Towards equity in healthcare

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Editors’ welcome

Gisela A. Kristono, Logan ZJ. Williams

Kia ora and welcome to Issue 29 of Te Hautaka o Ngā Akongā Ron-goā, or the New Zealand Medical Student Journal (NZMSJ)! This issue marks our 15th anniversary, which is a significant milestone for us when we reflect on the achievements and growth of the Journal. We are delighted to continue to present the high quality of work conducted by medical students and academics in Aotearoa.

The theme of this issue is, “Towards equity in health care”, which is a pertinent topic to both medical students and other healthcare professionals in Aotearoa. There are many sub-topics to consider regarding (in)equality in health care. Although we were unable to address them all in this issue, we were fortunate to be able to address a significant proportion through our invited, feature, and media review articles.

We are extremely grateful for Professor Peter Crampton’s invited article that presents a clear message on how we can progress toward equitable outcomes for Māori and Pasifika people at an individual to a governmental level. We are also privileged to have Dr Lucy McKay, Director of Medics4RareDiseases, write a fascinating article on the current state of rare disease education in medical school and how her organisation is advocating for change.

We were pleased to receive so many feature article submissions related to our theme. Starting with climate change, Cameron Toogood highlights its detrimental effects on groups most affected by health inequities in Aotearoa, including low socio-economic, Māori, and Pasifika individuals. There is an insufficient rural health workforce to provide an equitable health service across Aotearoa. Benjamin Alsop-ten Hove reviews the wonderful initiatives conducted by student rural medicine organisations and the New Zealand Rural General Practice Network to attract pre-tertiary students living in rural areas to a vocation in health. Rex Liao provides an overview of Asian health. His article is an informative introduction to a topic that has been largely neglected. In the annual review on the New Zealand Medical Students’ Association’s (NZMSA) activities, Fraser Jeffery, the NZMSA President, discusses how they have focused on gender equity in medicine and improving leadership diversity within their own organisation to be more representative of the students they represent. We were delighted to invite the President of the Pacific Island Health Professional Students’ Association (PIH-PSA), Fuatino Heath, and the Tumuaki of Te Oranga, Chayce Glass, to write articles on how their organisations have represented and supported our Pasifika and Māori students. Last but not least, we have the first Māori Health Review article written by Emma Espiner, which is the start of a new series for the NZMSJ. In this article, Emma discusses the Health Safety and Quality Commission’s report on Māori health equity, the success of Te Ara Tika pilot smoking cessation programme aimed at young Māori wainae, and a review presented at the Royal Australasian College of Surgeons Annual Scientific Congress on indigenous peoples’ perspective on biobanking and genomics.

The media review articles in this issue also support our theme. Emily Yi reviews the documentary, “Unnatural causes: Is inequality making us sick?” and its associated online resources. For medical students, the stories told in the documentaries will help them to understand the impact of social determinants of health on health (in)equality. Meanwhile, Sylvia Duncan reviews the International Handbook of Health Literacy by Okan et al, which serves to remind us the importance of health literacy in achieving equitable health outcomes.

We were impressed by the calibre of work presented in our academic articles. Andrew Jayasuria et al conducted a study investigating medical students’ views on the teaching and learning of the male genital examination, which is highly relevant to both medical students and academics. Dr Paul Huggan wrote an overview of sepsis, which will be the first of a series on academic overviews for the NZMSJ. We are also proud to publish Dr Steve Waqanivalvagi et al and Natalie Allen’s case reports on ciguatera fish poisoning and an unusual presentation of Gianotti Crosti syndrome, respectively.

We have two additional feature articles to complete our impressive selection in this issue. As part of our regular interview series, Tim Hall and Emily Yi met with Dr Debbie Hughes and Sue van Mierlo from Anamata CAFE (Clinics and Advice for Everyone) to discuss their much-needed free sexual health services for youth. It is fascinating to read about the services they provide that would not be as easily done in the more structured health system. Last but not least, Associate Professor Robin Turner et al, from the University of Otago Biostatistics Unit, have kindly written another statistics primer for us. This time, the article is on receiver operator characteristic (ROC) curves, which is a useful statistical concept to understand when reading clinical studies.

Finally, we would like to congratulate Rubayet Arefin, Robin Page and Michael Hayton for winning this issue’s Creative Arts Competition. This competition is an ongoing collaboration with NZMSA to showcase our fellow medical students’ creative talents. Rubayet and Robin both crafted poems related to their clinical experiences, while Michael captured a stunning sunset during his elective on Mljet Island.

The Editorial Board would like to thank the Universities of Auckland and Otago for their financial and academic support towards the journal. We would also like to thank the Medical Assurance Society for their funding and the New Zealand Medical Journal for their guidance, as well as their financial support for the new Verrall Award. The winner of this year’s Award will be decided from either our previous issue or this one, and will be announced later this year. We would like to acknowledge the NZMSA for their ongoing support, and our Advisory Board members for their advice and guidance. Finally, the authors would like to thank the Editorial and Commercial Boards and our reviewers, as they have worked hard behind the scenes to enable this issue to be published.

We hope NZMSJ readers will enjoy the variety of engaging articles that Issue 29 brings. We would like to congratulate all of the authors who have contributed towards it and encourage all readers to submit their work to NZMSJ in the future.
The Ministry of Health has defined health equity as follows:1

In Aotearoa New Zealand, people have differences in health that are not only avoidable but unfair and unjust. Equity recognises different people with different levels of advantage require different approaches and resources to get equitable health outcomes.

This is a fit-for-purpose definition because it focuses on the avoidable, the unjust, and on differences in levels of advantage. The theme of this issue of the New Zealand Medical Student Journal is ‘towards equity in health care’, and in this editorial I argue that now must be the turning point for equity in our health system. Equity means fairness. Equitable health outcomes are fair health outcomes. Fairness is a long-standing core value in Aotearoa, embedded in Te Tiriti and threaded into our national psyche. Yet, we have stubbornly stood back from our failure to achieve fair health outcomes.

Māori health outcomes are anything but equitable, as evidenced over many decades in the lived experience of countless whānau and documented in every report that has ever been written on the subject. While the social and economic determinants of health have a major part to play, the health system is also a key player in both driving and ameliorating inequitable health outcomes for Māori.

A powerful message has been sent to New Zealand by the Waitangi Tribunal in its first report from what will be a long-running inquiry into health.2 This report is clear and unequivocal. The Tribunal tells us to wake up and start implementing Te Tiriti, including the principle of equity, which requires the Crown to commit to achieving equitable health outcomes for Māori. To achieve this, we should honour the guarantee of tino rangatiratanga, which provides for self-determination and mana motuhake in the design, delivery and monitoring of health care.

The exercise of tino rangatiratanga in health is entirely achievable. There are excellent examples of primary health-care services that are designed to encorporate Māori values, respond to Māori health-care needs, and are orientated around the principles of te ao Māori. And there is the huge added benefit that these services work well for patients of all ethnicities. Similar principles apply to the design and delivery of health services for Pacitic communities and there are, as well, numerous long-established examples of primary health-care services that are specially tailored to meet the needs of low-income communities. In secondary and tertiary care, District Health Board (DHB) and hospital-based clinicians, managers, and leaders have shown us that transforming hospital-based health services to achieve equity is entirely within our reach.

In sum, we have plenty of experience from Māori, Pacitic, community-based, and DHB-based examples that demonstrate we have the know-how and the ability to provide health services that serve the needs of populations most in need.

In addition to the Waitangi Tribunal’s inquiry, the Heath and Disability System Review panel is, at the time of writing this editorial (August 2019), about to release its interim report. The review of the health system was instigated by the Minister of Health last year with the brief of making recommendations about what changes are needed in order “to improve the performance, structure, and sustainability of the system with a goal of achieving equity of outcomes, and contributing to wellness for all, particularly Māori and Pacitic peoples”. The panel, of which I am a member, recognises the huge opportunity occasioned by the review to refocus our health system on equitable health outcomes. Its final report will be completed in March next year and will include recommendations for the consideration of the Minister of Health and his Government colleagues, and for the consideration of governments in the future.

The health workforce has a central role in achieving equity. The health workforce has many strengths, but in order to meet current and future equity challenges, some positive changes are required. To ensure that tino rangatiratanga, the needs of Pacitic communities, and the needs of low income communities will be continually at the centre of the frame of reference in the development and implementation of health policies, the health workforce must fully reflect these diverse communities in its makeup. Even though good progress is being made in some areas, true ethnic representation in the workforce would represent a marked shift in the recruitment, training, and support of health professionals, compared to the status quo in 2019.

Strong and skilled leadership is required. In order for leadership functions in health to be exercised, there is an urgent need for systematic investment in and development of health leadership capability that fully reflects the diversity of Māori, Pacitic, Asian, and other communities. There is absolutely no excuse for any senior leader within the health system not to have strong working knowledge of te ao Māori. This should be a key criterion in appointment processes. Where lack of knowledge of te ao Māori is identified amongst existing or prospective leaders, then there are excellent professional development and support resources available to be drawn upon to help rectify the deficit.

New Zealand’s health system—communities, workers, leaders, and organisations—collectively has the knowledge, expertise, and skills to design and provide excellent primary and secondary health services to our diverse communities. The Waitangi Tribunal report and the Health and Disability System Review, along with the commitment and effort of individual health professionals and health organisations, do indeed provide us with the opportunity now to refocus and, where necessary, reshape our health system to achieve equity of health outcomes.

I encourage all medical students to commit to the values of fair, culturally appropriate, proportionate service delivery according to need and to equity in health outcomes. These values are at the heart of professionalism.

Now is a turning point for equity

Peter Crampton
References


2. Waitangi Tribunal. HAUORA, report on stage one of the health services and outcomes kaupapa inquiry, pre-publication version. Waitangi Tribunal: Wellington: WAI 2575; 2019.

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Professor Peter Crampton is Professor of Public Health at Kōhatu, the Centre for Hauora Māori at the University of Otago, Dunedin
A disparate bunch
Over 7000 rare diseases have been described in accordance with the European Union definition of a condition that affects fewer than one in 2000 people. An initial browse of Orphanet’s Rare Disease Directory reveals a plethora of disparate conditions, which would prove an insurmountable challenge should they all be represented in the medical curriculum. Firstly, their presentation can be incredibly varied; you can be born with a rare disease without any family history, have a long pedigree of rare disease, or acquire one in later life. This makes rare diseases, as a collective, impossible to assign to any particular demographic such as age or gender. Also, while every medical specialty will have its own “common rare disease”, many rare diseases fall under a number of specialties and have no place that they can easily call home. Therefore not one specialty can take ownership of all rare conditions and, while some may suggest this is the job of medical genetics, it is estimated that 20% of rare diseases are not considered to have a genetic origin. There are further challenges when teaching about how to spot rare genetic diseases, because one genotype can have drastically different phenotypes caused by processes such as variable penetrance and variable expressivity. That is to say, the same genetic change can manifest differently between individuals, even those in the same family. Given the myriad ways that different people can be affected by different rare diseases, it seems inevitable that there will be inequity in this area of medicine. Medics4RareDiseases (M4RD) is working on an educational approach that aims to equip medical professionals with the tools to think about rare disease as a single area of focus. We believe that basic training on the subject of rare disease with broad messages will help reduce inequity in the medical education system.

The diagnostic odyssey
Patients rarely describe uniform or standardised pathways to diagnosis. The term “diagnostic odyssey” has been coined to describe the journey to diagnosis that is faced by patients living with a rare disease. The word “odyssey” is not only used to highlight the average 5.6-year wait that people face before diagnosis, but it also conjures up an epic journey with giant-sized obstacles and detours along the way. It is not possible to attend a rare disease event without hearing numerous lived experiences that testify to the reality of the diagnostic odyssey. M4RD is calling for standardised medical education about rare diseases that will enable future clinicians to know when to suspect a rare disease, understand the impact of such conditions and to act as advocates for their patients living with rare diseases.

Existing inequality in medical education
If you take into account the heterogeneity of rare diseases described in the first paragraph of this article, rare disease medical education feels like a non-starter. In whichever country you carry out your medical studies, you will inevitably have a packed curriculum with every specialisation or interest group competing for your time. Prostate cancer is the most commonly diagnosed cancer in males in England with 41,201 men diagnosed in 2017; however, the charity Orchid is calling for more awareness and improved diagnosis for this common cancer as it is not being diagnosed promptly enough, despite its high incidence. From a utilitarian point of view, should a small patient group expect to be heard when they are also asking for greater awareness of their condition, which only affects a handful of patients in the country? Some may argue that medical students already have enough common conditions, such as prostate cancer, to learn about without tackling rare ones. Despite the obvious challenges, rare disease education is not entirely absent at medical school, but is also not standardised. The rare diseases that are chosen for inclusion in medical studies can vary significantly. In fact, the rarity of some conditions, such as Cushing’s syndrome, may be a surprise to students because of how familiar they are with them, while other rare diseases that are more common may mistakenly be assumed an improbable diagnosis due to lack of inclusion in regular teaching. For example, the Childhood Tumour Trust, a patient organisation supporting those affected by neurofibromatosis type 1 (NF1), reports that NF1 is more common than cystic fibrosis, Duchenne muscular dystrophy and Huntington disease combined. This is something that is unlikely to be common knowledge amongst medical professionals. Without a standardised approach to rare diseases in medical education, it is natural that inequity will arise.

Rare disease and medical education
How are specific diseases chosen for teaching content? Below are factors that may influence the possible inclusion of a rare disease in formal education.

PREVALENCE
It may seem like an oxymoron, but there is such a thing as a “common rare disease”. In terms of medical education, there are some bread and butter rare diseases that are likely to be universally covered in medical studies based on their prevalence (e.g. cystic fibrosis – a multi-system condition that is caused by disruption of a membrane transport protein called CFTPR. It affects more than 10,500 people in the United Kingdom (UK) according to the Cystic Fibrosis Trust).
MONOGENIC DISEASES TAUGHT DURING GENETICS MODULES
Examples of monogenic disorders include Huntington disease, which is a progressive neurological disorder inherited in an autosomal dominant pattern, and Duchenne muscular dystrophy, an X-linked disorder characterised by progressive muscular degeneration. Both of these diseases have a clear inheritance pattern and are therefore helpful for communicating concepts of inheritance in genetics modules. While genetics modules are an opportune time to teach about rare diseases, we must bear in mind that not all rare diseases are genetic in origin. An example is Guillain-Barré syndrome, which is a rare autoimmune disorder that leads to peripheral neuropathy and is thought to be triggered by an infection. Additionally, those that are genetic are not always inherited (sporadic) and some may be genetic but acquired as in the case of some rare cancers.

GEOGRAPHICAL LOCATION OF THE MEDICAL SCHOOL
Certain geographical areas have different patient populations and this will impact the likelihood of a medical student seeing different pathologies. Tuberculosis (TB) is typically a lung infection (however, not always restricted to the respiratory system, especially if left untreated) and it is caused by the bacterium Mycobacterium tuberculosis. TB rates are currently at an all-time low in the UK with 4655 cases recorded in 2018. This is a rate of 8.3 per 100,000 population and therefore it qualifies as a rare disease. However, certain geographical areas such as Tower Hamlets in East London have a much higher rate (66 cases per 100,000 in 2017) and this will be reflected in the medical education in this region, because students are more likely to come across cases of TB during their clinical placements.

SPECIALIST CENTRES
According to the “UK Strategy for Rare Diseases”, patients with rare diseases should have access to a specialist centre or “Centres of Excellence”, in order to receive coordinated care for complex conditions. For example, Salford Royal Hospital near Manchester is famous for its Mark Holland Metabolic Unit and is a specialist centre for adult patients with inherited metabolic conditions. It provides services to patients all over the country and some patients have to travel substantial distances to attend appointments. The medical school connected to a specialist centre such as this one will naturally have an artificially high number of patients with a particular rare disease using its services, relative to its local prevalence of that disease. These patients will then be seen by medical students in clinics and on the wards. This creates great opportunities for medical students to learn about specific rare diseases, however, will further contribute to the variability of medical student exposure to different rare diseases.

LECTURER’S SPECIAL INTEREST
Throughout the UK, there are a huge number of health care professionals and scientists working in rare diseases – whether clinical work or research. Medical students may receive teaching on a rare disease if their lecturer has a special interest in a particular area.

PATHOGENOMIC SIGNS FOUND ON CLINICAL EXAMINATION
 Infective endocarditis is an acquired rare disease with a high mortality rate. Historically, infective endocarditis was suspected in those with underlying congenital heart disease or a history of rheumatic heart disease. However, these are now relatively uncommon precipitators. Increasingly, age-related valve degeneration, mitral valve prolapse, intravenous drug misuse, and hospitalisation are considered risk factors for this infection. In clinical medical school examinations, it is famous for causing pathognomonic signs called Janeway lesions. These stigmata are painless, erythematous macules found on the plantar and palmar surfaces. A student would be remiss to finish their cardiology Observed Structured Clinical Exam (OSCE) without mentioning that there was “no evidence of Janeway lesions”. This is despite the annual incidence of infective endocarditis being only three to ten cases in 100,000 and Janeway lesions being an uncommon sign of this rare disease.

Infective endocarditis is a potentially life-threatening infection that needs high clinical suspicion in order to treat it effectively, so it is surely a worthy rare disease to include in education. However, many rare diseases could be placed in the same category but are unlikely to be mentioned in a medical school OSCE. Fabry disease is a progressive and systemic, inherited metabolic disorder. It is caused by an enzyme deficiency that results in the abnormal storage of the accumulated substrate, making it one of a group of conditions called lysosomal-storage disorders. Fabry disease can cause visual and hearing impairment, gastrointestinal symptoms, kidney disease, and cutaneous signs. Importantly it can cause myocardial infarction and stroke. Fabry disease is estimated to affect double the number of those affected by infective endocarditis (estimated prevalence is one in 5,500 and newborn screening studies suggest this could be much higher). Similar to infective endocarditis, Fabry needs rapid diagnosis in order to start life-saving treatment and to prevent major complications. However, despite the prevalence, severity and treatability of Fabry disease, “no evidence of angioleucomas suggestive of underlying Fabry disease” is not a phrase that rolls off a medical student’s tongue in a cardiology exam.

MULTIPLE-CHOICE QUESTION-FRIENDLY
Multiple-choice questions (MCQs) are a standard in medical school assessment and represent an effective way to assess understanding about a large volume of varied information. However, they can have the tendency to reduce a subject to very specific details without allowing for nuance, which can mean that variation within a rare disease isn’t considered. So while a rare condition may be featured in an MCQ exam, the description learned by students may not be the reality when it comes to clinical practice. For example, the Fragile X Syndrome is highlighted that patients are being dismissed as not having the condition due to a lack of specific facial features, sometimes called “dysmorphic features”. Studies have shown that some characteristic facial features may be absent until after puberty or completely absent. The charity also raises awareness around the fact that Fragile X Syndrome can affect girls as well as boys. Therefore, the following MCQ could be problematic: “A young boy with learning difficulties, challenging and impulsive behaviour is brought in by his mother. Upon examination you notice he has a long, narrow face and prominent ears. What is the most likely diagnosis?”. While this may well be a realistic description of a portion of Fragile X patients it could deter a doctor from thinking of Fragile X Syndrome in a girl without distinguishing facial features but the same behavioural symptoms described.

Collectively common
It is difficult to establish exactly how rare diseases are covered in UK medical schools because every institution defines its own syllabus and sets its own examinations. Albeit with guidance from the General Medical Council and Medical Schools Council to meet a common standard. Given the examples above, it is fair to assume that all medical students will learn about a number of rare diseases before they graduate and be in a position to diagnose patients with certain diseases. However, the mantra of “common things are common” that is widely used as a diagnostic heuristic through medical practice creates a mental obstacle that can be hard to overcome in clinical practice. It does not take into account that collectively rare diseases are common. Rare Disease UK estimate that 3.5 million people in the UK are living with a rare disease — this is comparable to all women diagnosed with heart and circulatory disease in the UK, according to the British Heart Foundation. Therefore, a medical student should expect to see rare disease patients regularly in their future clinical practice as they would expect to see women with cardiovascular disease.

Worryingly, data that M4RD has been collecting over the last three years strongly suggests that medical students are unaware of the prevalence of rare disease as a whole. Seventy per cent of medical professionals that M4RD has surveyed reported that they were not aware of rare diseases being so common. If a doctor practices
with the belief that they will never see a rare disease, this will become a self-filling prophecy and they will be one more obstacle in the diagnostic odyssey. Just because a doctor is not “seeing” rare diseases, it does not necessarily mean they are not there. This is reflected in Shire’s Rare Disease Impact Report, which states that patients will see an average of eight clinicians before receiving a diagnosis. The reality is that a generalist may be unlikely to see any specific rare disease (depending on their patient population, of course) but they should expect to see patients with rare diseases regularly.

