall interRAI assessments were valued by professionals and older people/family. Priority areas for improvement have been identified, and piloting changes in aged care will be initiated in the future.

DELIVERY OF AN OCCUPATION-FOCUSED COGNITIVE REMEDIATION THERAPY (CRT) PROGRAMME WITHIN AN AOTEAROA NEW ZEALAND MENTAL HEALTH SERVICE: OCCUPATIONAL THERAPISTS AND SERVICE LEADERS' PERSPECTIVES

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BACKGROUND

Enduring psychotic illnesses lead to cognitive challenges for people, affecting day-to-day occupations. These challenges have not been addressed within mental health services. Evidence shows CRT can address clients' cognitive challenges, but little is known how to deliver CRT and deliver CRT incorporating an occupational focus.

AIMS

The study aimed to gain understanding of the factors influencing the delivery of an occupation-focused CRT programme, to support an effective roll-out of the programme through Aotearoa mental health services. This presentation explores managers' and occupational therapists' experiences of delivering the programme as part of a wider study.

METHODS

A qualitative constructivist case study was undertaken within an organisation delivering the programme. Managers and occupational therapists delivering the programme were interviewed and documents relevant to the case reviewed. Data were analysed using thematic analysis and direct interpretation.

RESULTS

Findings highlighted complexities when delivering the programme. Managers faced tensions when embedding CRT within services. Therapists navigated the fusion of occupation and CRT, with strong relationships and training pivotal to successful delivery. Communication gaps hindered broader progress. Delivery barriers included lack of management direction and communication breakdowns, emphasising the need for leadership, training and cultural responsiveness. Recommendations include ministerial support, cultural consultation and an occupation-focused approach in CRT delivery.

DISCUSSION/CONCLUSION

CRT programmes can be delivered with a focus on occupation highlighting future innovation in delivering the programme that benefits tāngata whai ora. Occupational therapists are well suited to deliver the programme with adequate training in CRT to develop the necessary skills.

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THE ROLE OF COMMUNITY PHARMACIES IN THE PROVISION OF HPV SELF-TESTING: A RANGE OF DELIVERY MODELS AND PROOF-OF-CONCEPT STUDY IN AOTEAROA NEW ZEALAND

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BACKGROUND

Although HPV self-testing is well received in Aotearoa New Zealand, longstanding disparities in cervical screening and cancer rates remain for Māori, Pacific peoples and people not regularly screened. Community pharmacies have the potential to improve screening access.

AIMS

To explore the role of pharmacies in providing HPV self-testing through a small proof-of-concept study.

METHODS

We developed three delivery models for pharmacy involvement and tested two models in six Auckland pharmacies with high proportions of Māori and Pacific customers for six weeks: 1) promotion of self-testing by pharmacy staff with mailed test kits from the study team and 2) on-site provision of at-home test kits by study nurses. Telehealth support and results follow-up were provided by a centralised co-ordination team. Pharmacy staff were surveyed after the study.

RESULTS

Forty-five people received a self-test kit and 31 returned a sample (69%). A third (32%) of self-tested participants were overdue for screening by ≥2 years, and 29% were Māori (19%) or Pacific (10%). More people participated in the provision than in the promotion model. All survey respondents (n=16) supported pharmacy involvement; enablers and challenges were identified.

DISCUSSION

Although our numbers were small, pharmacy involvement can engage people with HPV self-testing. The proposed models require different levels of pharmacy infrastructure, resources and support, including collaboration with mail-out and centralised results management services.

CONCLUSION

Pharmacies, supported by a centralised co-ordination team, can be an additional primary care setting to increase access to HPV self-testing for groups less well served by standard national screening strategies.

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GENERAL PRACTITIONERS' PERSPECTIVES ON THE DIAGNOSIS OF ENDOMETRIAL CANCER AMONG WĀHINE MĀORI AND PACIFIC WOMEN IN AUCKLAND HEALTH DISTRICTS

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BACKGROUND

The burden of endometrial cancer (EC) is rising in Aotearoa New Zealand, particularly among wāhine Māori and Pacific women.

AIMS

To explore general practitioners' (GPs) perspectives on EC-related awareness among wāhine Māori and Pacific women and provision of related healthcare.

METHODS

One-on-one semi-structured interviews were undertaken with GPs practicing in Waitematā, Te Toka Tumai Auckland and Counties Manukau between 1/09/2022–30/06/2024. Data were analysed thematically.

RESULTS

Fifteen GP were interviewed; seven had >5 years in GP practice. GPs described variable trainings in

women's health and recognised a shortage of GPs performing pipelle biopsy. All GPs observed limited knowledge of EC among women and noted abnormal vaginal bleeding being normalised. GPs identified systemic barriers including limited appointment availability, short consultation time and the cost of visits. Institutional racism, obesity bias and the lack of culturally safe services also impacted the provision of equitable care. Cultural factors such as embarrassment related to discussing symptoms and respect for seniority among wāhine Māori and Pacific women influenced the diagnostic process. GPs recommended improved GP training, fast-track referrals, whānau-centred care and culturally diverse teams in primary care.

DISCUSSION

The findings suggested that suboptimal women's health-related GP training opportunities, reduced EC-related awareness among women and system barriers contributed to EC diagnosis delays. Cultural factors and bias amplified inequities for wāhine Māori and Pacific women.

CONCLUSION

Improved GP training, increased EC-related awareness among women, better access to timely diagnosis and heightened cultural safety of EC-related care are essential for achieving equitable EC outcomes for wāhine Māori and Pacific women.

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UNDERSTANDING ENDOMETRIAL CANCER AWARENESS AMONG WOMEN OF DIFFERENT ETHNICITIES: A COMMUNITY-BASED SURVEY IN AOTEAROA NEW ZEALAND

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BACKGROUND

The endometrial cancer (EC) burden is increasing in Aotearoa New Zealand, particularly among Pacific women and wāhine Māori.

AIMS

To examine awareness of EC-related symptoms, risk factors and health seeking behaviour in women of different ethnicities without EC.

METHODS

A community-based survey was conducted between 1/09/2022–30/06/2024 of women aged ≥18 years without EC residing in Waitematā, Te Toka Tumai Auckland and Counties Manukau. Snowball sampling was used with initial respondents recruited through primary care practices, a women's health clinic and online. Data were collected via an online survey link and analysed by prioritised ethnicity.

RESULTS

Four hundred and sixty-five respondents were included in analysis: 34% Māori, 33% Pacific Peoples, 12% Asian and 21% European/MELAA/Other women. Across these groups, only 26–47% of women were aware that abnormal vaginal bleeding or pelvic/lower abdominal pain were EC symptoms and awareness was significantly lower among Pacific peoples compared to European/MELAA/Other women (adjusted relative risk [aRR]=0.64, 95%CI 0.45–0.91; and aRR=0.57, 95%CI 0.40–0.82, respectively). Awareness that higher body weight and diabetes are EC risk factors was even lower across ethnic groups (7–21%) with statistically non-significant differences. Most women (63–73%) would seek healthcare for EC symptoms, and the majority (64–88%) preferred to see a GP or nurse.

DISCUSSION

Culturally tailored approaches are required to increase awareness of EC symptoms and risk factors across women of different ethnicities. Primary care and diagnostic capacity are also key considerations in relation to healthcare for EC symptoms.

CONCLUSION

Improvements in EC knowledge and aware-

ness are required among women of all ethnicities, including Pacific women.

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