**A global issue**

The diagnostic odyssey is not a problem unique to the UK and there are medical student groups across the globe who are also calling for better preparation for managing undiagnosed patients. McGill University in Montreal is home to a Rare Disease Interest Group “RareDig” and they are “equipping future physicians for the reality of rare disease.” Their “Humans of Rare Disease” project tells the stories of people in Canada who waited years for an accurate diagnosis, and one participant states “I had to leave Montreal after doctors... gave up on finding what I had...” They refused to test beyond lupus, with my mental health in shambles and still having no clue what was happening to my body. After nearly dying in late December 2017, I was finally diagnosed with a rare form of vasculitis.

A student at the University of Auckland, Logan Williams, won the Student Voice Essay Competition 2018 during his fifth year of medical school. His winning essay discussed how the medical education system’s focus on biomedicine, rather than psychosocial and humanistic factors, negatively impacts on the care received by those living with a rare condition. He describes how an outdated disease-based approach, which concentrates on understanding the scientific minutiae of a condition, can leave psychosocial factors as an afterthought in the learning process. In the case of his patient CS with Worster-Drought syndrome, this led to disastrous consequences because his mother was unable to obtain the basic equipment to keep him safe when he was having seizures. The story of CS and his mother illustrates that a physician does not need to know the exact pathophysiology and aetiology of a rare disease in order to make a positive impact on their quality of life and clinical outcomes. It also highlights some of the obstacles faced by many patients and their families: difficulty obtaining equipment; family members as carers; managing complex needs; and adapting the family home. Also, the important role of the “expert patient” or “expert carer” with their “lifetime worth of experience” can be feared by a doctor trained in a traditionally paternalistic field.

A disease-based approach in medical education is also an impediment to understanding how to advocate and manage patients with rare diseases because it requires a student to learn about each condition individually. CS and his mother clearly made an impact on Logan and this experience will arguably prepare him better for helping his rare patients in the future than detailed learning about a handful of rare diseases, which will be unlikely to include Worster-Drought syndrome.

As well as Canada and New Zealand, M4RD is aware of medical student activity in rare disease education in a number of other countries: The National Organisation of Rare Disorders in the United States of America has a student chapter, the University of Western Australia involves medical students in the Undiagnosed Disease Program and students are involved in Rare Disease Ghana. In 2004 the French National Plan for Rare Diseases included a details of how rare disease is to be included in undergraduate medical education in partnership with Orphanet. These are just a handful of examples, but it is clear that across the globe there is a sense that we can be doing more for those living with rare diseases from the very beginning of a doctor’s medical studies.

**#DareToThinkRare**

Rare diseases are collectively common and a lack of appreciation of this amongst medical professionals perpetuates the diagnostic odyssey. To combat this problem M4RD is proposing a new approach to rare diseases in medical education. All medical students should receive fundamental teaching about rare diseases during their studies. Lessons should include broad messages about rare diseases such as the concept of the diagnostic odyssey and how to reduce it; specific challenges faced by those affected by a rare disease; where to find accurate information and support for patients; and crucially, the prevalence and relevance of rare diseases to everyday medical care. While specific diseases and case studies may be used to relay key concepts, the teaching is not designed to focus on any individual rare diseases. This teaching should always be delivered in collaboration with patients, advocates and patient groups, so students hear about the lived experience. M4RD is calling this “Rare Disease 101” and we believe that this will be crucial in reducing the inequality encountered in medical education with regards to rare diseases.

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Male genital examination in the medical curricula: an exploration of medical students’ experience

Andrew Jayasuria, Andy Wearn, Anna Vnuk, Harsh Bhoopatkar

Abstract

INTRODUCTION
One of the challenges regarding the teaching and learning of the male genital examination as part of the undergraduate medical curriculum relates to the extent of practice opportunities with patients in the clinical setting.

OBJECTIVES
To quantify how many male genital examinations have been performed on real patients by medical students at the point of graduation, and to explore the context of performing the examination with patients.

METHODS
A self-completed, online, anonymous questionnaire was developed and deployed as part of a two-centre study. Data were collected from final-year medical students in the period just after graduation from the medical programmes at the Universities of Auckland and Flinders in late 2013.

RESULTS
The combined response rate was 42.9% (134/312). The median for the number of male genital examinations performed was 2-3. A total of 16% of medical students had never performed a male genital examination. Self-reported opportunities for performing the male genital examination were strongly related to the setting (e.g. urology and paediatrics/neonates). The largest self-reported barrier was related to patients being uncomfortable being examined by female students.

CONCLUSIONS
For some students, their only experience of performing male genital examinations is on a model in simulation. Opportunities to perform the male genital examinations that students feel comfortable with are rare. The delivery of medical curricula needs to address this issue.

Introduction
The teaching and learning of the male genital examination as part of the medical curriculum is complex. Traditional methods of teaching sensitive examination include textbooks, models, videos, small groups, and lectures. Genital teaching associates (GTA) have also been used increasingly in undergraduate medical programmes. In New Zealand, use of GTAs in a simulated clinical environment has been found to be effective in increasing medical student’s skills and confidence. However, there are numerous advantages to using real patients as part of teaching and learning. The most valued method identified by medical students is with patients. This is shown by their increased confidence in their ability to differentiate the abnormal from the normal, as well as the ability to make this distinction accurately when given the opportunity to learn from real patients.

One of the challenges is the extent to which medical students have the opportunity to practise with real patients in the clinical setting. Factors preventing opportunities to perform the male genital examination are multifactorial. Difficulties include conflict between ethical and educational needs, student anxiety, student gender, and patient preferences. In one study, obstruction by clinical staff was the least identified reason as a barrier for performing the male genital examination, unlike for other sensitive examinations such as the female pelvic examination.

Opportunities for medical students to perform sensitive examinations with a patient can be rare. With regards to the male genital exam, the lack of opportunity is highlighted in an international survey of 104 medical schools. The study showed that a male genital examination would typically never be performed by their medical students at the time of their graduation, in approximately 50% of surveyed medical schools. In a context with cultural differences to Australasia, a study conducted at the King Saud University College of Medicine identified that 34.6% of interns had never completed a male genital examination at the point of their graduation. In another study from two Saudi Arabian medical programmes, the majority of students (75.2%) had never performed a male genital examination. There is a paucity of information in the literature on the rates of performance of the male genital examination in the Australasian context.

This study aims to quantify the number of male external genital examinations on real patients at the point of graduation, as well as barriers to performing this examination on real patients at two Australasian medical schools. Self-reported competence of the examination and differentiating between abnormal and normal is also explored.

Methods
SETTING AND SUBJECTS
Medical students from Flinders University and The University of Auckland in their final year were eligible to complete an anonymous online survey at the point of their graduation in late 2013.

For both medical programmes, the male genital exam is not formally taught in the simulated or preclinical setting. Opportunities for performing these examinations on real patients as an appropriate part of patient assessment occur in different years for the different medical schools. Flinders University has a four-year Doctor of Medicine (MD) programme, of which opportunities to perform male genital examinations on real patients occur in the clinical years (Years Three to Four). The Bachelor of Medicine and Bachelor of Surgery (MBChB) programme at the University of Auckland starts in year two, and is a six-year curriculum with opportunities to perform the male genital examination during Years Four to Six.
**SURVEY DESIGN**

The survey was created with a United Kingdom based team, and then adapted for New Zealand and Australia, taking in to account different ethnic categories. The survey tool was electronic and anonymous.

In the questionnaire, students were asked to estimate, using an ordinal categorical range scale (none, 1, 2–3, 4–5, 6–9, 10–19, 20–49, 50–99, 100+), the number of male genital examinations they have performed throughout their medical school training. The students were also asked to comment separately on their ability to differentiate between normal and abnormal, as well as their perceived competence in performing these examinations. Free text responses for each examination was available. Basic demographic data (i.e. ethnicity, gender, age) were also collected in the survey.

Ethical approval for this study was granted by the University of Auckland Human Participants Ethics Committee and the Social and Behavioural Research Ethics Committee at Flinders University.

**DATA ANALYSIS**

Descriptive and comparative statistics were used to analyse the quantitative data with the IBM SPSS Statistics version 23 computerised statistical package.

Thematic analysis was used to identify, analyse, and report patterns within the qualitative data (free text comments). HB read, coded and themed the whole data set. AJ, AW, and AV independently reviewed the data against the themes and revised the analysis. A consensus was reached by all four authors. Barriers and opportunities to practise the male genital examination identified, reviewed, and defined certain themes. For each theme, illustrative quotations were selected.

**Results**

The survey’s overall response rate was 42.9% (134/312). At Flinders University, the response rate for the survey was 32.8% (40/122), while at the University of Auckland the response rate for the survey was 49.5% (94/190). For the combined data set, the median age of the students was 25 years (interquartile range (IQR), 4 (24–28) years). The University of Auckland’s students’ median age of 24 years (IQR, 3.3 (23–26.3) years) was significantly lower (Mann–Whitney U-test, P < 0.05) than the Flinders University students’ median age of 27 years (IQR, 6.3 (26–32.3) years). Table 1 shows the demographic details of the study population.

**Table 1: Gender and ethnicity of medical students.**

<table>
<thead>
<tr>
<th>Gender</th>
<th>University of Auckland</th>
<th>Flinders University</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>41 (43.6)</td>
<td>20 (50.0)</td>
<td>61 (45.5)</td>
</tr>
<tr>
<td>Female</td>
<td>53 (36.4)</td>
<td>20 (50.0)</td>
<td>73 (54.5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>University of Auckland</th>
<th>Flinders University</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>European</td>
<td>40 (42.6)</td>
<td>25 (62.5)</td>
<td>65 (48.5)</td>
</tr>
<tr>
<td>Asian†</td>
<td>32 (34.0)</td>
<td>5 (12.5)</td>
<td>37 (27.6)</td>
</tr>
<tr>
<td>Australian Aboriginal or Torres Strait Islander</td>
<td>0 (0)</td>
<td>1 (2.5)</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Māori or Pacific Peoples</td>
<td>8 (8.5)</td>
<td>0 (0)</td>
<td>8 (6.0)</td>
</tr>
<tr>
<td>Americas</td>
<td>1 (1.0)</td>
<td>2 (5.0)</td>
<td>3 (2.2)</td>
</tr>
<tr>
<td>African and Middle Eastern</td>
<td>3 (3.2)</td>
<td>0 (0)</td>
<td>3 (2.2)</td>
</tr>
<tr>
<td>Other†‡</td>
<td>10 (10.6)</td>
<td>7 (17.5)</td>
<td>17 (12.7)</td>
</tr>
</tbody>
</table>

† Includes students who identified themselves as coming from South East Asia, North East Asia, Southern Asia, and Central Asia
‡ Includes students who identified themselves as “New Zealander”, “Australian”, or those who identify with multiple ethnicities

The median number of male genital examinations performed was 2–3. The number of male genital exams performed in each location is seen in Figure 1.

**Figure 1: Number of male genital exams performed.**

A total of 479% and 42.5% of students felt incompetent performing the male genital examination at The University of Auckland and Flinders University, respectively. With regards to differentiating normal from abnormal, 39.3% of students at The University of Auckland and 40.0% of students at Flinders University felt incompetent. Table 2 shows the perceived competence in performing the male genital examination, and Table 3 shows the perceived confidence in differentiating normal from abnormal findings.

**Table 2: Perceived competence performing the male genital examination.**

<table>
<thead>
<tr>
<th>No response (%)</th>
<th>Completely incompetent (%)</th>
<th>Fairly incompetent (%)</th>
<th>Fairly competent (%)</th>
<th>Very competent (%)</th>
<th>Expert (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Auckland</td>
<td>0</td>
<td>9.6</td>
<td>38.3</td>
<td>46.8</td>
<td>5.3</td>
</tr>
<tr>
<td>Flinders University</td>
<td>10</td>
<td>15</td>
<td>27.5</td>
<td>40</td>
<td>7.5</td>
</tr>
</tbody>
</table>

**Table 3: Perceived confidence regarding differentiating normal from abnormal**

<table>
<thead>
<tr>
<th>No response (%)</th>
<th>Completely incompetent (%)</th>
<th>Fairly incompetent (%)</th>
<th>Fairly competent (%)</th>
<th>Very competent (%)</th>
<th>Expert (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Auckland</td>
<td>0</td>
<td>10.6</td>
<td>28.7</td>
<td>54.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Flinders University</td>
<td>10</td>
<td>15</td>
<td>25</td>
<td>45</td>
<td>5</td>
</tr>
</tbody>
</table>

There was a moderate, and statistically significant, correlation between the number of male genital exams performed and perceived competence regarding the exam (Spearman’s rho, 0.625). There was a moderate, and statistically significant, correlation between the number of exams performed and perceived confidence in distinguishing between normal and abnormal for the male genital examination (Spearman’s rho, 0.627).
Qualitative analysis of free text comments provided four main themes. Firstly, that students identified certain clinical attachments as providing a better opportunity to perform the male genital examination. Secondly, the gender of the student was seen as a barrier to performing the examination, with patients being more uncomfortable being examined by female students. Thirdly, students wanted more teaching. Fourthly, students felt incompetent performing the examination.

1. CLINICAL ATTACHMENTS
Speciality surgery, paediatric, and emergency medicine attachments were identified as being conducive to more opportunities to perform the male genital examination.

“Only exposure in urology and paediatrics...and E.D.” (Female; age 33 years; the University of Auckland; response ID 87)

“All in paediatric population” (Female; age 24 years; Flinders University; response ID 5)

2. GENDER OF STUDENT
With respect to performing the male genital examination, being a female student was mentioned as a barrier.

“Usually males [patients] were understandably shy to have me in the room for genitalia exams. If I was, I mainly observed.” (Female; age 24 years; the University of Auckland; response ID 57)

3. REQUEST FOR MORE TEACHING
Students wanted more teaching of the male genital examination.

“Would have liked more teaching about examination of testicular lumps/masses.” (Female; age 27 years; Flinders University; response ID 6)

4. PERCEIVED LACK OF COMPETENCE
Students reported that they were not prepared or organised to perform the male genital examination.

“Bit unsure of what to do other than inspect.” (Female; age 23 years; the University of Auckland; response ID 52)

Discussion
We found that rates of performance of the male genital examination by medical students were low, but higher than the available international literature, taking into account cultural differences between Saudi Arabia and Australasia. In a study based in Saudi Arabia 75.2% of students, by the end of graduation, had never performed male external genital examination on real patients as compared with 16.2% of final-year medical students in this study. Our study found that the median number of male genital examinations performed was 2–3. This was higher than a similar study done in Saudi Arabia: median number 1–2. Quantitative analysis did not identify any statistically significant predictors of lower or higher rates of attainment for the male genital examination. The significant difference in age of student at the two locations is unsurprising, since the majority of students enter through an undergraduate pathway for the Bachelor of Medicine and Bachelor of Surgery (MBChB) at The University of Auckland, whereas entry to medical school at Flinders University is almost exclusively through a graduate entry pathway.

However, our qualitative analysis showed that opportunities to perform the male genital examination appeared to be related to the clinical rotation that the student was attached to. Students reported that surgical-based rotations in hospital (particularly urology) and paediatric rotations seemed to be better in terms of opportunities to perform the male genital examination. With regards to barriers to perform the male genital examination on real patients, students identified gender (female gender of student) as a reason for reduced opportunities to perform the male genital examination. This was similar to the findings of other studies. Other issues raised by students related to the amount of teaching they would have liked to receive and their perceived competence performing the examination.

The moderate and statistically significant correlation between the number of exams performed and perceived confidence in distinguishing between normal and abnormal found in our study was also supported by the literature. However, this is not a strong correlation and our quantitative analysis indicates that some students feel incompetent with regards to performing the male genital examination and differentiating normal from abnormal, despite performing examination on patients.

There are several limitations to this study. First, our data was retrospective and is based on the memory of medical students over multiple years during their degree. Second, our data was self-reported and the relationship between perceived and actual competence cannot be verified. Third, the response rate was low; however, this was better than is typical of online surveys. Fourth, the data are five and a half years old and the curriculum may have improved. Fifth, we did not perform an analysis to determine if our respondents were representative of all students (by age/ethnicity). Finally, as the data were collected from two Australasian institutions (New Zealand/Australia), it may not be possible to extrapolate more widely.

Despite the limitations, our results raise important questions regarding teaching the male genital examination to medical students. Firstly, is it necessary to teach the male genital examination to undergraduate students? Unlike other sensitive examinations such as the rectal examination and the pelvic examination, the male genital examination is not specified by accrediting bodies in Australia and New Zealand as a skill that pre-vocational junior doctors are expected to be able to perform. Secondly, if medical students are expected to be able to perform the male genital examination, how many male genital examinations should students be expected to perform? Finally, given that the requirement for this examination is rare, is the teaching and learning of the male genital examination sustainable? Further qualitative data from educators, clinicians, and students is required in order to answer these questions.

To our knowledge, this is the first paper that quantifies the number of male genital examinations performed by medical students in the Australasian context and investigates the confidence and competence in performing male genital examinations by medical students.

In conclusion, some final-year medical students have never performed the male genital examination in a clinical setting during the extent of their degree. Opportunities (e.g. facilitated by surgical and paediatric rotations) and barriers (e.g. related to gender and lack of formal teaching) were identified by students. If this examination is to be considered necessary for students to learn prior to graduation, the teaching and learning of the male genital examination in the undergraduate medical programme should take these factors into account and ensure that students have adequate learning experiences and opportunities to become competent.

References


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› Associate Professor Anna Vnuk, MBBS, EdD, is an Associate Professor in Medicine at Flinders University.
› Dr Harsh Bhoopatkar, MBChB, MMedSc, is the Director of the Clinical Skills Centre at The University of Auckland.

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Sepsis – a quick tour

Paul Huggan

Abstract
Sepsis is defined as a life-threatening disorder caused by a dysregulated immune response to infection. It can be a challenging condition to recognise, and patients with sepsis are some of the most complex in any medical or surgical service. Sepsis patients are demanding due to their illness severity and underlying morbidities. Successful resuscitation relies on recognition, early delivery of appropriate anti-microbial therapy and management of shock/organ failure. Parallel efforts are required to identify and treat the infection driving the sepsis response, often leading to multiple investigations, procedures, and long stays in hospital. Ongoing efforts are required to recognise and treat sepsis as the population vulnerabilities that drive infection persist in New Zealand.

Introduction
Infectious diseases are the most common cause of hospitalisation in New Zealand. Rates of infection-related hospitalisation have been increasing for several decades! Infectious diseases and sepsis are more common amongst older adults, Māori and Pacific people, and those living in conditions of high socio-economic deprivation. These are independent risks – for example, non-Māori people living in settings of deprivation are also at increased risk. Sepsis presentations mirror infectious disease epidemiology – where there is more infection in a region or population, there is more sepsis.

Presentations with sepsis present to every sub-specialty of medicine or surgery. Because every specialty deals with some sepsis, counting cases has to be done using administrative data. In a study of sepsis epidemiology in the Waikato region, we took patients with primary admission codes for major infectious diseases, then identified the sickest patients in this group by looking for secondary codes describing organ failure. We found that 8% of all admissions over a five-year period had a primary infectious disease code, of which 10% had organ failure codes. That means that about 1% of all admissions met this definition of sepsis. The 28-day mortality in this group was almost 19%, increasing to 37% in patients admitted to our intensive care unit (ICU).

Case vignette one
Mr M, a 61-year-old man, has been admitted to hospital for management of hemiparetic stroke. He has benign prostatic hypertrophy and was catheterised two days ago for new urinary retention. You are asked to see him with a fever of 38.5°C. He has rigors and is confused. You find his peripheries are warm, pulse 115 beats per minute, respiratory rate 28 breaths per minute, systolic blood pressure (SBP) 110 (normal SBP in hospital has been 160), SpO₂ 95% on room air. He has no signs of peripheral line infection. There are no abnormalities on auscultation of the chest. He has a soft abdomen and a small amount of concentrated urine is in the catheter bag.

Box 1. Definitions of sepsis and related terms.

Sepsis 3.0 narrative definition (proposed in the Third International Consensus Definitions for sepsis and septic shock): “Sepsis is characterised by a life-threatening organ dysfunction due to a dysregulated host response to infection.”

Lay narrative definitions of sepsis:
1. “Sepsis is a life-threatening condition that arises when the body’s response to an infection injures its own tissues and organs.”
2. “Blood poisoning.”

Translation of terms into Te Reo Māori:
1. Sepsis: Mate whaktāoke (mate = illness; tāoke = toxin; whaktāoke = to make toxic).

Clinical definition of sepsis:
“An acute change in total Sequential Organ Failure Assessment Score (SOFA) ≥2 points consequent to infection.”

Septicaemia:
An outdated (but commonly recognised) term indicating a bloodborne inflammatory response due to infection.

Bacteraemia:
The presence of bacteria in the blood.

Hypoperfusion:
Reduced flow of blood through tissue.

Hypotension (in adults):
1. SBP <90 mmHg.
2. A drop in systolic blood pressure of ≥40 mmHg from the patient’s normal.
3. A mean arterial pressure <65 (the mean arterial pressure is the average blood pressure in a patient’s arteries over one cardiac cycle – in the absence of invasive monitoring, calculate by doubling the diastolic blood pressure, adding to the systolic blood pressure and dividing this number by 3).
WHAT IS SEPSIS AND HOW IS IT RECOGNISED?

Current definitions of sepsis, septic shock and related terms are given in Box 1.

Biologically, sepsis is best conceived as an acute inflammatory disease of the circulation caused by infection, or “malignant intravascular inflammation”: Disturbance of endothelial and circulatory function (further described below) leads to tissue injury, which accumulates and progresses over time. This is why the earliest signs of sepsis can be non-specific, but then evolve quickly. Presentations can vary depending on the patient, the stage of the illness at presentation, the nature of the underlying infection, variable manifestations of organ failure, and, to a certain extent, the micro-organism involved.

If sepsis-related tissue injury goes untreated (i.e. with antimicrobials, management of the infection, and careful supportive care) it gets harder to manage as time passes, while at the same time, the underlying infection becomes increasingly obvious. This is literally a classic medical dilemma, described succinctly by Niccolò Machiavelli in ‘The Prince’, written in 1532:

“As the physicians say it happens in hectic fever, that in the beginning of the malady it is easy to cure but difficult to detect, but in the course of time, not having been either detected or treated in the beginning, it becomes easy to detect but difficult to cure.”

Our patient Mr M appears very unwell and sepsis seems likely, but the underlying infection has not yet been identified. At this stage, the formal “Sepsis 3.0” (see Box 1) definition of sepsis cannot be applied, as this requires laboratory testing. Guidelines published in New Zealand by the Best Practice Advocacy Centre (BPAC) recommend the use of available findings to categorise patients as being at a high, moderate, or low risk of sepsis: The New Zealand Sepsis Trust (NZST) has collaborated with the UK Sepsis Trust (UKST) to publish a Sepsis Screening and Action Tool (Figure 1), which simplifies the assessment process. It is available at www.sepsis.org.nz and uses the presence of Red Flags to justify rapid investigation and treatment. Red Flags cannot easily be memorised, but note that in non-pregnant adults, any single vital sign that would score a 3 using the national early warning score (EWS) counts as a Red Flag. Paediatric and maternal physiology differ; which is why there are specific tools for these groups (available at www.sepsis.org.nz). Some patients with less severe abnormalities (so called “Amber Flags”) are still at moderate risk of progressing to sepsis and need careful assessment.

Mr M has several Red and Amber Flags. He has new onset confusion, his nurse is worried about his condition, his SBP has dropped further (40 mmHg below his normal), and he has a respiratory rate of 28 breaths per minute. He needs immediate investigation and treatment using “Sepsis Six” (Figure 2). This is printed on the reverse of the Sepsis Screening and Action Tool, focusing attention on securing a diagnosis and administering effective antibiotics.

Case vignette two

The house officer and nurse both attended sepsis training as part of their hospital orientation. They use the screening and action tool to confirm Red Flag sepsis. The house officer checks the local antimicrobial guideline for sepsis. Because of recent catheterisation in a male, and in the absence of any other clinical signs, she looks for recommendations for treating sepsis of urinary source. Ceftriaxone and gentamicin are recommended. She asks the nurse to prepare these while she inserts a new intravenous line, drawing blood for culture and serum lactate. While antibiotics are being given, the blood pressure is re-checked and confirmed at 105 systolic. The house surgeon decides to give a 500 mL bolus of normal saline over 30 minutes. As the $SpO_2$ is 95% on room air, she decides not to give oxygen, even though the patient’s respiratory rate is elevated. The lab calls a few minutes later to say that the serum lactate is 3.1 mmol/litre (normal range 0.5–2.0).

WHAT ARE THE PRINCIPLES OF CARING FOR A PATIENT WITH SEPSIS?

Mr M has received prompt treatment with appropriate antibiotics and is being given a fluid bolus. A likely source has been identified and the outlook might be good. However, at this stage it is not clear whether the diagnosis of a urinary tract infection is correct, or indeed whether Mr M will respond appropriately. He needs to be carefully monitored with two things in mind:

i. Is the infection correctly identified and treated?

ii. Is there evidence of persistent hypoperfusion?

The need to keep asking the first question is self-explanatory. The second question needs a little more explanation. The whole immune system is involved in the sepsis response, which is expressed clinically through changes in endothelial and circulatory function. Increased endothelial permeability, neutrophil diapedesis, release of nitric oxide, and migration of inflammatory cells into the interstitium cause tissue oedema and cell damage. When this happens in the skin, the end result is the swelling, redness, heat, and pain (tumor et rubor cum calor et dolore) that can be seen with the naked eye. In sepsis, these changes occur in every major organ, causing tissue damage while also reducing effective circulatory volume (preload) and peripheral resistance (afterload). Damage to the microvasculature combined with low cardiac output leads to global tissue hypoxia. This triggers an increase in production of lactic acid, which in the case of Mr M was elevated above 2 mmol/litre after resuscitation, providing an additional Red Flag.

Available signs of global tissue hypoxia include hypotension, elevated lactate, tachypnoea, and reduced level of consciousness (patient is unresponsive or responds only to voice or pain). If any of these are present at initiation of the Sepsis Six, the patient should be assessed regularly to ensure that things improve. Typically, this means seeing the patient after two to four hours have passed, or earlier if there is reason for concern. NZST have published a Sepsis Hypoperfusion Pathway to aid decision making in this setting. As sepsis is much more common amongst elderly patients, end-of-life decision making may come in to play. However, it is important to recognise that persistent hypoperfusion is a precursor to a poor outcome. Regardless of the underlying situation, involving a senior decision maker or intensive care/medical emergency team is almost always appropriate, even if eligibility for intensive therapies is in doubt.

Case vignette three

Despite a 500 mL fluid bolus, Mr M’s blood pressure continued to fall (to 100 systolic) and his respiratory rate increased to 35 breaths per minute with an $SpO_2$ of 91%. Oxygen was administered via mask and the $SpO_2$ improved to 95%. A further 500 mL fluid bolus was administered but the blood pressure remains unchanged, leading to administration of a 1000 mL fluid bolus over the second hour. By this stage, Mr M has had 20 mL/kg of crystalloid fluid, but remains drowsy and tachypnoeic. The EWS increases to 10. Despite concerns that the underlying stroke may limit Mr M’s eligibility for intensive care admission, the house surgeon decides to call her registrar, who advises
requesting a further lactate and requesting an intensive care review. The intensive care team identify that the blood pressure has fallen further to 90 systolic, there has been no urine produced for four hours and the lactate remains elevated at 41 mmol/l. A decision is made to initiate vasopressor support and transfer to the high dependency unit (HDU). The stroke unit consultant attends and confirms that resuscitation efforts are appropriate.

**WERE THE ANTIBIOTICS APPROPRIATE?**

Now the situation is looking very serious. Mr M satisfies the definition of septic shock given in Box 1, increasing his risk of in-hospital death to 40%. From the point of view of his antimicrobial therapy, it might be tempting to continue adding “broad spectrum” antibiotics into the mix. However, having sustained a serious inflammatory injury, the body’s response to sepsis can persist in the first few hours, despite effective therapy. This will be particularly true if an abscess, perforation, or other serious anatomical lesion hasn’t been identified and correctly treated (a popular rule of thumb is to “never go to sleep on pus”). With that caveat in mind, if the first clinical assessment is felt to be accurate and antibiotics have been given using an accepted local guideline, it is reasonable to observe response over several hours before considering additional agents. At our hospital, 20% of patients admitted to the ICU or HDU with clinical sepsis have no clearly identified source, but the antibiotics recommended in our guidelines are active in over 95% of cases. Consider imaging or direct intervention if there might be a drainable collection. Follow the microbiology results carefully. Once susceptibility results are available a decision can be made about how long to continue antibiotic treatment and whether to use an intravenous or oral route.

**Case vignette four**

Mr M spent some time on oxygen and phenylephrine while additional fluid was administered to a total of 30 ml/kg. A chest x-ray showed no pulmonary parenchymal changes. The EWS slowly improved and phenylephrine was weaned overnight. A gram-negative bacillus was identified in blood after six hours of incubation. By the following afternoon this was reported as an Escherichia coli (E. coli), and the same organism was found in a catheter urine specimen, confirming a diagnosis of catheter-associated urinary tract infection. Ceftriaxone was continued for 48 hours, but by the end of the second day, the E. coli was found to be susceptible to amoxicillin. After insertion of a nasogastric tube, ceftriaxone was stopped and amoxicillin given enterally. Mr M improved quickly and a decision was made to stop antibiotics after seven days. He was transferred back to the stroke unit. The same house surgeon met with the family and was surprised to find that none of them had ever heard of sepsis. As Mr M is going to be discharged with a urinary catheter, his family ask how they would spot sepsis if it happened at home.

**HOW DO I TALK TO PATIENTS AND FAMILIES ABOUT SEPSIS?**

NZST volunteers surveyed almost 300 people attending the 2019 Fieldays event, and found that only 40% had even heard of the term “sepsis”. Other evidence suggests that these problems of awareness and understanding extent to health care workers, who can struggle to explain sepsis to patients and families. This means that patients often leave hospital with an incomplete understanding of their illness and its consequences. We recommend describing sepsis as “blood poisoning (toto pirau) due to infection”, whether or not people have heard of sepsis. This speaks simply to the severity and pathophysiology of the condition, and provides people with a description they can easily remember and share with others. Many people will have heard of the term “septicemia”, which was in common use in the medical profession until the early 1990s. It is worth explaining that the preferred term for septicemia is sepsis.

NZST has produced an information leaflet in English and Te Reo Māori for patients, family, and whānau, available on the Health Navigator website (search sepsis) and at www.sepsis.org.nz.

**What are the unique challenges in managing sepsis in New Zealand?**

In the Waikato study, the incidence of sepsis amongst Māori was three times higher than amongst non-Māori. Sepsis incidence is one of a range of health indicators that are worse for Māori than non-Māori.2 This inequality (between group difference in health status) has its origins in inequity (defined as maldistribution of resource), which is a manifestation of institutionalised, interpersonal, and internalised racism.3 Inequity and racism contribute to overcrowding, malnutrition, smoking rates, skin and dental disease, poor health literacy, and difficulty accessing and relating to health care providers. These, and other factors, not only predispose to infection, but also to serious morbidities that are frequently complicated by infection, for example cancer and rheumatic fever. Sepsis occurs as a complication of infection, ergo, any population with higher rates of infection will have higher rates of sepsis. It would follow that the burdens of sepsis amongst Māori will not be lessened until entrenched health and socio-economic inequities are addressed.

**What can I do to prevent sepsis or help those who are recovering from it?**

Some deaths from sepsis are preventable with early recognition and response. That is why the mission of the New Zealand Sepsis Trust is to ensure that there are “no preventable deaths due to sepsis in New Zealand”. Significant resources are already devoted to the prevention of infection. Examples include vaccination, sanitization, hand and procedural hygiene, and hospital infection control programs. We also support antimicrobial stewardship efforts. Antimicrobial stewardship programs aim to restrict total antimicrobial use while improving antimicrobial prescribing decisions. While it will always remain important to minimise use of antibiotics in low-risk settings, suspected sepsis is the paramount condition in which early guideline-driven antimicrobial therapy is appropriate.

The NZST’s goals are to ensure: i) that all New Zealanders understand sepsis is deadly, but preventable and treatable; ii) that standardised emergency treatment is provided by clinicians with access to high quality sepsis education; and iii) that sepsis survivors and their families receive support and education to aid their recovery. Sepsis survivors are key partners in our work, helping us to understand the longer term impacts of sepsis on day-to-day physical and cognitive function. For a condition that has twice the mortality of myocardial infarction or stroke, remarkably little has been done to elevate sepsis as a major health concern. You can take part in changing this and find out more at www.sepsis.org.nz.

In summary sepsis is a deadly condition amenable to improved outcomes through increased community awareness, standardised emergency treatment, and efforts to prevent and treat infection in the community.

**References**


About the author

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Conflicts of interest

Co-founder and Chair, Sepsis Trust NZ.

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Adult Sepsis Screening and Action Tool

To be applied to all non-pregnant adults and children over 15 years with fever (or recent fever) symptoms, or who are clearly unwell with any abnormal observations.

Staff member completing form:
Date (DD/MM/YY): [ ]
Designation: [ ]
Name (print): [ ]
Signature: [ ]

Important:
Is a Last Day of Life Care Plan in place? Yes [ ] No [ ]
Is escalation clinically inappropriate? Yes [ ] No [ ]
Initials: [ ]

1. EWS 3 or above?
AND/OR does patient look sick?

2. Could this be an infection?
Yes, but source unclear at present [ ]
Pneumonia [ ]
Urinary Tract Infection [ ]
Abdominal pain or distension [ ]
Cellulitis/ septic arthritis/ infected wound [ ]
Device-related infection [ ]
Meningitis [ ]
Other (specify): [ ]

3. Is ONE Red Flag present?
Responds only to voice or pain/ unresponsive [ ]
Systolic B.P ≤ 90 mmHg (or drop >40 from normal) [ ]
Heart rate > 130 per minute [ ]
Respiratory rate > 25 per minute [ ]
Needs oxygen to keep SpO₂ ≥ 92% [ ]
Non-blanching rash, mottled/ ashen/ cyanotic [ ]
Not passed urine in last 18 hours [ ]
Urine output less than 0.5 ml/kg/hr [ ]
Lactate ≥ 2 mmol/l [ ]
Recent chemotherapy [ ]

4. Any Amber Flag criteria?
Relatives concerned about mental status [ ]
Acute deterioration in functional ability [ ]
Immunosuppressed [ ]
Trauma/surgery/procedure in last 6 weeks [ ]
Respiratory Rate 21-24 or breathing hard [ ]
Heart Rate 91-130 or new arrhythmia [ ]
Systolic BP 91-100 mmHg [ ]
Not passed urine in last 12-18 hours [ ]
Temperature <36°C [ ]
Clinical signs of wound, device or skin infection [ ]

Discuss with senior clinician, decide either:
Start Sepsis Six pathway (see page 2) [ ]
Take bloods and review within 1 hour (FBC, U&E, CRP, LFT, coag, VBG, lactate) [ ]
Hold off bloods and review within 1 hr [ ]

Clinical deterioration or AKI or lactate >2
YES [ ]
NO [ ]

Clinical deterioration or AKI or lactate >2
Clinician to make antimicrobial prescribing decision within 3h [ ]

Red Flag Sepsis!! Start Sepsis Six pathway NOW (see page 2)

This is time critical, immediate action is required.

Figure 1: Adult Sepsis Screening and Action Tool
**Figure 2: Sepsis Six**

### Adult Sepsis Screening and Action Tool

To be applied to all non-pregnant adults and children over 15 years with fever (or recent fever) symptoms, or who are clearly unwell with any abnormal observations.

**Make a treatment escalation plan and decide on CPR status**

Inform consultant *(use SBARR)* patient has **Red Flag Sepsis**

<table>
<thead>
<tr>
<th>Action (complete ALL within 1 hour)</th>
<th>Time zero</th>
<th>Consultant informed?</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Administer oxygen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aim to keep saturations &gt;94% (88-92% if at risk of CO₂ retention e.g. COPD)</td>
<td>Initials</td>
<td>(Tick)</td>
<td></td>
</tr>
<tr>
<td>2. Take blood cultures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least a peripheral set. Consider e.g. CSF, urine, sputum</td>
<td>Initials</td>
<td>Time complete</td>
<td></td>
</tr>
<tr>
<td>Think source control! Call surgeon/radiologist if needed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Give IV antibiotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer to hospital guideline</td>
<td>Initials</td>
<td>Time complete</td>
<td></td>
</tr>
<tr>
<td>Consider allergies prior to administration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Give IV fluids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If hypotensive/lactate &gt;2mmol/l, 500ml stat</td>
<td>Initials</td>
<td>Time complete</td>
<td></td>
</tr>
<tr>
<td>Repeat if clinically indicated – do not exceed 30ml/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Check serial lactates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeat VBG lactate after fluid bolus completed. Send ABG lactate only if arterial line in situ</td>
<td>Initials</td>
<td>Time complete</td>
<td>Not applicable – initial lactate</td>
</tr>
<tr>
<td>If lactate &gt;4mmol/l, call Critical Care and recheck VBG after each 10ml/kg IV fluid challenge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Measure urine output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May require urinary catheter</td>
<td>Initials</td>
<td>Time complete</td>
<td></td>
</tr>
<tr>
<td>Ensure fluid balance chart commenced and completed hourly</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**After delivering the Sepsis Six, does patient still have any of the following?**

- systolic B.P <90 mmHg
- reduced level of consciousness despite resuscitation
- respiratory rate over 25 breaths per minute
- lactate not reducing or >2mmol/l

If escalation remains clinically appropriate, Consider vasopressor support and call ICU IMMEDIATELY.
Two cases of ciguatera fish poisoning following eel consumption

Steve Waqanivavalagi, Michael Murphy, Peter Jones

Case

An 18-year-old man presented to the Emergency Department with generalised abdominal pain, nausea, loose bowel motions, haematochezia, and perioral paraesthesia starting thirty minutes after eating eel. He was tachycardic (108 bpm) and hypertensive (188/90 mm Hg), his abdomen was generally tender but soft, and he had bilateral perioral paraesthesia. His 45-year-old father presented with generalised abdominal pain, loose bowel motions, perioral paraesthesia, and bilateral foot paraesthesia starting one hour after exposure. His vital signs were normal and his abdomen was generally tender, but soft. Neither patient complained of chest discomfort, dyspnoea, visual disturbance, or muscle weakness.

Both patients were treated with two litres of 0.9% saline and monitored for bradycardia and hypotension. They remained haemodynamically stable after four hours of care and were then discharged home with return advice and routine general practitioner review.

The patients reported that the eel had been brought back from Tonga two days prior to being home-smoked for consumption. Three other family members had also eaten the eel, two of whom had reportedly developed similar symptoms and presented to another emergency department in Auckland.

Ciguatera fish poisoning (CFP) was considered clinically probable in these two cases given the close association between eel consumption and symptom onset, and the development of perioral paraesthesia, which is not typically seen in other foodborne illnesses. Other tox-in-related conditions may have been considered, had the source of the patients’ illnesses been uncertain. For example, a history of shellfish ingestion would have prompted consideration of neurotoxic shellfish poisoning and paralytic shellfish poisoning, which are caused by the dinoflagellates Gymnodinium breve and those of the Alexandrium genus. The Japanese delicacy pufferfish, which produces tetrodotoxin, may also have been a relevant consideration, although pufferfish poisoning differs from CFP in that tetrodotoxin causes muscle weakness and paralysis. Other illnesses with similar features include organophosphate poisoning, foodborne botulism, Guillain-Barré Syndrome, multiple sclerosis, and eosinophilic meningitis.

The patients were followed up by telephone two weeks after discharge. They both reported resolution of their gastrointestinal symptoms but complained of ongoing perioral paraesthesia. The younger patient had also since developed perioral cold allodynia. Unlike gastrointestinal and cardiovascular complaints, which commonly improve within 48 hours and rarely extend beyond four days, neurological symptoms may persist for weeks to months. Although uncommon, they may even linger for many years depending upon toxin-related factors such as previous exposure and amount ingested.

Discussion

CFP is the commonest cause of toxin-related foodborne illnesses in tropical and subtropical regions. It is caused by ciguatoxin-producing dinoflagellates such as those of the Gambierdiscus genus, which are a food source for herbivorous fish. Ciguatoxin climbs the food chain when affected fish are preyed upon by carnivorous species such as barracuda, moray eel, sea bass, and red snapper. Thus, humans may contract CFP when contaminated fish are consumed.

Ciguatera toxicity is often under-reported and poorly-recognised, perhaps because it is infrequently seen in Australia and New Zealand. Nevertheless, CFP can have profound systemic effects compared to other foodborne illnesses, which necessitates its early recognition and management. Fortunately, the cases we encountered were mild in that they required little intervention.

Ciguatoxin is difficult to detect because it is colourless, odourless, and tasteless. Attempts to mitigate CFP by cooking contaminated food are also futile, because ciguatoxin is heat-cold stable. Thus, the only means of preventing CFP is by avoiding the consumption of reef fish. Ciguatoxin mediates its deleterious effects by binding to sodium (Na+) channels, which increases Na+ channel permeability and membrane excitability. Thus, in addition to milder symptoms such as paraesthesia and cold allodynia, patients may suffer from severe sequelae such as cardiotoxicity or a coma.

The treatment of CFP is largely supportive. Thus, fluid resuscitation is used to manage hypotension or to replace fluid losses, and neuromodulating agents such as gabapentin or pregabalin may be used to treat neurological symptoms. In severe cases, patients may require atropine to counter bradycardia, or vasopressors to treat persistent hypotension. Mechanical ventilation may even be required to manage hypventilation.

Although infrequently seen in our department, the cases reported here highlight the importance of considering CFP in patients with gastrointestinal upset coupled with neurological symptoms after recently ingesting seafood. The symptoms may be prolonged or require intensive intervention, which is why recognition must occur early. An increasing number of tourists are frequenting higher risk Pacific regions, which has been associated with a rise in CFP in enquiries received by the National Poisons Centre. The cases we encountered were unique in that the contaminated food was brought ashore and then consumed by the patients. Given the growing Pacific population in Australia and New Zealand, personally imported food may become an important feature of history taking in patients presenting with gastrointestinal upset coupled with neurological symptoms. Trends in CFP diagnoses are overseen by public health services. Notification to a public health service is thus important for monitoring affected seafood and managing outbreaks.
References


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An unusual case of enterovirus causing Gianotti Crosti syndrome

Natalie Allen

Abstract
A 15-month-old child presented to the emergency department with a papular acrally distributed erythematous rash of unknown cause. The eruption was unusually florid but consistent with a diagnosis of Gianotti Crosti syndrome, a self-limiting skin condition of childhood. The child had not been unwell, nor recently vaccinated, but tested positive for enterovirus polymerase chain reaction (PCR). Although numerous viruses, such as Epstein-Barr and Coxsackie B, have been associated with Gianotti Crosti syndrome, this is one of the few published cases specifically discussing the presentation of enterovirus-induced Gianotti Crosti syndrome.

Introduction
Gianotti Crosti syndrome (also called papular acrodermatitis) is a benign self-limiting skin condition of childhood. It usually presents as a monomorphous, purpuric rash, commonly appearing on the extensor surfaces of the extremities.¹ Though frequently attributed to hepatitis B and Epstein-Barr virus, the syndrome is most often idiopathic.² There are also European cases connecting atopy as well as recent vaccination with Gianotti Crosti syndrome.³,⁴ The pathogenesis of this condition is not well understood, but is likely immune-mediated and complex.⁵ This report hopes to draw attention to enterovirus as a cause of Gianotti Crosti syndrome, as well as a potential diagnosis for an unknown rash in children with no overt history of virus or recent vaccination.

Case Report

Figure 1. Bilateral foot rash

Rash as seen in dermatology clinic, two weeks after initial appearance. Desquamation and erythema still present despite hydrocortisone cream and amoxicillin use.

A 15-month-old male Māori infant presented to the Waikato Hospital Dermatology Department following referral from paediatrics. He had a two-week history of bilateral foot rash (Figure 1). The rash was initially managed in the community and emergency department with oral amoxicillin and hydrocortisone cream, which provided no benefit. Initially, the rash presented as erythematous desquamation of the feet, which then transformed into small white blisters. Following this, he developed papules on the extensor elbows, knees, buttocks, and around the mouth. He had no lymphadenopathy or mucosal involvement. There were no target lesions or intact vesicles. The child had a fever, but otherwise no coryzal or gastrointestinal symptoms. He had no history of recent illness or vaccinations in the last three months. He did have a history of upper respiratory tract infections, with two presentations to the emergency department at the age of 6 weeks and 5 months, alongside suspected dairy intolerance.

Differential diagnosis included acropustulosis of infancy, pityriasis rubra pilaris, and hand, foot, and mouth disease. His rash was most consistent with Gianotti Crosti syndrome. A complete blood count, antistreptolysin O, liver function enzymes, hepatitis and Epstein-Barr serology, and a throat swab were ordered. All results came back unremarkable except for the throat swab, which revealed presence of enterovirus. Management of Gianotti Crosti syndrome is conservative; the patient was prescribed fatty cream three times daily and followed up after one week. At this appointment, he improved significantly and was discharged from dermatology.

Discussion
Gianotti Crosti Syndrome was initially described in the 1950s in Rome and was previously thought to be associated with hepatitis B infection in children.⁶ A papular urticarial rash in a child lasting longer than ten days is considered the most predictive diagnostic indicator, as rashes consistent with Gianotti Crosti syndrome last between two and four weeks.⁵ The clinical features can be very variable, but usually include a symmetric papular eruption over the buttocks, feet, cheeks, and extensor surfaces of limbs. This rash may progress to vesicles and is often pruritic, though not in all cases. The incidence of Gianotti Crosti syndrome is difficult to predict, primarily due to underdiagnosis and the limited number of case studies. It is believed to occur predominantly in children between the ages of one and six years.⁶

Despite the variety of potential causes, the pathogenesis of Gianotti Crosti syndrome remains unclear. The virus appears to be the key driver behind the skin changes, with secondary immunomodulation necessary to induce the rash.⁷ Despite using immunohistochemistry and electron microscopy, no viral antigens have been identified in the skin lesions of children presenting with Gianotti Crosti syndrome in at least three studies so far.⁸ The implications of this are that the development of the rash is unlikely due to local interactions between viral antigens and the skin, but rather some unknown systemic process.⁹
The introduction of hepatitis B vaccination in 1965 challenged the aetiology of this condition, and over time numerous additional causes were identified. Epstein-Barr virus is now considered to be the pre-dominant precursor to Gianotti Crosti syndrome in the developed world.¹ Other known viral agents include hepatitis A, cytomegalovirus, rotavirus, parainfluenza, mumps, coxsackie, and respiratory syncytial viruses.² Bacterial causative agents such as Mycoplasma pneumoniae and haemolytic Streptococci have also been reported.³ Vaccination has also been recorded as an inducer of Gianotti Crosti syndrome, though it has been speculated that afflicted children also had a viral infection at the time of immunisation.⁴⁵ Alongside these infective cases, many cases are idiopathic.⁶ It also appears as though children with a history of autoimmunity are at a greater risk than their non-atopic peers.⁷

Enterovirus has previously been included in the general list of causes.⁸ Regarding this specific case, the patient has no indications of enterovirus infection. This raises the question: how many idiopathic cases of Gianotti Crosti syndrome have an occult viral cause?¹ The frequency of idiopathic presentation,⁹ coupled with asymptomatic viral infection discussed in this case may suggest that the development of Gianotti Crosti syndrome is not directly correlated with the severity of infection. A stronger understanding of the pathogenesis of this syndrome is necessary to understand how a variety of pathogens may cause similar presentations in young children. Therefore, this case report highlights the necessity for additional research with respect to the prevalence and presentation of enterovirus-induced Gianotti Crosti syndrome.

References


About the author

Natalie is a fifth year medical student at the University of Auckland. Her hobbies include overconsumption of cappuccinos and re-reading Harry Potter.

Acknowledgements and consent

Thank you to the Waikato Dermatology Department. Verbal and written consent were obtained from the patient’s legal guardian.

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Climate medicine: our changing climate and health inequity in New Zealand

Cameron Toogood

Abstract
Climate change is a present and ongoing threat to the wellbeing of New Zealanders. The impacts of climate change will therefore exacerbate current inequities of health and generate new ones. As climate change impacts are regionally specific, there is pressing need to investigate the population groups in New Zealand at greatest risk of these inequitable outcomes. The present article discusses by what environmental mechanisms, and through what medical sequelae, climate change is expected to inequitably affect the health of these key populations. The groups discussed here include socioeconomically deprived individuals, Māori, Pacific peoples, children and the elderly, and agricultural workers. Greater clarity surrounding specific local population vulnerabilities to the impacts of climate change will allow for the development of targeted initiatives that prevent, mitigate, and foster adaptation to these threats.

Background
Climate change will reshape health care as we know it. Globally, the World Health Organisation conservatively estimates an additional 250,000 deaths yearly due to climate change between 2030 and 2050.1 Though poised to affect all livelihoods across the coming decades, not everyone will be equally impacted.2 Through to mid-century, the United Nations International Panel for Climate Change (IPCC) reports that impacts are expected to primarily affect those already suffering health inequities, who will suffer rising inequity as a result.3 Accurately detailing these impacts requires locally-driven, contextual approaches.4 The present article aggregates some key future threats to health equity in New Zealand as a foundation for targeted action.

From blue fluorescing pillars in front of me leaped shining Tokelau, covered in glimmering solar panels and lush foliage. This was Te Taiao, the latest offering from the Wellington national museum Te Papa. Yet, these photos evoked unease. Palm trees poked their heads above the tops of water-stained concrete walls. The sign before me: “Facing climate change… float and hope?”.4 I walked away, passing two children fighting over a lever that draws a house in a tsunami.

We are presently transforming our climate through human greenhouse gas (GHG) emissions, which include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases.5 The greatest contributor to warming from emissions to date is CO₂, and as of 2017 we had produced 2,200 ± 320 gigatonnes (Gt) of it since pre-industrial times.5 The United Nations’ Paris Agreement (Accord de Paris) is currently ratified by 185 countries including New Zealand.6 It recognises “the need for an effective and progressive response to the urgent threat of climate change,” and thus commits parties to “holding the increase in global average temperature to well below 2 °C above pre-industrial levels, and pursuing… 1.5 °C”.6 The absolute total carbon budget remaining, should we be likely to meet these goals, was estimated in 2018 as merely another 570 GtCO₂ for 2 °C, or 420 GtCO₂ for 1.5 °C.1 Yearly emissions are currently 42 ± 3 GtCO₂, leaving under ten years to change course and avoid 1.5 °C of warming.6 Current international commitments by world governments lead to approximately 3.3 °C of warming by 2100, and without these a rise of 41 °C to 4.8 °C.7 In 2018, we reached 1.0 °C.8

Climate change evokes many global outcomes, but amongst the most salient is sea level rise (SLR). Although SLR occurs across hundreds of years and with a significant lag-time following emissions of GHG, it will continue rising beyond 2100, even within the 1.5 °C target.3 This will reshape future coastlines and force mass human displacement internationally.5 New Zealand’s SLR is at 0.22 m since 1916.6 Should warming reach 2.0 °C by 2100, local areas modelled to ultimately fall below sea level include South Dunedin, Napier, and Blenheim.7 At 4.0 °C by 2100, this expands to include the Auckland airport, Lower Hutt, Gisborne, and large parts of Tauranga, Invercargill, Christchurch, Tokelau, and Rarotonga.8 Overseas, this would be expected to submerge Florida, Shanghai, and roughly half of London, amongst others.9 Without the maintained integrity of Antarctic and Greenland ice sheets, SLR is expected to climb many further metres.10 These ice sheets are thought to destabilise between 1.5 °C and 2 °C of warming.5

Other global impacts of climate change are numerous and heavily region-dependent. These impacts include ocean acidification, reduced food security, more frequent droughts and floods, loss of air quality, and spread of disease.3 Impacts are discussed below as relevant to specific populations inequitably at risk.3

Before I could leave Te Taiao, my eye caught a map stylised as a weather forecast. “Climate change at your place.” I leaned in, searching for my home in Kāpiti. “More rain and floods,” it said. Float and hope?

New Zealand is already experiencing changes to its climate, giving rise to evolving threats to local equity of health.10 The ClimateEx model identifies areas of greatest predicted climatic change, estimated by expected temperature and precipitation shifts.11 Regions modelled to experience the most change include those within Northland, Bay of Plenty, Taïråwhiti, and Waikato District Health Boards (DHBs).12–15 This model does not, however, incorporate some other important regional impacts such as deglaciation.10

Groups at risk of inequity
Populations at risk of inequitable impacts from climate change overlap with populations already facing health inequities.11–15 Immediate steps taken now to support these groups with prevention, mitigation, and adaptation strategies has the power to reduce these inequities in...
the future.16 Synergistically, steps to reduce pre-existing inequity in New Zealand also decrease the future impacts of climate change.3 Some of the groups facing inequity of health as a result of their specific pressures are discussed here.

1. SOCIOECONOMICALLY-DEPRIVED INDIVIDUALS
Socioeconomic deprivation is correlated with increased all-cause mortality in New Zealand across all age groups.17 These existing health inequities are expected to worsen due to increasing financial pressures from climate change, embedding people further into poverty. The World Bank cites climate change as a major driver of international poverty, expected to impoverish 100 million people over the next ten years.18

Climate change exerts disproportionate financial pressures on those who are socioeconomically deprived, due to both a reduced capacity to prepare against economic loss, and greater damage from these losses when they occur.18 Extreme weather and natural disaster-triggered economic ‘shocks’ are expected to become more frequent.18 For those who have less access to insurance, greater reliance on consistent employment wages and financial aid, and fewer financial assets for recovery or relocation out of devastated areas following disasters, these shocks become life-changing.3 The subsequent mental health toll may be more severe; victims of the February 2011 Christchurch earthquake in low socioeconomic suburbs were found to suffer higher rates of depression and anxiety when compared to those in medium and high socioeconomic suburbs.20

Food security is expected to fall due to shifting precipitation patterns and ocean life migration driving up food prices.5 Because of the greater proportion of their income that is spent on food, those who are socioeconomically deprived will be disproportionately affected.3 This financial burden is recurrent, making escaping poverty more difficult for deprived individuals.19 This may subsequently increase the risk of undernutrition amongst the most impoverished and their susceptibility to illness.19

Furthermore, areas predicted to be exposed to the largest climatic changes are currently already disproportionately impoverished.16–18 In the Bay of Plenty and Waikato DHBs, the most deprived citizens are ‘over-represented’, whereas in Northland and Tairāwhiti the proportions in the quintile of most deprivation are ‘very high’.12–15 These residents therefore face the double threat of vulnerability to extreme weather events from existing inequality, and a forecast of greater weather variability relative to other areas.11 This may intensify damage from these events, such as increased disaster-related trauma and greater psychosocial harm.16

2. MĀORI
Coastal erosion, sea level rise, and flooding threaten cultural connections to whenua (land), rohe (territory), and sites of intergenerational cultural importance to Māori, such as marae and urupā (burial grounds).31 Increasingly researched as a uniquely impactful psychiatric stressor, the dysphoria experienced from witnessing environmental change to a place that one connects to has been termed ‘solastalgia’.22 Solastalgia may affect Māori who experience loss of land that is tied strongly to their beliefs of origin and identity.22 Consumption of kai-moana (seafood) may also be undermined as a result of emerging and increasing rates of foodborne illness associated with warming and acidifying oceans, such as ciguatera fish poisoning and Vibrio gastroenteritis.3,4,21 These cultural impacts threaten both hīnengaro (mental health) and wairua (spirituality) aspects of hauora Māori (Māori wellbeing).23 Māori are over-represented across all measures of socioeconomic deprivation in New Zealand, and will therefore be inequitably affected by the aforementioned impacts on the socioeconomically deprived.24

Northern areas of New Zealand predicted to experience greater climatic variance are also disproportionately inhabited by Māori.19–21 Due to the changes in precipitation and temperatures, these areas are at greater risk of the establishment of new disease vectors such as Aedes aegypti.5,22 Diseases with raised concern of possible outbreak in New Zealand include Zika, dengue fever, malaria, Japanese encephalitis, Ross River fever, various tick-borne illnesses, and human myiasis (parasitic flies), amongst others.8 Combined with the increased vulnerability of these areas due to socioeconomic deprivation, northern Māori communities may risk inequitable harm, should such a disease produce an epidemic.12–15,21

Existing health inequities are expected to worsen through climate change.1 Māori currently have inequitably high mortality rates due to respiratory and cardiovascular disease, including asthma, chronic obstructive pulmonary disease, and ischaemic heart disease.21 Climate change is expected to increase the severity and prevalence of these diseases by increasing allergen counts and reducing air quality.14 Pollen production is predicted to increase many times over and airborne particulate matter may be generated through fire outbreaks and dust formed in droughts.9

3. PACIFIC PEOPLES
Pacific peoples in New Zealand originate from a diverse background of Pacific nations, as well as from the greater New Zealand realm including Tokelau, Niue, and the Cook Islands.26 These are a heterogeneous peoples, and will both respond to and be affected by climate change in varying ways.

International climate change forums have been criticised for effectively condemning small island territories such as Tokelau to the fate of eventual, unavoidable evacuation to escape flooding and overwhelming SLR.27 The striking injustice of this fate is that these islands contribute almost nothing to overall global carbon emissions, and yet the people face the ultimate loss of their homelands, which will precipitate both tangible harms and damage to intangible cultural identity, beliefs, and practices.31 Evacuation is not welcomed by many Pacific peoples, as it sacrifices their cultural heritage, normalises their irreparable losses, and strips them of agency and dignity.27,28 However, migration from low-lying islands will become necessary for survival for some Pacific peoples should countries fail to uphold the Paris Agreement; some may be migrating for this reason already.29 Forced migration will have large impacts on psychosocial wellbeing, and may separate families between islands.29 Like for Māori, Pacific peoples whose homes are lost around them are also likely to be heavily affected by solastalgia.22

For those living on small island nations, rising ocean acidity and temperatures trigger new migration patterns of fish and threaten traditional food security.29 This in turn increases dependence on imported, energy-dense, obesogenic foods.29 Pacific peoples are further at increased risk of seafood toxicity from previously mentioned diseases such as Vibrio gastroenteritis and ciguatera, which may further encourage the reliance on imported foodstuffs.29

Pacific peoples in New Zealand receive lower average incomes compared to New Zealand Europeans, and will be at increased risk of the inequitable outcomes linked to socioeconomic deprivation discussed prior.28 They also face increased risk of present non-communicable disease inequities being further exacerbated, as faced by Māori.19

4. CHILDREN AND THE ELDERLY
Children are dependent upon caretakers for normal childhood growth and development, and require stability to maintain school attendance and develop cognitively.21 This creates vulnerability to sudden lifestyle upheavals, or health and socioeconomic shocks to families in the wake of disasters.21 Forced migration and coastal retreat disrupts children’s academic progress, and may create long-term psychological trauma.24 Due to their reliance on caregivers for safety and wellbeing, children are particularly vulnerable if separated from families through extreme weather disasters, or if harm befalls family and guardians.31 Children are also at risk of undernutrition and resulting developmental delay due to socioeconomic shock.31 Infants may face suboptimal breastfeeding if their mothers are stressed or harmed.32

Children in New Zealand have amongst the highest rates of asthma in the world, which is expected to be exacerbated, as described
prior, through air quality and pollen count changes.\textsuperscript{33} The World Health Organisation additionally estimates a small increase in yearly diarrhoeal disease mortality amongst children in Australasia.\textsuperscript{9} Should tick-borne or mosquito-borne illnesses such as Lyme disease and malaria reach New Zealand, children are likely to be most affected.\textsuperscript{11}

Amongst the elderly, cognitive impairment and anxiety may be worsened during disasters.\textsuperscript{14} This may impair communication for effective response and result in additional morbidity.\textsuperscript{14} The elderly risk inequitable health outcomes through exacerbation of existing cardiovascular and respiratory illnesses in similar ways to those described above.\textsuperscript{9} Although New Zealand faces less heat wave risk than many other countries, the elderly are amongst the most vulnerable to heat stroke, and by 2 °C of warming the number of heat-related deaths amongst those over 65 is predicted to rise from 14 to 51 in Auckland and Christchurch.\textsuperscript{11} Similar rises can be expected in other northern areas.\textsuperscript{9}

5. AGRICULTURAL WORKERS

Individuals relying on agriculture and farming for their livelihood are at risk of financial threat from the changing climate.\textsuperscript{26} Precipitation changes will alter the frequencies of heavy rainfall and severe droughts, which will demand advance management to maintain crop yields through dry periods.\textsuperscript{24} Pestilence of crops may also increase.\textsuperscript{25}

New Zealand’s GHG emissions come primarily from the agricultural industry.\textsuperscript{15} Policies such as the restriction of land deforestation for agriculture, or scaling back dairy farming, may be necessary to reach New Zealand’s Paris Agreement commitments and reduce overall climate change impacts.\textsuperscript{10} However, agricultural workers would be disproportionately impacted by such policies.\textsuperscript{10}

These collective pressures may create socioeconomic shocks and result in the downstream health consequences previously discussed for the socioeconomically deprived if workers are heavily impacted. Despite these risks, with sufficient mitigation and adaptation planning, temperature, precipitation, and CO$_2$ concentration shifts have the potential to expedite plant growth for limited periods, increasing crop yields and resisting downturn.\textsuperscript{15}

Should crops fail, or if mitigation and adaptation are unsuccessful in buffering future impacts, agricultural workers are at increased risk of psychiatric illnesses such as suicidality, anxiety, and depression.\textsuperscript{36,37} Further specific health impacts on those who work outside include higher rates of asthma through means described above, and greater risk of heat stroke.\textsuperscript{8}

6. OTHER GROUPS AT RISK

It is not possible here to exhaustively detail all those at risk from climate change; there is also evidence that women, the disabled, and recent migrants may face specific and inequitable impacts.\textsuperscript{16,38,39} More research is needed to apply this to local contexts.

The way forward

Widespread ecological shifts will continue to inequitably precipitate numerous medical sequelae, which must be well characterised and targeted through a range of interventions fostering prevention, mitigation, and adaptation.

Despite the scope of these challenges, a large range of mitigating and adaptive initiatives have been discussed and analysed by the IPCC for their effectiveness.\textsuperscript{9} A review of these is beyond the present article’s scope, but solutions include international collaboration, regional and national government coordination, and community mobilisation.\textsuperscript{2} New Zealanders have further intangible assets to draw upon, including guidance through Māori concepts such as kaitakitanga (reciprocal stewardship) and our culture of historical grassroots mobilisation in the face of adversity.\textsuperscript{40,41}

With such a range of potential impacts from climate change, there is no shortage of ways to respond. As current and future health professionals, we hold a responsibility to understand these challenges and how they will affect our patients. Every New Zealander is capable of contributing to initiatives that resist the impacts of climate change. The key message is that these responses are urgent if we are to avoid an inequitable future for our country; there is under a decade before we breach the carbon budget expected to hold us to 1.5 °C of warming.\textsuperscript{1} There is no time left to debate the need for action.

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Conflicts of Interest

The author is a member of OraTaiao: The New Zealand Climate and Health Council.

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New Zealand rural health is in crisis. Many rural general practices are closing their doors or relying heavily on short-term locums. There was public outrage when general practices in Northland closed their books, but this is what more of rural New Zealand will face if swift and ongoing action is not taken. In the Royal New Zealand College of General Practitioners 2018 survey, 39% of rural respondents worked in a practice with an unfilled vacancy, and 36% of rural general practitioners intended to retire in one to five years. In addition, it showed that rural general practitioners are more likely to do on-call and unpaid work than their urban counterparts. This shouldn’t come as a surprise; the results of this survey are consistent with the 2005 Rural Workforce Report, which highlighted the pending retirement wave within the rural health professions. This report was the stimulus for the University of Auckland and the University of Otago to adopt targeted rural admissions schemes. Rural health workforce literature shows that the results of this survey are consistent with the 2005 Rural Workforce Report, which highlighted the pending retirement wave within the rural health professions. This report was the stimulus for the University of Auckland and the University of Otago to adopt targeted rural admissions schemes. Rural health workforce literature shows that to produce graduates who work permanently in rural settings, a comprehensive rural pipeline is best. This involves recruiting rural students and offering them early and ongoing rural training, with ample job opportunities at the end of this training.

Currently, New Zealand has targeted rural admissions schemes in some tertiary institutes, improving undergraduate and postgraduate rural training and of course ample job opportunity. Despite this, projections for the rural health workforce, and therefore the health of rural communities, remain bleak. This suggests current measures are insufficient. The purpose of this feature article is to discuss a pre-tertiary intervention to increase the numbers of rural people training in health, supporting our struggling rural admissions programmes.

Rural targeted admissions schemes at both the University of Otago and Auckland have consistently failed to reach quota. Applying the University of Auckland definition of “Regional-rural” to population data of New Zealand 15–19 year olds, shows that 38% of this group are “rural”. Protocol developed by the University of Otago suggests 26% of the same group are “rural”. Despite making up a large proportion of the population, rural students, as per each University’s definition, make up only 10–15% of the applicants to medical school. Furthermore, in the last five years, the rural seats have never been filled in Pharmacy, Dentistry, or Optometry at either University. There is nationwide inequity in tertiary education attainment between rural- and urban-origin people, and the training health workforce is clearly not immune to this.

Numerous reasons have been postulated by rural health students and rural secondary school teachers as to why rural students do not choose to study health. Lack of role-modeling, poorer career advising, lower educational attainment, and lack of knowledge about health careers are posed frequently at rural conferences. Community groups and rural health clubs have been fighting these barriers to encourage rural rangatahi into health for many years now. Examples include the New Zealand Institute of Rural Health’s university exposure trips and programmes for students to shadow doctors in the Hawkes Bay and Northland. Rural health clubs across New Zealand have been active in this space for many years and interestingly, rural health clubs are also one of the few evidence-based protective factors for future rural workforce participation in New Zealand.

The rural health clubs in New Zealand are Matagouri (Otago), Country Scrubs (Christchurch), Wellington Boot (Wellington), and Grassroots (Auckland). Collectively, they have nearly 2000 members. In 2017, Grassroots, the largest of these clubs with over 1000 members, ran a very successful “Grow Your Own” Rural Schools Visits programme (RSV) for over 1000 North Island rangatahi. RSV under Grassroots involved a group of health trainees from the University of Auckland schools of Medicine, Pharmacy, Optometry, and Nursing volunteering to road trip around a region of the upper North Island. The tertiary students deliver the RSV, which aim to promote health and health careers to rural rangatahi (specifically years nine and ten students).

In terms of health promotion, the trips serve to improve the understanding of the human body, health, and simple preventative measures to some of the most prevalent, preventable diseases in society. These diseases include smoking related illnesses and diabetes. There are typically several stations in which students engage in practical activities. Previous stations have included cardiopulmonary resuscitation (CPR), in which students practice their CPR on a dummy. There are also stations on reflexes, in which students practice eliciting reflexes and learn about FAST recognition of stroke, and a diabetes station teaching how to lower their risk. There is a chronic obstructive pulmonary disease (COPD) related station, where students run around a field and then breathe through a straw simulating the breathlessness experienced by COPD patients, which is then linked to smoking avoidance. Finally, a blood pressure and auscultation station, in which students auscultate the heart, bowel, or lungs and practice taking blood pressure. The purpose of the stations is to engage students in practical and interesting activities that trigger inquiry and enjoyment.

Despite being an important opportunity to engage rangatahi in health promotion, the primary aim of RSV is health careers promotion. The trips serve to encourage the study of science so more students are better placed to study health, they foster interest in health, and they provide relatable role models to students. In doing so, RSV attempts to reduce the effect of some of the aforementioned barriers to rural students engaging in tertiary health training. Some rural schools have reported this is the only significant face-to-face interaction students will get with any tertiary institute. Given this, the wide inequities in rural tertiary education attainment seem unsurprising. There are entire rural schools of intelligent and capable children who have never been filled in Pharmacy, Dentistry, or Optometry at either University. There is nationwide inequity in tertiary education attainment between rural- and urban-origin people, and the training health workforce is clearly not immune to this.

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FEATURES ARTICLE

Tackling rural health inequities from the ground up

Benjamin Alsop-ten Hove
The success Grassroots had in 2017 was largely due to the generous financial and administrative support of Kai Ora Hauora, a Māori careers health promotion group. Other supporters included the New Zealand Rural General Practice Network (NZRGPN), Northland District Health Board (DHB) and Northland Rotary. Unfortunately, Kai Ora Hauora were unable to support the initiative in 2018. Facing a significant loss in momentum, the Grassroots rural health club ran a tight ship financially throughout 2018 and gained permission to reallocate the funds required to deliver the trips from other budget lines. Eventually, with Grassroots as the primary funding partner, the 2018 RSV programme was delivered to 1400 students in Northland, Tairāwhiti, and the Bay of Plenty. The programme was again supported by the NZRGPN, Northland DHB, and Northland Rotary.

2018 also saw the genesis of Students of Rural Health Aotearoa (SoRHA), the national interdisciplinary rural health students’ association. SoRHA is directly associated with the NZRGPN whose board includes rural general practitioners, rural academics, and members from Rural Nurses New Zealand and the Rural Hospital Network. Rural health students are also represented. The NZRGPN are an eminent voice representing rural health practitioners to government and senior health governance groups. Through co-design and co-implementation, SoRHA aims to implement a national rural health careers programme focussed on supporting rural and rurally interested students in the pre-tertiary, early tertiary, and clinical tertiary phases. The first step in this programme is the bringing RSV nationwide.

The NZRGPN are deeply committed to supporting the current and future rural health workforce: it is one of their primary aims. As a result of the success of RSV 2017 and 2018, and the genesis of SoRHA, the NZRGPN are currently funding the RSV initiative, as well as providing administrative support. This has allowed significant upscaling of RSV. With the financial and administrative support of NZRGPN and the coordination of students nationwide, RSV in 2019 have already had great success. In June 2019, over 60 rural schools from South of Dunedin to Taupō, and in between, were involved in the RSV programme. As a result, over 2000 students experienced RSV. The delivery of this iteration of RSV involved volunteers from all four of the rural health clubs, under the umbrella of SoRHA. This September, RSV will happen across Taranaki with another ten schools predicted to partake. Finally, in November, a national drive from Southland through the nation to Northland is expected to reach over 3000 students. It is highly likely that RSV will be delivered to well over 5000 rangatahi this year. This is a fantastic achievement for the future rural health workforce. It would not have been possible without the considerable support from the NZRGPN.

The administrative support of the NZRGPN also means that organisational learning is possible. Instead of a revolving group of students delivering the intervention, there is central coordination. Contacts, itineraries, and planning skills will be maintained. The shift from student volunteers has freed up time for the activities involved with the genesis of SoRHA and other rural promotion work. The increase in efficiency created by the organisation will mean that over the coming years, SoRHA should be able to roll out their other planned activities. These include more career-focused visits for senior rural high school students, peer-mentoring for early tertiary students, and mentoring for clinical students by recently graduated practitioners.

There is an enormous requirement for further research in this area. This author recommends workforce monitoring to track the rural health workforce through the entire pipeline. This would assist the measurement of the efficacy of interventions at each phase including RSV and the interdisciplinary rural health hubs announced by Minister Dr David Clark.11 Before this significant undertaking, scouting projects into rural admissions data across institutes with targeted rural admissions schemes would likely highlight the need for rural scheme support. In addition, determination of what rural health clubs provide that makes them protective for rural workforce progression would highlight areas for clubs to focus and lobby for further funding.

The significant momentum in the support for rural rangatahi and rurally inclined tertiary students is the result of tireless work by many rural champions over the years, including past leaders within rural health clubs, the NZRGPN, and rural or supportive academics. The rural health workforce faces significant ongoing challenges in the years ahead. Streamlining the rural workforce pipeline from pre-tertiary, through tertiary and post-graduate phases will help. This author believes that the collaboration of rural health clubs, rural health representative groups (NZRGPN, Rural Nurses New Zealand), health workforce directorate, and tertiary institutes will be essential to enabling this process. Rural champions together with institutional support can tackle the crisis.

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acting chair of SoRHA. He was also Vice-President External of the New Zealand Medical Students Association (NZMSA), and served on the organising committee for NZMSA Conference 2019: Empower. In his spare time (what spare time) he loves to tramp, travel and socialise with his mates.

Acknowledgements

Decades of leadership from rural health champions

Conflicts of Interest

New Zealand Rural General Practice Network Board Member (2018–Present)
Past President, Grassroots Rural Health Club
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Introduction

New Zealand (NZ) Asians have a long history in Aotearoa dating back to the 19th century, with especially pronounced increases in migration over the past few decades. This ethnic category is an exceptionally broad term, which incorporates individuals with ancestry covering an immense geographical and cultural range, with completely different languages, migration narratives, and experiences of discrimination.

There can be a naive assumption that a diverse workforce composition is all that is necessary for ensuring the needs of ethnic and cultural groups are accounted for. Without making a concerted effort to examine the statistics and the communities they aim to represent, we cannot assume our healthcare policies are actually effective for those populations. Asians are often excluded from further analysis, and there is a complete lack of Asian health teaching within the medical curriculums. Too often, policies barely reference Asians apart from tokenistic references to their demographic presence and above-average headline statistics.

Owing to the breadth of this topic, the focus will be on Aotearoa-specific research. For the purposes of this article, all references to ethnicity are within the NZ context. With all the benefits conferred by a multicultural country, equally the responsibilities inherent in diversity must be addressed openly.

Demographics

From the 2013 Census, 11.8% of the population identified as having Asian ancestry, the second highest ethnic minority group. It also had the second highest rate of growth from 2006–2013, especially pronounced in Auckland, Wellington, and Waikato. The Auckland region has 23% of its population identifying as having Asian ancestry, which totals 65% of the Asian population in Aotearoa. The fastest growing Asian subgroups were those identifying with Indian, Chinese, Korean, or Filipino ancestry; these were also the most populous subgroups.

Beyond the headlines

Headline statistics categorise Asians as generally healthy. This allows complacency to assert itself through an absence of Asian health in mainstream discourse. However, there are several factors to consider when interpreting these statistics.

Firstly, broadly presenting Asian populations as healthy can mask drastic disparities in health outcomes within and between subgroups. There is some attempt to stratify Asians into three groups: Chinese, Indian (or South Asian), and Other Asian. However, most of the time, disaggregation is not performed. This is significant because different subgroups can have divergent health outcomes that are hidden when they are averaged out into one single classification. Even with the subgroups, the Other Asian category is especially problematic. It comprises people of ancestry from countries with completely different cultures, languages, and challenges into one amorphous group. Just as before, disparities within communities of this category can be hidden by the averaging effect of being included with other groups.

Secondly, Asians have the lowest rates of enrolment with primary healthcare providers and the utilisation of those services. This is explored later on, but those who do interact with primary healthcare services may be healthier than the general Asian population. Hence, primary healthcare providers may see less of the health issues that significantly affect Asian communities, reducing the impetus for advocacy.

Thirdly, immigrants admitted more recently may have different profiles from those who migrated earlier on. This stems both from Aotearoa’s shifting desire of immigrant skills reflected in its immigration policies, and the dramatic changes in Asia across this time.

Time spent in Aotearoa also lends varying levels of acculturation and socialisation depending on their time and place in society. Hence, it is important to keep these demographic shifts in mind when interpreting research. Studies that applied to a particular Asian subgroup 20 years ago may be less relevant to the subgroup today, as they could have very different backgrounds despite having the same aggregated ethnicity.

Furthermore, owing to the rapid migration of the past decades, most Asians are first-generation immigrants, although there is an increasingly large block of NZ-born Asians. As immigrants must pass various immigration protocols for both work skills and health, they will naturally contribute to higher rates of labour-force participation, employment, educational attainment, and better health statistics. This is often referred to as the “healthy immigrant effect”. Continuously adding their relatively healthy statistics into the group helps conceal issues that may otherwise be developing.

Healthy immigrant effect

In Aotearoa, there is evidence to suggest the “healthy immigrant effect” begins to dissipate the longer people remain in a country. Comparing between Asian subgroups, NZ-born Indians had the highest all-cause and cardiovascular (CVS) mortality rates. The groups examined included overseas-born and NZ-born Indians, Chinese, and Other Asians. Conversely, Chinese and Other Asians were more likely to have higher cancer mortality rates. From separate census data, Chinese and Other Asians of both genders had higher rates of smoking than South Asians, which may contribute to this relationship.

Between NZ-born and overseas-born Asians, the latter had lower all-cause mortality across all three ethnic subgroups. There was also a dose-response relationship between all-cause mortality and duration of residence. Another study by similar authors examined the effects of socioeconomic and neighbourhood deprivation, with educational attainment. Asians without post-school qualifications or who lived in deprived neighbourhoods had higher mortality rates than those who did not experience these circumstances.

Factors that contribute to the dissipation of the “healthy immigrant effect” include time spent in Aotearoa, differing education and employment, and health outcomes. However, it is equally important to address the reasons why these statistics are not in place. Factors such as economic incentive, work and immigration policies, and the health system play a significant role in these statistics. This is further reflected in the high rates of time spent in the workforce and education.

Conclusion

In summary, disparities within Asian subgroups exist, however, they are not accounted for in mainstream discourse. Factors such as education, employment, health, and immigration policies need to be considered when examining health outcomes in Asian groups. Continuous research to identify and address these disparities is essential to improving health outcomes in Aotearoa.

Rex Liao
effect” may include acculturation, levels of physical activity, lack of health service usage, discrimination, and loss of support systems.3,30

Uptake of services
As mentioned, Asians have the lowest usage of primary healthcare providers.3,35 Underreporting of healthcare needs, under-usage of disability, residential care, chronic pain services, oral health care, mental healthcare, screening, and public services have also been observed in Asian populations.3,30-34 It cannot be assumed that a lack of usage reflects a lack of need. For example, in comparison to European patients, Asian patients attending chronic pain services reported significantly more pain, social impairment, and reduced quality of life.3,34 However, as a result of cultural and systemic barriers they were less willing to reveal their distress to others, let alone seek professional help.34

A shorter length of residence was also strongly associated with less frequent access to healthcare practitioners.3 From the 2013 Census, 12% of the Asian population stated they did not have conversational skills in English.3 Unable to comfortably navigate casual conversation, it is likely that even more are uncomfortable articulating already difficult to explain health issues to health professionals.

Asians also report the highest rates of discrimination out of all ethnicities.5,36 Adolescent Asians reported high levels of discrimination and bullying, compounded with the fact that they were also less likely to seek assistance.5,38 Another factor that serves to suppress these issues from public purview is the pervasive “model minority” stereotype.17 Typcascast and assumed to be successful in narrowly defined roles, stepping out of the shadow of societal stereotyping can be both confronting and wearisome. Interviews with Asian youth elaborated issues with bullying, compounded with the fact that they were also less likely to report loneliness, but were the third most likely to live alone compared to other ethnicities.17 Social isolation is a known risk factor for suicide, but from coronial records the vast majority of elderly Asian suicides occurred while they still resided with their families.27 It should be noted that this was from a sample size of 15 people.32 In this study, themes of declining physical health and the stresses of acculturation were highlighted.5,39 Stigma, barriers with accessing health services, and culture-specific manifestations of mental distress also make identification of warning signs very challenging.23,32

The symptoms of mental distress differ across cultures and generations. Coupled with barriers to access, it is important to keep these factors in mind when interpreting headline statistics. They likely mask a much darker truth. Considering the heterogeneous makeup of the Asian population, it is important that health professionals, particularly if they have personal expertise, are encouraged through recruitment and funding to effectively contend with these issues.

Diet, exercise and related comorbidities
Indians have the highest rates of diabetes compared to other ethnicities and were more likely than Europeans to suffer from the associated adverse outcomes as well.13 South Asians overall have very high rates of diabetes, CVS diseases, cholesterol, and hypertension.13 However, they were also less likely to receive a “Green Prescription” through primary healthcare.3

Asians were also the least likely group to be consuming the recommended amount of fruits and vegetables, which did not change between 2002 and 2013. The 2017 Health and Independence Report reiterated this trend among both Asian children and adults.34 This effect was exacerbated for those living in socioeconomically deprived regions.14 This indicates a strong need for health promotion, and is an issue primary health providers should keep in mind when screening for relevant conditions.

Physical activity levels were also very low.1 This corresponds with another report showing Asians had significantly lower levels of participation in sporting events, clubs, competitions, and gym memberships.15 Among children, Asian girls were the least likely among all
ethnecies and genders to use an active mode of transportation to school.24 Considering the link between exercise and recreation with both physical and mental health, this indicates a significant need to develop strategies to increase community participation in active recreation. Two potential barriers included insufficient time and the associated cost of the activities.35 Only limited measures have been taken to directly address this issue. Individual organisations, such as Harbour Sport, have made attempts to construct strategies targeted towards Asian communities, which may be useful frameworks to model from.37

While obesity rates were lowest among Asians, headline statistics can again be deeply misleading. Evidence suggests that Asians have similar levels of negative health outcomes at lower body mass indexes (BMI) compared with other ethnicities.38,39 Ministry of Health guidelines provide a non-specific recommendation that health professionals should lower management thresholds, particularly if there are additional risk factors such as the presence of abdominal obesity.40 It also suggests a lower threshold for abdominal obesity as measured by waist circumference.41 The World Health Organisation provides a few suggestions, with BMIs of > 23 kg/m² and > 27.5 kg/m² to represent low risk and high risk warning points for Asian populations.38

Obstacles ahead

In 2002, Dr Ruth D’Souza noted that Asian health research was lacking, despite their population growth and long history in Aotearoa.42 Agnes Wong in 2015 presents a similar story, despite the population growing 33% from 2006–2013.2,42 In 2017, the New Zealand Health Research Strategy (NZHRS) 2017–2027, in its only mention of the Asian population, echoed this problem, but even this was referred from Wong’s report.47 It made no suggestions. In 2018, a background paper used to advise the NZHRS notes several of the problems discussed earlier in this article about solely looking at headline statistics.48 Yet again, no suggestions were made beyond a paltry statement about achieving equity.

There will be difficulty in overcoming the inertia that naturally resists the pace of change. Despite the size of the population, Asians are grossly under-represented in leadership positions in politics and public service. In 2018, only 4% of those at the managerial level of State Services identified with an Asian ancestry.49 Members of Parliament of Asian descent were at a meagre 4% in 2014, the most underrepresented ethnic group, which was a reduction compared to 2008.50 These trends of scarce Asian leadership are a common pattern that exists across many fields. With few positions of influence, normalising and vindicating the needs of those communities will be uniquely challenging.

Limitations

The superficial examination of the issues discussed in this article does not give them their due importance. Little reference has been made to Asian subgroups with smaller populations as well. Also, many dimensions of Asian health have not been examined at all in this article. These include refugees, gender experiences, problem gambling, domestic violence, religion, LGBTQIA+ experiences, people with disabilities, and many more.

A path forwards

Overall, students and health professionals of Asian heritage are well-represented compared to the general population.49,50 However, a diverse workforce does not mean inclusive practices are a given, nor properly represented in leadership. Policy plans consisting solely of generic bywords such as “diversity”, “inclusion”, and “equity” with the assumption that non-specific guidelines are enough to serve an incredibly heterogeneous Asian population are not only insufficient, but negligent. Regional strategies such as the ones produced by Auckland, Manukau, Waitakere, and Canterbury District Health Boards enable interventions tailored to the diverse populations they serve.53–54

At a higher level, an overlying national Asian health framework should be developed to guide the creation of regional programmes and their specific initiatives. This involves ensuring Asian representation at the highest levels of policy design, along with additional funding of Asian health providers. Topic-specific strategies, such as for specific medical conditions, should account for Asian populations to a meaningful extent. It also means the development of Asian health strategies, along with specific teaching of Asian health and cultures within the medical curriculums. Currently, its absence remains an egregious oversight.

At a ground level, health students should not be tentative about asking for resources and funding specific to Asian health promotion. Giving the issues of the second-largest minority group in Aotearoa their due is hardly an audacious request. Health professionals and students have powerful platforms to lead on these matters. This is especially pertinent for health issues affecting Asian subgroups with smaller populations, which may otherwise remain overlooked. Considering how long these issues have been neglected, coupled with the continued growth of these populations, there is a growing urgency to act more boldly.

It is important to properly represent the interests of the communities we serve, particularly as many of them are disenfranchised and will be left by the wayside unless we actively engage with them. Open communication, co-design of solutions, and empowering community leadership will enable us to best use our knowledge and skills to meet the unique needs of each community.52,53 Health promotion is better discussed in Agnes Wong’s 2015 publication.54 Some understanding of the fundamental differences between Asian cultures and Western society, such as a tendency towards more collectivist perspectives, is also helpful.55

At a minimum, disaggregation of the Asian ethnic category should be the default expectation. If relevant, further stratification of Asians may be needed. For example, health outcomes may vary between overseas-born Asians and NZ-born Asians, or even by length of residence. This may not be feasible in the short-term or in every circumstance, but would go a long way in ensuring our policies are animated by the right statistics.

Furthermore, concerted efforts need to be made to address both the low engagement of Asian populations with health services and the significant levels of discrimination they bear. The severity of these issues despite the composition of the healthcare workforce is emblematic of entrenched problems within the health system.

Intertwined with all this is a need to work with, support, and learn from the leadership and health promotion activities of other groups. Collaboration between Māori, Asian, Pacific, and others is essential to rewriting the insidious stereotypes imposed on our communities, and strengthening the bonds between us with new cultural narratives. Enabling inequities to exist for one group implicitly justifies and keeps open the possibility for the discrimination of others.

It is time to step away from the shadow of exclusion. It will not be enough to simply exert our skills in cultural competence at an individual level, nor in working on the edges of an exclusionary healthcare apparatus. There are many challenges to overcome, especially as there is so much to be built without clear guides to follow. Meeting that charge is a weighty responsibility, yet one we must honour for the generations to come.

References

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About the author

Rex has completed his fifth year of medicine at the University of Otago, and is currently undertaking a BMedSc(Hons) with the Public Health department in Wellington. He is concerned about the overlooked health disparities that affect Asian New Zealanders. He hopes to continue advocating for systemic solutions to health inequities while pursuing a future in General Practice.

Conflicts of Interest

Rex is a student reviewer for the NZMSJ. This article has gone through a double-blinded peer review process applied to all articles submitted to the NZMSJ, and has been accepted after achieving the standards required for publication. The author has no other conflict of interest.

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NZMSA year in review 2019

Fraser Jeffery

It has been a steady year of progress for the New Zealand Medical Students’ Association (NZMSA) in 2019. Last year, our long advocacy campaign with the Government to raise the student loan lifetime limit reached a satisfying conclusion. This result demonstrated the importance of a strong students’ association to carry advocacy across multiple teams and “generations” of medical students. With that issue off our agenda for the first time in eight years, we have had the opportunity to outline some new priorities this year. Alongside our regular advocacy work in the areas of wellbeing, workforce, and education, we have had a strong interest in the role that gender plays in our medical education and the make-up of NZMSA’s leadership. In this review, I will give you a taste of what we have been working on.

Gender in medicine

A group of Wellington medical students conducted a survey in 2017 that demonstrated the inequity in learning opportunities and experiences across gender groups.1 The report highlighted the difference in experiences that students may have during medical school, depending on their gender. It showed how female medical students felt their gender would have a significant impact on their future career path, which was disheartening to see so early on in their careers. This is an issue that our organisation cannot ignore, particularly as the report found that medical student culture was also part of the problem. This aligned with qualitative research from the senior doctors’ union, the Association of Salaried Medical Specialists (ASMS), which examined how gender affected the careers of some female doctors in ways that they regretted.2

The experiences of different genders in medicine will come as no surprise to many of our students. It is an issue that pervades all levels of our medical culture. Unfortunately, we are not going to change this overnight, but we must raise awareness and have a conversation about how we change the culture. To begin this, the NZMSA ran a Gender in Medicine focus month during May, featuring thought-provoking excerpts from the report and a series of podcasts with NZMSA executive members discussing the issue with experts in this field. Work in this area will continue in years to come.

Wellbeing

The wellbeing and mental health of medical students has been a priority for the NZMSA for many years and will continue to be for the foreseeable future. The issue has been well documented and awareness is relatively high. Last year we sought to understand some of the drivers of medical student wellbeing and how we experience university support services through the NZMSA Wellbeing Survey. The report of the survey outlined several recommendations for the NZMSA to act on and focus our work on. We have made great progress in advocating for clear and reasonable university policies around the expectations of clinical working hours for our students (now in place for Otago University Trainee Interns), improving support for medical-student parents, and getting our ASMS-NZMSA Mentoring Programme off the ground. We hope these small steps will help make a tangible difference to the wellbeing of medical students. More work needs to be done and will be an ongoing focus for the NZMSA.

NZMSA’s leadership diversity

The makeup of NZMSA’s leadership is important to enable us to effectively represent and advocate for the breadth of our community. The consequence of good representation was demonstrated this year through one of our executive members, Bryony Harrison, being a parent and leading advocacy work in improving support for fellow parents in medical school. Without Bryony being a part of our team, we may well have never looked at this area. However, over the last few years, we have recognised that our team has not always had good representation of our medical student cohort. This is important as there is likely a flow-on effect whereby leaders in medical school become leaders later in their careers. There is good evidence to suggest that the higher up the medical hierarchy, the more male dominated it is.3 We need to ensure that our organisation is not contributing to that problem. In alignment with our Gender in Medicine focus month, this year we have been encouraging an environment in our elections where all members can contribute and serve. The NZMSA has also been looking closely at how we can collaborate better with the many other groups that represent medical students.

Workforce — unions, contracts, ACE and the Ministry of Health

The workforce portfolio has been one of the busiest this year. Firstly, we now have two junior doctor unions following the formation of the Specialty Trainees of New Zealand (StoNZ) in addition to the New Zealand Resident Doctors Association (NZRDA). Both have their own contracts in the form of a Multi-Employer Collective Agreement (MECA). We saw the NZMSA as playing an important role in giving clear advice to Trainee Interns about what options they have. We did this through developing a resource following discussions with both unions and the District Health Boards (DHBs). The NZMSA does not hold a view on either of the unions or the contracts they have negotiated. Ultimately, Trainee Interns will need to make a decision that suits their circumstances and we hope that we have helped to keep them informed through this process. We will continue to keep in touch with all the stakeholders to ensure that Trainee Interns are well informed.

Before Trainee Interns receive their first job offer, they first apply through the Advanced Choice of Employment (ACE) system, which matches them with one of 20 hospital placements across the country.
The NZMSA has been involved in the Reference Group that governs ACE since its inception and we continue to play an active role. Unfortunately, this year the ACE Roadshow, an event designed to allow medical students to meet with DHB staff and Resident Medical Officers, was greatly limited with no DHB attendance due to concurrent strike action. We are working diligently behind the scenes to try and ensure improvements are made for next year, as we know how important this event is for medical students in making an informed choice for where they want to work.

The NZMSA has also been keeping an eye on the wider health workforce plans at the Ministry of Health. This part of the Ministry has gone through a significant restructure recently and we will seek to ensure that the voice of the future workforce is heard wherever possible. Promising progress is being made in the area of our rural health workforce as well. It is hoped that the Rural Health Training Hubs proposal will help improve rural opportunities to eventually help alleviate an impending crisis in the rural doctor workforce.

And a quick mention of the rest...

This year we ran a number of successful events including Beyond the Med School Gates, Clinical Leadership Forum, Medical Education Summit and Sports Exchange. Our flagship event, the NZMSA Conference, was held in Auckland and was a fantastic weekend of speakers and social events. Many thanks must go to Cain Anderson and his team for putting on such a superb event. Next year’s conference is to be held in Christchurch for the first time since 2014. Sports Exchange is returning to Dunedin as well.

We have made a written submission to the Select Committee on the Zero Carbon Bill, advocating for strong action on climate change. We will also be making an oral submission to the Committee later this year. Our own carbon consumption will also be the subject of a new internal policy later this year that aims to increase the carbon offsetting of NZMSA-associated travel.

One area that we would like to improve in is the evidence base that informs our advocacy work. Traditionally, we have used informal surveys to better understand the issues affecting medical students. However, these surveys have seldom been methodologically sound. In order to improve this process, the NZMSA is collaborating on a summer studentship project at the University of Auckland as a pilot with a hope to be involved in more projects in the future. We have also signed a Memorandum of Understanding with the New Zealand Medical Student Journal to improve the collaboration between our two organisations.

As always, if there is something you think the NZMSA should be advocating on, please do not hesitate to get in touch with one of the team. Your first port of call should be your local NZMSA representative but any of us would love to hear from you.

It has been an absolute pleasure being the NZMSA President for 2019. Being involved with many fantastic teams of medical students over a number of years has been a great privilege. Thank you to all those who have contributed to the NZMSA this year. I believe the work we have done will make a difference to medical students now and into the future. I look forward to seeing what Ellie Baxter (NZMSA President 2020) and her team achieves next year.

References:


About the author

Fraser is a Trainee Intern based at the University of Otago’s Christchurch campus and has been the NZMSA President for 2019. He has been involved with the Association across the last four years, first as a member of the Dunedin conference team in 2016 and then as a Vice President and Christchurch Representative. Outside of medicine he enjoys tramping, photography, football and running. Next year he will be a PGY1 House Officer at Christchurch Hospital.

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Pacific Island Health Professional Students Association (PIHPSA): Who we are and the heart behind what we do

Fuatino Heath

It is an honour to be included in the NZMSJ; this is a reflection of the progression of and within Medicine that we are fortunate enough to be right in the middle of. I am proud to be part of an association that promotes the growth and evolution of Pacific Health in Aotearoa. We recognise the many setbacks incorporated in our Health system as well as the socioeconomic factors that goes against minority groups. We chose to uplift members by encouraging unity among our Pacific peers to evoke change. This feature article is just a small reflection of who PIHPSA is and what we stand for. Ultimately, our heart is for Our People. We are a relatively young association of 13 years, with much to learn. But our strength continues to build and our future holds great promise. Watch this space!

Taloha ni and warm Pacific greetings,
Ko toku ingoa ko Fuatino Heath. Ko oku matua ko Peter ma Nau- mati. Ko toku tamana e hau mai Samoa. Ko toku matua e hau mai Tokelau. Ko au e aoga faka fomai i te University i Otago, kua katao nei te tolu tauhaga. Ko au hiahia i taku galuega. Ko au ko he teine Pahefika! My name is Fuatino Heath and I am blessed to be the daughter of Peter and Mardi Heath. I am a proud Samoan-Kiwi from dad’s side and a proud Tokelauan from mum’s side. I am currently in my third year of Medicine at the University of Otago after recently completing my Bachelor of Science, majoring in Anatomy. I love what I do and most importantly, I am proud to be a Pacific woman!

From its origins, the Pacific Islands Health Professional Student Association (PIHPSA) was founded on the initiative to bring young Pacific students together, to create a space where we, as students, could strengthen our Pacific identity, connect with our peers, and find solutions to better Pacific Health. With time, PIHPSA’s focus has evolved to include academic, cultural, and social support to our Pacific and non-Pacific students who are passionate about the fruition of Pacific Health.

Networking is a key focus in PIHPSA with the purpose of preparing all students in their transition from a health professional programme, into the workforce. We endeavour to shed light on what is ahead through the recruitment of alumni, experienced staff, and health professionals as mentors. We also hold monthly dinners that promote the union of students in a relaxed environment. Here, speakers can breathe life into our members and provide insight into what to expect once leaving the sheltered precincts that are often associated with university. Because the real world can be somewhat daunting, the concept of growing up is often met with resistance or fear. In PIHPSA, we do our best to make sense of this. We recognise that the majority of Pacific students come to university with a purpose and mindset to serve their people. While we do aim to prepare students for what is to come, we also focus on the present time. PIHPSA celebrates all aspects of an individual’s identity, reinforcing the path students have chosen for their future, while serving as an anchor to remind students of why they have chosen this journey. This enriches the student experience and sets up a platform for leadership among our community.

In May, we held our annual PIHPSA Fono, a weekend of team bonding, fellowship, and seminars. The programme finished with a church service as a reflection and reminder of why we had all gathered. This year’s theme was We the Voyagers; the Pacific Journey. We wanted to it to highlight some of the issues we face as young Pacific people in the professional setting and to learn how to embrace the power that our own individuality brings. Many students felt that they could resonate with the discussion of what it feels like to have to walk between two worlds, a common reality for Pacific people in a westernised clinical context. Society rarely challenges the fact that the teaching and curriculum, set by centuries of tradition, may not be what is really best for all of our patients. As Pasifika students navigating through our education and professional journey, we can testify to this. We can understand how the gaps in medical literature, teaching and practicality act as barriers that hinder the provision of the best service to our people. We recognise the debilitating health inequities.

Sunday service at Fono 2019
We are no strangers to the shortcomings in our health system. By uniting Pacific students across all health professional courses, we encourage solidarity among the next line of leaders for Pacific Health. By providing a safe space for our students at PIHPSA, we spark conversations on what must be done in order to change the system that fails to cater to our people. Until the system can account for the gaps in our teaching curriculums, who can better serve our people than our people? Or at least, those with a heart for our people.

Keynote address by Falefatu Enari at Fono 2019

Among many highlights of the Fono, it was noted that the students were very moved by the alumni panel, where several of our alumni shared their own triumphs, struggles, and testimonies in their professional course. They were raw and explained their experiences in a way that resonated with our students. For example, the expectations from internal and external sources, balancing relationships while studying, life with kids in a professional setting, and much more. The keynote speaker for our Fono, Falefatu Enari, Principal/Tamā of Pacific Advancement Senior School (PASS), shared how we as young Pacific people must always remember the shoulders on which we stand. Our ancestors paved the way for all of us generations ago, in search of a better life for their mokopuna. But what he stressed was that our uniqueness as Pacific people is what sets us apart in the health sector, and we must embrace it as our strength. We are a people of hospitality, compassion, resilience, beauty, and grace. The art of navigation is in our genetic makeup. As we weave between two worlds, we acquire many skills that others are not fortunate enough to come across.

From its founding President Prerna Sehgal, to its current, the heart of PIHPSA remains the same. It is to equip young Pacific Health Professionals to be the next generation of Pacific leaders. We will shape our future communities and take the baton from our predecessors to continue its momentum. As our ancestors navigated foreign waters in the hopes of finding a new life, PIHPSA strives to guide students as they voyage through their own uncharted waters. We do this as a team, in the hope that a united health force will provide better service to our people.

Our founders saw a need for Pacific people within the university to reconnect, so that we may be inwardly strong to be outwardly effective. They started a ripple effect. As we continue to grow, there is summation of ripples that stir with each new year, only fortifying the passion of what PIHPSA stands for. We all have a responsibility to look after our people. However, it is equally crucial that the student body understands that we have been blessed with the opportunity to do so. The waves that such a movement will cause, will one day help to ameliorate health inequities and disparities that Pacific and Māori face in Aotearoa. Our impact will be made at full force.

“Our Pacific. Our People. Our Health”.
It is an honour to be your President for 2019.
Fakafetai lahi lele,
Fuatino Heath

About the author

Fuatino Talia Heath is the PIHPSA President 2019. University of Otago & The Otago School of Medicine, 2017: Bachelor of Science, Majoring in Anatomy, 2018–2022: Bachelor of Medicine and Bachelor of Surgery

Acknowledgements

I would love to acknowledge the PIHPSA Executive of 2019. I am proud to be part of your team.

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PIHPSA Executive 2019, missing our Wellington & Christchurch Representatives.
Equity at the table: 
Te Oranga and the push for Māori representation

Chayce Glass

In recent years there has been a growing push to ensure the Māori medical student voice is well represented. Te Oranga has been at the forefront of this movement, working with its members and other medical student organisations to ensure this is achieved. Our challenge now is to ensure that those who occupy these seats we have worked to create at the table have a voice that is heard and respected.

Te Oranga, the peak national organisation for Māori medical students, has been in existence since 1998. It exists primarily to promote and protect the collective interests of Māori who study medicine throughout Aotearoa. To achieve this, Te Oranga is run by an elected executive made up of representatives from all reaches of the country. These representatives build policy, advocate on issues, and organise events that promote whakawhanaungatanga between Māori medical students. In essence, Te Oranga achieves a by Māori, for Māori approach aimed at protecting and enhancing a unique group of doctors-in-training who are part of the solution to reducing health inequities faced by Māori throughout Aotearoa.

To achieve this, Te Oranga has sought to ensure it is well represented throughout the medical student space to provide a voice for Māori medical students wherever appropriate. An important part of this has been in the development of quality relationships with other medical student associations.

The best example of this is the relationship between Te Oranga and the New Zealand Medical Students’ Association (NZMSA). In 2012, both parties worked to build the Māngai NZMSA role. A shared executive member, the Māngai NZMSA helps to maintain effective communication between both parties and ensure a voice is present for Māori medical students at the decision-making table of the NZMSA. The Māngai NZMSA has full voting rights, and Te Oranga is also represented throughout the medical student space to provide a voice for Māori medical students at the decision-making table of the NZMSA.

While no formal evaluation of the above partnership has been conducted to date, this author believes that it is a shining example within medical associations of how Māori and non-Māori organisations can work together to enhance the interests of Māori, and promote the collective interests of the students they serve.

Regionally, Te Oranga has supported Māori representation within medical students’ associations. The Wellington Health Professional Students Association has a Te Oranga representative appointed to its council. Dunedin-based Māori medical students now elect a Te Ao Māori representative to the Otago University Medical Students Association. Auckland students have their own Māngai Māori within the ranks of the executive of the Auckland University Medical Students Association. Very soon our whānau in Christchurch will have a voice within the Christchurch Medical Students Association (CMSA) with the creation of the Te Whirika role and the inclusion of the Te Oranga Ōtautahi Tuakana, both within the CMSA executive.

These are great examples of medical students creating a space for Māori peers to engage in the activities and administration of medical student organisations throughout the country. It is overwhelmingly positive that medical students are doing this of our own volition and becoming a leading example of ensuring our leadership roles are representative of all students.

With Māori medical students now being given a space at the table of many organisations, our next challenge must be to ensure that this space is also given a voice. It is one thing for us to have “the Māori representative” and another to allow that representative to be heard. For this, we must again turn back to equity and shift our focus from not only diversity, but inclusion as well.

This author offers the following advice:

› Māori never ceded sovereignty and should therefore always be allowed to have their own voice and self-determination.
› Acknowledge that Māori students fulfilling these roles are there to represent Māori medical students and not the whole of Te Ao Māori (the Māori world).
› Understand that Māori people and culture are not homogenous and vary between iwi, hapū, whānau and individuals.
› The Māori representative is not there to satisfy the need for “culture” within an organisation, but to promote the opinions and views of Māori medical students.
› One Māori at the table is not enough and effective change will require more Māori voices.
› Finding ways to support kaupapa Māori within our space as medical students will guide us in how to do so once we are doctors and can make change within the health system.
› Māori should not be isolated to just Māori-specific roles, but encouraged to be leaders wherever they wish.
› Work together, debate each other, and understand differences.
Te Oranga will be there to lead and support this new challenge we face. However, one organisation cannot do this alone. Medical students all need to share this challenge and actively explore ways in which we can rise to this. This will help us create medical schools that are more inclusive of the Māori world. We can hope this will help us work towards effective change that will reduce Māori health inequities once we are graduated and take our steps into the world of practising doctors.

About the author

Chayce Glass is the Tumuaki of Te Oranga and a Trainee Intern at University of Otago, Wellington. He has been the Tumuaki of Te Oranga since December 2016, driving Te Oranga to become much more recognised across the national stage. His passion is in supporting Māori medical students in achieving excellence within academic, cultural and leadership fields, and pushing the medical schools to ensure they are an excellent environment for things Māori. Chayce will graduate at the end of this year, officially ending his role as Tumuaki after 3 years of service.

Acknowledgements

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Health equity, tobacco smoking and biobanking

Emma Espiner

Introduction
The editorial team of the New Zealand Medical Student Journal (NZMSJ) welcomes a new regular series on Māori health, launched to coincide with our special issue on health equity. This series will feature case studies of kaupapa Māori health initiatives, interviews with experts, and analysis of research and emerging issues in health equity for Māori.

Our first installment features a discussion about the Health Quality and Safety Commission report into Māori health equity, a case study of a successful kaupapa Māori smoking cessation programme in South Auckland, and an update from the Royal Australasian College of Surgeons Annual Scientific Congress on indigenous attitudes to biobanking and genomics research and the implications for Māori health research.

Health equity for Māori: a life course perspective from the Health Quality and Safety Commission

In July 2019, the Health Quality and Safety Commission (HQSC) released “A window on the quality of Aotearoa New Zealand’s health care 2019 – a view on Māori health equity” (Window 2019). The report quantifies the effects of institutional racism and the ongoing impacts of colonisation on Māori health, and lays a challenge to the sector about the imperative for change. The HQSC Window series is an annual report authored by the Commission, but this is the first time that equity has been the primary focus and the first time that the report has been approached as a collaborative piece of work in line with Te Tiriti o Waitangi principles.

The report’s findings support those from other recent analyses of the health system’s responsiveness to Māori. These include the report on stage one of the health services and outcomes kaupapa inquiry by the Waitangi Tribunal, the mental health and addictions review, and countless studies from Māori health experts over the last 150 years. The findings from each of these reports coalesce around a single point: the health system does not, and has never, provided equity for Māori.

Window 2019 interrogates the health status of Māori by comparing data for Māori and non-Māori across five stages of the life course — maternity and birth, childhood, youth, adulthood, and old age. A life course epidemiological approach is used to reflect the compounded impact of experiences across the life course and inter-generationally. Life course frameworks allow policy-makers and researchers to identify interventions that will have the greatest impact to individuals and populations by addressing the causes, rather than the consequences, of ill-health. This approach also allows researchers to attempt to account for the ongoing impact of colonisation. The report’s authors note, “with each generation, this has resulted in accumulating disadvantage for Māori.” They assert the value of this approach for turning around these accumulated disadvantages by demonstrating that interventions early in the life course can positively alter negative trajectories for whānau. The data are interpreted through three questions: what are the health inequities between Māori and non-Māori?; why are there health inequities between Māori and non-Māori?; and how do we resolve health inequities between Māori and non-Māori, and advance Māori health?

The report emphasises a system view of health equity issues, encouraging readers to think about the way systems create and influence health equity and inequity. HQSC Chair Professor Alan Merry says in the introduction to the report, “we need to change the conversation from one where the system is ‘broken’ to understanding that each system delivers precisely the outcome that it was intended to deliver — the systems themselves need to be changed before they can deliver different outcomes.”

Window 2019 shows that there is inequity in access and inequity in service quality, and even when Māori access services, the quality of that service delivery is poorer than the same service accessed by non-Māori. Evidence that quantifies the barriers to access for Māori includes lower access to maternity services, oral health services, and specialist appointments when compared with non-Māori. Older Māori are less likely to receive specialist equipment for disability needs and there is a mismatch between sexual health services testing rates for chlamydia among Māori relative to non-Māori, despite a higher prevalence of chlamydia infection among Māori. Health inequity for Māori is sometimes attributed to socioeconomic status alone and the authors of this report demonstrate that, even when poverty is accounted for, Māori still experience barriers to access compared with non-Māori. This shows that Māori experience barriers beyond those that can be explained by poverty alone.

The measures of service quality found to be inequitable by the report’s authors include sub-optimal asthma control, inappropriate medication prescribing among older Māori, longer surgery wait times following hip fractures, and discrepancies in gout and diabetes management leading to worse outcomes. Māori also consistently report fewer positive experiences communicating with health practitioners compared to non-Māori.

The report shows that interventions to improve the health system have historically offered uneven gains for Māori compared with non-Māori, and have on some occasions worsened inequity, even when equity is identified as a key outcome from the outset. Examples given by the authors include the reduction in equity in childhood immunisation rates since 2014, with Māori rates being nearly ten percentage points lower than non-Māori. They also interrogate apparent improvements in equity, which are not supported by evidence. For example, the improvement in human papillomavirus vaccination rates among Māori compared to non-Māori appears to have been driven...
by worsening of vaccination rates for non-Māori, instead of an improvement for Māori. Institutional racism is named specifically by the report’s authors and the need to identify and remove racism from organisations is concluded to be fundamental to the resolution of inequitable health outcomes for Māori. Institutional racism is given a specific definition in the report — it is said to include “inappropriate action and/or inaction in response to need. It also includes monocultural perspectives and worldviews embedded in health, education, legal and other systems.”

One of the external reviewers of the report, Associate Professor (Faculty of Medical and Health Sciences, the University of Auckland) Elana Taipakapi Curtis (Ngāti Rongomai, Ngāti Pikiao, Te Arawa), BHB, MBChB, MPH, NZCPhHM), told the author that the timing is important, even if the message is not a surprise to Māori health experts (phone interview, 2019 Aug 2). “The report’s findings reiterate the evidence we already have, showing the depth and breadth of inequities and putting a name to institutional racism as a causal factor for inequity in Māori health.”

The solutions put forward by the report’s authors include the need for a sustained and multi-level approach, underpinned by Te Tiriti o Waitangi. Tā Mason Durie (Rangitāne, Ngāti Kauwhata, Ngāti Raukawa) writing in the report’s conclusion states, “Te Tiriti o Waitangi should be recognised as a 21st century prescription for Māori health.”

The author spoke to Māori health consultant Gabrielle Baker, (LLB, Faculty of Medical and Health Sciences, the University of Auckland) (phone interview, 2019 Aug 2). “The report’s findings reiterate the evidence we already have, showing the depth and breadth of inequities and putting a name to institutional racism as a causal factor for inequity in Māori health.”

For medical students and future health professionals, this report offers an important insight into the legacy of colonisation on the health of Māori. We will all encounter whānau Māori among our patients, irrespective of our field of practice. This report shows us that an awareness of the issues is not enough and that our approach to Māori health must account for and eradicate institutional racism in order to provide equitable care for Māori. This includes adopting life course approaches, which address causes, rather than consequences, of ill health, and finding ways to support equity and leaders in equity within our field.

References


Te ara tika hau ora wāhine: addressing the needs of young Māori women who smoke

Smoking rates have been steadily decreasing since a landmark report in 2010 to the Māori Affairs Committee into the role of the tobacco industry in New Zealand. The Committee recommended that the government commit to a smoke-free nation by 2025. The comprehensive response in 2011 to the report’s findings includes excise tax increases and regulations around the sale and supply of tobacco products. Nationwide smoking cessation services were also established in support of the goal to reduce smoking rates across all population groups in New Zealand to less than 5% by 2025. In 2008, 21% of adults were current smokers and by 2018 this had reduced to 14.7%.

Despite the 2010 report firmly establishing the disproportionate burden of tobacco-related morbidity and mortality on wāhina Māori, the decrease in overall smoking rates and consequent improvement in health outcomes has not been equitably distributed, with young Māori women continuing to suffer the most from the consequences of tobacco use. The prevalence of smoking among Māori adults has decreased from 42% in 2006/2007 to 33% in 2017/2018. However, the prevalence of smoking among Māori women in 2017/2018 was the highest out of any population group at 37%. This was a decline from 42%, but still demonstrates a significant inequity with Māori women being 3.4 times more likely to be current smokers than non-Māori.

Ministry of Health data demonstrated that the strategies to reduce tobacco use were not reaching everyone equally. The differential benefit received by non-Māori in response to these interventions compared with Māori had the effect of entrenching tobacco-related harm among Māori women. Advice was then sought by the Ministry from four kaupapa Māori services with a track record of work in Māori communities. One of those services was Turuki Health Care. Turuki is a charitable trust that was initially established by a group of Māori midwives in the mid-90s to provide health services to wāhine and tamariki Māori in South Auckland. It has since expanded and has GP clinics, oral and mental health services, pharmacists, public health contracts, and wāhau ora services.

Hikukui Winiata-Kelly (Ngāti Ranuini), the project lead for the Te Ara Tika pilot smoking cessation programme at Turuki, was interviewed by the author. She had previously recruited women for smoking cessation programmes used in the local District Health Board catchment area, and she said she was not surprised that young Māori women were not presenting to these programmes. Winiata-Kelly told the author (2019 Jul 31) that “often it wasn’t properly explained to the women what they were getting themselves into. Someone just told them that they were getting a referral for smoking cessation because they told someone at some point in the health system that they smoked”.

Winiata-Kelly said that the narrowness of the contract requirements meant she was not able to support the women in the way she felt they needed, saying “I had so many frustrations, I found that house after house I went to they were struggling with so many other things and I had to just talk to them about quitting smoking. They expect us to go in and ask these questions and there’s no food on the table and no power on in the house and there’s nothing we can do about that.”

Te Ara Tika brought together a group of nine Māori women over a 12-week period. The women were incentivised to attend the first meeting with a voucher, with no expectation that they would have to commit to the programme and reassurance that their relationship with Turuki and its staff would not be impacted if they decided not to continue.

Winiata-Kelly said the 12-week timeframe, compared to a standard six-week group behavioural therapy programme, was critical to the success of Te Ara Tika. “Normally in the Pākehā world they go for six weeks which doesn’t allow for relationship building or anything so I purposely built that in to our programme — time to get to know each other and get on top of the issues they were experiencing in their lives. We didn’t even talk about smoking for the first four weeks.” This is an instructive example of how a key concept in te ao Māori — whakawhanaungatanga, or relationship-building — is incorporated into the smoking cessation programme and how it improves the efficacy of the intervention for Māori.

Each woman was dealing with complex issues. Common experiences included domestic violence, drug and alcohol use, lone parenting, joblessness, interactions with the justice system, and poverty. The
programme evaluators found that the women needed space and support to come to terms with those issues before a conversation about smoking cessation could be initiated.

The initial programme structure allowed for the women to meet once a week, but the group asked to meet twice a week — two full days every week for three months. There was no funding for the programme, so the women met and did free or low cost activities — walking, free fitness classes, and meeting for picnics. The space was always child-friendly and supportive of the women’s parenting commitments. Each of the women had quit smoking by the end of the 12 weeks.

Winiata-Kelly says that the main intervention that the women used to quit was vaping. This was not a smoking cessation intervention that was introduced by the programme facilitators. It was an incidental occurrence arising from the use of vape products by one of the facilitators who went outside to use it and attracted the attention of the women who were all still smoking cigarettes at that point. By the end of the programme each of the women had quit smoking using vaping and some remain smoke-free a year later.

The author interviewed the CEO of Turuki, Te Puea Winiata (Ngāti Ranginui, 2019 Jul 31). She told us that “Te Ara Tika tells the story of the complexity of Māori women’s lives and the effort and empathy that is required to get through the door to be able to support these women to achieve hauora”. Winiata took exception to the commonly used “hard to reach” label given to Māori. Her response was, “we know that their isolation is not of their own making — it is the isolation of poverty, of a punitive criminal justice system and isolation from whakapapa and from te ao Māori”.

She concluded her interview by saying “these women are not hiding from us, they are doing what they need to survive. We must understand that before we can start to think about entering their lives to help them to quit smoking or whatever our externally defined goals are. Programmes for Māori women need to acknowledge all of who they are first and foremost and the challenges they face, in a mana-enhancing way. Looking at wellbeing and quitting smoking comes next.”

Future health professionals have much to learn from this programme’s success. It showcases a co-design approach, which is increasingly utilised by policy-makers. This is an approach that doesn’t pre-determine the goals of a programme like Te Ara Tika, but which allows the participants to take part in shaping their own intervention. In this instance, it was rigorously evaluated and the findings provide valuable insights into successes and failures that can inform similar programmes in future. Philosophically, it also demonstrates to aspiring researchers and clinicians the practical application of tikanga and how this has the potential to support better outcomes for Māori.

### References


### Indigenous attitudes towards biobanking and genomics research: reflections from the Royal Australasian College of Surgeons Annual Scientific Congress 2019

Equity was a key focus of the Royal Australasian College of Surgeons (RACS) 88th Annual Scientific Congress, with an indigenous health programme convened by Associate Professor Jonathan Koea (Ngāti Mutunga, Ngāti Tama) and keynote speeches by Professor Papaarangi Reid (Te Rarawa), from Te Kupenga Hauora Māorí at the University of Auckland, who was also awarded an honorary fellowship of the College.

During the Indigenous trainee research session, Dr Jaclyn Aramo-ana-Arlidge (Waikato-Tainui) presented on barriers to Indigenous peoples’ participation in biobanking and genomic research, sharing insights from a systematic review published in the Journal of Global Oncology. The review contributes the first formal analysis of the global research into Indigenous peoples’ views on the barriers they face to participation in biobanking and genomic research, an increasingly important area for research into the causes of disease and the identification of opportunities for disease prevention.

The history of Indigenous and non-European peoples’ experiences with medical research is often bleak, with instructive stories found in the experiences of Henrietta Lacks; the Tuskegee syphilis study participants; the Havasupai Indians; and — closer to home — the “Māori warrior gene” scandal. This paper is important because it centralises Indigenous peoples’ experiences and highlights the gaps in the literature where Indigenous voices have been neglected and excluded. It is also timely as it provides context for the consideration of issues in emerging medical science such as targeted gene therapies.

The review grouped Indigenous peoples’ attitudes towards biobanking and genomic research into four themes. These are: 1) concepts of interconnectedness between land, ancestors, culture and bodily substances; 2) that tissue and blood can provide important information about a person — both in biomedical and cultural terms; 3) notions of ownership and guardianship are key in Indigenous peoples’ consideration of participation in research; and 4) that the benefit of the researchers and the research team.

The authors assert that barriers to Indigenous peoples’ participation in biobanking and genomic research risk entrenched inequities. Globally, non-indigenous population groups are more likely to participate in this research than Indigenous peoples. This means that advances in disease prevention and treatment are more likely to benefit non-indigenous communities.

The author interviewed Associate Professor (Surgery, the University of Auckland) Jonathan Koea (BHB, MBCChB, MPhil, MD, FRACS, FACS. Phone interview, 2019 Aug 1), a co-author on the paper. He said that the systematic review shows that the burden of proof of the value of biobanking and genomic research for Indigenous peoples lies with researchers themselves. “The challenge for researchers is to develop relationships and culturally safe approaches which will enable them to demonstrate that improvements in collective wellbeing can be achieved through participation in biobanking and genomic research. If they don’t, they will contribute to worsening health equity for Indigenous communities.”

There are frameworks and guidelines available for researchers seeking to work in a culturally safe way with Māori, Te Mana Raraunga, the Māori Data Sovereignty Network, has developed a set of principles to guide researchers, policy writers, and governance bodies in protecting the rights of Māori. The six principles encompass authority, relationships, obligations, collective benefit, reciprocity, and guardianship. Te Mata Ira: guidelines for genomic research with Māori offers more specific advice for researchers in the field of genomics, and a researcher from Ngāti Porou Hauora — one of the five iwi who contributed to the development of these guidelines — says that culturally safe practice is the expected norm for her team.

Dr Jennie Harré Hindmarsh (BA(Hons), MSc, PhD), is the Research Coordinator for the Ngāti Porou Hauora Te Rangawairua o
Paratene Ngata Research Centre. She told the author that they are continually having to stay at the cutting edge of the emerging trends in order to uphold and protect the interests and integrity of their people (phone interview, 2019 Aug 3). She said, “since Ngāti Porou Hauora’s inception, many researchers want to work with us because of the important data they see available in our majority-Māori population. However, we are committed first and foremost to doing what’s right and best for whānau, hapū and iwi so we have been vigilant about developing clear and, what some perceive as quite strict, terms of engagement with research teams as a basis for developing trustworthy relationships which are integral to best research practice.”

Dr Harré Hindmarsh says this includes: additional agreements and clauses about re-approval and re-consent when researchers want to use gifted data that has been collected for one purpose to use for a different purpose than previously understood; about data use, storage and access protocols, ownership and guardianship; and about co-dissemination strategies, which first and foremost involve discussing with, and returning back to, participants and the community the iterative and final research findings.

This systematic review and the supporting literature should be instructive for future medical professionals and researchers. Not only do they provide essential historical context for Indigenous peoples’ interactions with the scientific community, they also offer guidance for culturally safe approaches to research with Indigenous communities. Specialist colleges, funding bodies, and policy-makers are increasing their requirements for applicants to demonstrate cultural safety as a bare minimum. The pace of this transformation suggests it will be impossible for the medical practitioners of the future to succeed without engaging with Indigenous communities in a different way to what was acceptable in the past.

References


About the author

Emma Espiner (Ngāti Tukorehe, Ngāti Porou) is a fifth year medical student at the School of Medicine, University of Auckland. She works part-time as the National Communications Lead for Hāpai Te Hauora, a Māori Public Health NGO and is the host of the upcoming RNZ podcast series on Māori health equity ‘Getting Better.’

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Conflicts of interest

Emma is a student reviewer for the NZMSJ. This article has gone through a double-blinded peer review process applied to all articles submitted to the NZMSJ, and has been accepted after achieving the standards required for publication. The author has no other conflict of interest to declare.

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Debbie Hughes is a General Practitioner (GP) and Medical Director of Anamata CAFE (Clinics and Advice for Everyone), a youth one-stop shop health clinic that services the wider Taupō region. Established over 30 years ago, Anamata CAFE is a charitable trust employing 13 staff who are passionate about ensuring young people have easy access to health care providers and sexual health education, empowering them to make healthy and safe choices and transition successfully into adulthood.

The authors sat down to chat with Debbie and her colleague Sue van Mierlo, a Nurse Practitioner, to discuss their career journey, what Anamata CAFE does, and the reality of youth and sexual health services in New Zealand (NZ).

This interview has been edited for clarity and conciseness with Dr Debbie Hughes’ approval.

Hi Debbie, could you please tell me a bit about your journey from medical school and GP training to where you are now.

**Debbie:** I am currently a Fellow of the Royal New Zealand College of General Practitioners. My primary degree was from the Welsh National School of Medicine in Cardiff. I also have a Diploma in Child Health and a Postgraduate Certificate in Health Science (Youth Health). I originally intended on training to become a paediatrician in the United Kingdom (UK), but becoming a female consultant in the 1980s was challenging; I wanted a life and career so I decided to switch to general practice. I knew there would be many paediatric patients in general practice and it would give me more flexibility in my career pathway. I completed my GP training, and at the time the health service in the UK was in a state of flux. I had been working long hours and the time was right for a change of scenery. Serendipity brought me to NZ. I took a GP locum job in Taupō, which was meant to be a nine-month working holiday. I had just finished renovating a house in Cardiff and I was planning on working as a GP in the Welsh border country. However, I then met my husband who is a Kiwi and 30 years on, here I am.

I moved here permanently in 1990. We lived in Auckland for ten years, where I worked initially as a GP locum and in Family Planning clinics, which is something I had always enjoyed. I then had a part share in a small practice in Papatoe, while starting a family. We moved back to Taupō with our two daughters in the year 2000, and I started working in general practice here. One of the GPs I was working with was also working with CAFE. It was known as CAFE for Youth Health at that time. He was heading towards retirement and tapped me on the shoulder and asked me to get involved, so I worked alongside him for a couple of years. When he left in 2003, he handed over the reins to me. I still work as a GP in town, splitting my time between the practice and CAFE.

What is Anamata CAFE and how did you become involved?

Debbie: CAFE was started in the late 1980s by a small group of people: the aforementioned doctor, a couple of nurses, and community minded people who wanted a family planning clinic, as the Family Planning Association was not prepared to come to such a small town. It started as a lunchtime clinic once a week, however, over the first few years it had quickly evolved into a more comprehensive family planning service. CAFE then signed a contract with the District Health Board (DHB) as a specialist primary sexual health service. One of my personal projects was developing school health services. Postgraduate study made me realise the importance of being able to offer young people a choice in services and specialist providers. Our main demographic has always been young people, and we became recognised as a “youth one-stop shop” a few years ago. Our point of difference with other youth one-stop shops across the country is that, although the majority of our clients are aged 25 years or under (for which the service is free), we still provide specialist sexual and reproductive health services for people of all ages. The older clients are part of a demographic which may not easily access primary care. Maintaining our ability to see people of all ages is essential in this community, as access to providers such as Family Planning clinics and hospital sexual health services would involve significant travel, particularly from the south end of the lake.

The original meaning of CAFE was “Contraception And Family Education”. We used to have fun times with the old CAFE sign in the window as people would come in wanting coffee! About eight to ten years ago, CAFE underwent a large re-branding project as our original brand no longer reflected who we were, and CAFE became known as “Clinics and Advice For Everyone” – a name our young people helped us come up with.

We’ve come a long way in the last 30 years. We started with seeing a couple of people a week, to now, where we have about 6000 consultations a year. We have a community clinic every day, which is predominantly focused on sexual and reproductive health and staffed by our incredible team of specialist nurses. They are experts in sexual, reproductive, and youth health and work independently under comprehensive standing orders. One of my main roles is overseeing those standing orders, which involves auditing consultations to ensure we are complying with the standing order regulations, as well as making sure the guidelines are up to date. Our nursing team can provide a range of contraceptive options. One of our nurses is trained at inserting contraceptive implants (Jadelle), which has widened access to this important option, especially for our young people. Sometimes we go into the community, including homes, to insert Jadelles. We have a late night clinic, which is especially useful for our young men who may work out in the forest and come back later in the day. We also have school nurses who run clinics several times a week in the high schools in Taupō and Tūrangi, which is a 40 minute drive from Taupō. We’re doing our best to improve access.
There are two other GPs in town who have supported me over the last few years. They’ve taken over the school GP clinics and the procedures clinic. I’m about to hand over my role to Sue, who is a nurse practitioner. She will take over the Clinical Director role as she is able to support the standing orders. I’m now very much working as clinical oversight here. It’s been difficult to find GPs in small communities like ours. CAFE will continue to be a nurse-led service with GP support, but that doesn’t mean we don’t need GPs in youth and sexual health!

Did you face any challenges when establishing Anamata CAFE?
Debbie: In order to keep the clinics running and free for youth, we have had multiple sources of funding. We have contracts with the DHB, a sexual health promotion contract with the Ministry of Health, funding from the local Public Health Officer, and little pots of funding for things like mental health. It’s complicated! We have relied heavily on grant applications as our government contracts do not fund all the services that we provide. We were lucky enough a few years ago to receive money from the Ministry of Social Development around youth development, which has really allowed us to become sustainable for the first time in our long history.

The philosophy of CAFE has always been that clinical services, health promotion, and education work alongside each other. They inform and feed into each other. We used to provide the sexual health education in the schools and through that young people became aware of the services that we provided and would feel comfortable walking into the clinical space. The wider health promotion was done in the community. It’s all about de-mystifying sexual and reproductive health to break down the barriers to access.

In a small community like this, one of the challenges is primary care accepting that this service is not in competition with them. It’s collaborative and is there to support GPs, with the understanding that young people need a range of services. I worked hard to engage with other GPs in the community. Being a GP myself has made that easier and helped make them understand that we aren’t taking business away, and that if we weren’t here there would be even more pressure on their service.

Sue: It’s to do with the complexity of the cases. For example, someone can be coming in with recurrent sexual health problems and after a few sessions you realise there’s a background of gender issues. The traditional 15 minute GP appointment does not allow time to further explore other aspects of a young person’s world. A lot of them are complex.

How do you balance working as both a GP at your practice and as a sexual health doctor?
Debbie: Working as a GP helps bring a wider primary care perspective to this service. This is especially important when interacting with young people who don’t come in “nice tidy pieces”. They come as a “big messy whole” and will present with multiple issues, not just sexual health presentations. Sometimes we may only have one opportunity to establish that engagement and we very much utilise the Home, Education, Eating, Activities, Drugs and Alcohol, Suicide and Depression, Sexuality, and Safety (HEEADSSS) framework. It’s always in the back of our minds and may take several meetings to cover all of those aspects.

But it’s about building that relationship – young people don’t care what you know until they know that you care. I think this is sometimes where the traditional medical model fails young people. It takes time to develop trust and foster a relationship and we have the luxury to have that repeated contact with the client. You may well see a young person several times before the real issue comes to light.

Also, it is good that, as a GP, we can still develop a specialty area.

What would a typical, if there even is one, consultation look like?
Debbie: No such thing! I guess hospital medicine is far more structured, whereas in primary care you are a jack of all trades. I don’t know what’s going to walk through the door. Here, it is usually related to sexual health or contraception, but often there are also mental health issues, substance use, or background domestic violence components. At CAFE we are lucky that we can give people the time they need. It can be a simple five to ten minute consult or we can easily spend an hour talking to a patient. It’s much more flexible.

Sue: As a team, we are all accepting that the person next door may take an hour with their patient and there’s no “why have you taken an hour”. It is what it is.

Debbie: Sometimes with the young people or the demographic we work with – those who are transient or have difficulties accessing health care – this may be the only chance to engage with them. We appreciate that we have the time to do that.

Sue: It’s a safe environment so people can come back.
Debbie: Very non-judgmental.

Is there a combination of those who are transient, one-time clients and people who come back several times?
Debbie: Yes we do have people who come back. I’ve been here for a while and now it’s the next generation coming through! It’s really lovely to have worked with young people, especially those who were challenging for me when they were 14 or 15, who are now coming back in their 20s and they’re competent, well-resourced, functioning members of society and it’s nice having that full circle. Young people come back and say “you made a real difference when life was pretty shit”. It makes all the work worthwhile.

Sue: It’s incredibly rewarding.

That must be incredibly fulfilling. With any job, there’s always the hard days too. What do you find the most difficult?
Sue: The diverse population is really challenging – young people who have come from difficult backgrounds, commonly from situations of substance abuse or domestic violence. There’s a strong feeling of responsibility.

Debbie: It can be challenging discovering many things that aren’t going well. There’s a temptation to try to fix everything – but we can’t. The most important thing is developing the relationship and trust. Obviously making sure there are no immediate threats to their safety is paramount. After that we think — “what is the best way we can support this young person”? We work very much as a team. We share concerns and ideas around who has the best service to provide. It’s a collaborative team approach to the situation, like an in-built multi-disciplinary team. I like to think about it as joining the dots around the person, like a circle of confidentiality. Sometimes the circle needs to widen, not breaking it, but allowing more people in that are there to help. We explain that we will be taking the young person on the journey. They may not like what we’re doing, but we’re taking them with us and they are always at the centre of what we do.

Another challenge is community perceptions. Parents often don’t like the idea that we’re talking to their kids about sex. We work hard to dispel the myths and the stigma. We always encourage an adult significant to the young person to be a part of their journey. We sometimes have irate parents or caregivers coming in, because they found pills in their young person’s bedside table. We take time to explain we aren’t encouraging young people to have sex, but rather we want them to be safe.

Do you see “youth one-stop shops” such as Anamata CAFE being a viable way to reach the youth in other provincial areas of NZ? Are there similar initiatives that you are aware of?
Debbie: There’s no national funding model. Each DHB has their way of funding. Some youth one-stop shops have almost none (from the health sector) and rely on social development or youth development...
What do you believe are the biggest barriers for youth with concerns or issues relating to sexual health to seek medical advice?

Debbie: Cost is still an issue for a lot of people, which is why it’s really important from both a public health and personal health perspective that we continue to provide a free, all-ages sexual health service. Having a range of health services for young people is also important as they are “snackers”. They may go to the GP for a chest infection, but not for a sexual infection. Particularly in a small town, their aunt or family friend could be the receptionist, so confidentiality and embarrassment are other potential barriers. Transport and booking appointments can also be an issue and that’s why the school clinics are so essential.

Do you have any words of advice for how we as future clinicians can help reduce inequity among youth health and improve uptake with local health care providers?

Debbie: Young people are complex — and the current medical model does not allow for issues to be resolved. I feel that the youth one-stop shop model is really beneficial. They can come in, and even though we may not have counsellors or drugs and alcohol services, we will walk alongside that young person and support them in seeking and accessing the services that they need. I see one of my most important roles as being an advocate for young people, particularly those who are marginalised and may have greater vulnerability, such as the LGBTQIA+ community.

Sue: Something as simple as having the confidence to make an appointment via a phone call can be a barrier. We are here to help young people transition into general practice, and saying “let’s make the appointment together and I’ll come with you” facilitates that supportive relationship.

Debbie: It’s about empowering young people to access the services when they need them. We’ve had the Ministry of Health dictate that we should not provide education services in schools as it should be the responsibility of schools and the Ministry of Education. Many teachers don’t like providing sexual health education and young people can tell. They may be able to explain the nuts and bolts, but there can be a lot of discomfort with the tricky stuff — relationships, consent, diversity. We need to have specialist sexual education providers teaching it.

Young people are snackers of health care, yet most of the funding is in general practice. It’s underutilised for the important stuff. Unless we look after the health of our young people, how else can we change the trajectory of health care?
Receiver operating characteristic (ROC) curves summarise graphically the trade-off between sensitivity and specificity for diagnostic tests. We will describe how to interpret these graphs, but first we need to understand how we assess diagnostic test accuracy and why we are interested in these concepts of sensitivity and specificity.

Diagnostic tests diagnose whether a person has a particular disease or not. They vary in how well they perform. We start by considering what we call the gold standard; this tells us whether the person truly has the disease or not. The gold standard may be imperfect (that is a whole other area of research); but is the best test we have. For instance, histopathology might be considered the gold standard test for deciding if a person has cancer or not, or glycated haemoglobin (HbA1c) for testing for diabetes.

The diagnostic test that we want to estimate the accuracy of is compared to the gold standard test. For example, we may have a new (hypothetical) cancer test and we could take 100 people, some who have cancer and some who do not, and we would apply both the new cancer test and the gold standard of histopathology. We can group people into testing positive or negative with the new cancer test, versus which truly have cancer or not based on the gold standard. Table 1 shows the cross classification of people by the new test and gold standard. If the test is positive and they have cancer, this is considered a true positive result. If they test negative and do not have cancer, this is a true negative result. The new test may also give an incorrect result; if the test is positive but they do not have cancer, this is a false positive result and if the test is negative but they do have cancer, this is a false negative result. We can measure how many correct results there are by measuring the percentage correctly classified (the diagonal of the table): 100% x (45 + 40)/100 = 85%.

Table 1: The number of people testing positive or negative by cancer status for a total sample of 100 people undergoing both the new test and gold standard.

<table>
<thead>
<tr>
<th>New test</th>
<th>Gold standard</th>
<th>Cancer</th>
<th>No Cancer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test positive</td>
<td>45</td>
<td>10</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Test negative</td>
<td>5</td>
<td>40</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

There are four measures of interest: sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV). Sensitivity measures the percentage of people who test positive out of all of those who truly have cancer. From Table 1, this is: 100% x 45/50 = 90%. Of all people who have cancer, the test will be positive for 90% of them (and negative for 10%). Specificity measures the percentage of people who test negative out of all of those who do not have cancer. From Table 1, this is: 100% x 40/50 = 80%. Of all people without cancer, 80% will test negative (and 20% will test positive). Sensitivity and specificity do not depend on the prevalence of the disease (in this example the prevalence is 50% as half have cancer and half do not) because they are estimated separately for those with cancer and those without cancer. Once there is a test result, the PPV and NPV are useful measures. The PPV estimates the percentage of people who have the disease out of all those who test positive, and similarly the NPV estimates the percentage of people who do not have the disease out of all those who test negative. For our example, the PPV is: 100% x 45/55 = 81.8% and the NPV is: 100% x 40/45 = 88.9%. The PPV and NPV vary as the prevalence of disease changes, so are less useful as measures of test accuracy. For example, if the test were used in a different population with an increased prevalence, the PPV would increase and the NPV would decrease, but sensitivity and specificity would remain the same.

The example above assumes a binary test, i.e. the new diagnostic test provides a positive or negative result, but many tests have a continuous result and a threshold is needed to define whether a test is positive or negative. The cancer test may measure the level of an antigen in the blood, which can take on any value between 0 and 10. Table 2 shows how many people have different antigen levels (the new hypothetical test) and whether or not they had cancer based on the gold standard test.

Table 2: Antigen level (new test) by cancer status for the sample of 100 people

<table>
<thead>
<tr>
<th>Antigen level</th>
<th>Cancer</th>
<th>No Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

If we choose a threshold of greater than or equal to 6 to be considered a positive test, then we end up with the numbers shown in Table 1, i.e. anyone with an antigen level of 6 or more is considered to be positive. In our example, 45 people with cancer had a test result of 6 or more and only ten of those without cancer had a test result of 6 or more. We can vary the threshold for a positive test from 1 to 10 and calculate the PPV and NPV.

Understanding receiver operator characteristic (ROC) curves

Robin M Turner, Claire Cameron, Ari Samaranayaka
greater than or equal to 0 (where all people test positive), through to greater than 10 (where all people test negative) and calculate the sensitivity and specificity at each threshold. This is shown in Table 3. We can see that as the threshold increases, sensitivity decreases and specificity increases. Changing the threshold will always change one at the expense of the other. It is not possible to increase both sensitivity and specificity by altering the threshold.

Table 3: Sensitivity and specificity for each different test positivity threshold.

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(&gt;= 0)</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>(&gt;= 1)</td>
<td>100</td>
<td>16</td>
</tr>
<tr>
<td>(&gt;= 2)</td>
<td>100</td>
<td>34</td>
</tr>
<tr>
<td>(&gt;= 3)</td>
<td>98</td>
<td>48</td>
</tr>
<tr>
<td>(&gt;= 4)</td>
<td>96</td>
<td>60</td>
</tr>
<tr>
<td>(&gt;= 5)</td>
<td>96</td>
<td>70</td>
</tr>
<tr>
<td>(&gt;= 6)</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>(&gt;= 7)</td>
<td>70</td>
<td>90</td>
</tr>
<tr>
<td>(&gt;= 8)</td>
<td>44</td>
<td>98</td>
</tr>
<tr>
<td>(&gt;= 9)</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>(&gt;= 10)</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>(&gt; 10)</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

The ROC curve plots sensitivity against 1-specificity to show this trade off. Figure 1 shows the ROC curve for our example. The points show the sensitivity and 1-specificity pairs from the different thresholds (note the graph is showing proportions not percentage as we have used previously, we use these interchangeably). The diagonal line represents if we decided randomly whether the test was positive or negative. Tests with poor accuracy will lie close to this line, while tests with high accuracy will be heading towards the upper left corner. A perfect test would have a sensitivity of 1 and a specificity of 1, which would lie in the top left corner.

The area under this curve can tell us how well the test is discriminating between those with the disease and those without the disease. A poor test lying on the diagonal line will have an area under the ROC curve of 0.5; a perfect test will have an area of 1. Most tests will lie in between. Our example cancer test has an area of 0.916, indicating it has very good discrimination between cancer and non-cancer.

The ROC curve allows us to make decisions about where a threshold might best be chosen. It is important to note that choosing a threshold is a clinical decision based on whether sensitivity or specificity is more important. If sensitivity is more important, a lower threshold might be chosen. This will minimise false negatives, but will come with worse specificity and thus an increased number of false positives. Increasing the threshold will do the opposite.

In summary, ROC curves have an important use in showing how a test performs against the gold standard across a range of thresholds. It allows easy assessment of which threshold might be better for a particular situation, and the area under the curve gives an estimate of the discriminative ability of the test.

References


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Area under ROC curve = 0.9160
As the title suggests, the International Handbook of Health Literacy is an exhaustive text serving both as an educational read for health professionals and as a road map for anyone engaging in health literacy research. Health literacy is essentially about citizens’ ability to access, understand, and use information about health care. Beginning its journey with the origins of the term “health literacy” in the 1973 Conference on Health Education in upstate New York, the Handbook explores current research, targeted interventions, policy programmes, and predictions for the future written by an international consortium of experts.

The first section encompasses the current state of the health literacy field, reviewing terminology frequently used by researchers. It also captures a snapshot of health literacy in different communities, such as in older people, people living with chronic conditions, and in other marginalised populations. Section two of the Handbook audits a selection of community interventions aimed at increasing health literacy in various populations, providing the reader with digestible examples of both the concept of health literacy and the potential efficacy of such programmes. Children’s health literacy is given particular attention here, theorising that including children in their own health-care decisions will develop their health literacy in a safe space, with supportive clinicians and parents acting as a safety net to guide the child towards good health choices.

Section three broadens its scope to population level, discussing various nations’ approach to health literacy. Case studies of Organisation for Economic Co-operation and Development (OECD) nations, such as Canada, Scotland, and Finland, and their national health literacy strategies highlight the potential benefits to the populace and advices of known pitfalls to be avoided. A chapter centred on the health literacy of New Zealand’s Māori population outlines several contexts in which Māori health outcomes are worsened by poor health literacy. Particularly eye-opening was a discussion of the Ministry of Health’s “A Framework for Health Literacy”: a 2015 publication that identifies steps the Ministry can take towards building a health-literate public and a health system that communicates better to those lower levels of health literacy. This may provide some impetus for further research into the challenges New Zealand faces in promoting health literacy to its increasingly diverse population. Section four looks to the future, exploring how research in this area can be improved by promoting more participatory research and by acknowledging the interconnectedness of health literacy and other factors that reduce health care participation.

The handbook also discusses the concept of mental health literacy at length. This section is of acute importance to today’s students, who are more aware of mental health-care and issues than the generations before them. A chapter by Anthony F. Jorm, a Melbourne University Professor renowned for his work in population-level mental health action, argues that much of the general population is developing knowledge about mental health disorders and effective self-help strategies for milder issues. However, Jorm argues that population mental health literacy can be improved and that any shortcoming could have significant effects in a crisis. Lack of mental health literacy may contribute to often large delays between onset of a mental illness and recognition of an issue. Furthermore, a deficiency of mental health first aid skills may lead to ineffective peer interventions in crucial moments.

The Handbook serves as a reminder to us as burgeoning medical practitioners that people who walk through a clinic door are not “empty vessels”, ready and thirsty to be filled with knowledge provided by us as experts. Rather, patients come with their own pre-existing notions and ideas of their condition, potential investigations or treatments — an understanding that may be difficult to alter in a 15 minute consultation. Building health literacy from a young age that encompasses all areas of hauora is essential for developing a robust health system. The Handbook also practices what it preaches by providing, alongside its print copies for purchase, a free and fully searchable eBook for download from OAPEN (open access academic books at oapen.org) as a further contribution to reducing inequity in health. Although its hefty nature may scare students, the International Handbook of Health Literacy is an informative read for any student interested in advocating for better health understanding, and therefore better health outcomes, for New Zealanders.

References


About the author

Sylvia is a Trainee Intern at Dunedin School of Medicine, interested in how we as developing clinicians can prepare ourselves for our future careers. When not scouring the web for obscure e-books to read and review, she enjoys exploring the Dunedin sunshine when it shows itself.

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In 2008, the television network Public Broadcasting Services (PBS) released a four-hour documentary series called “Unnatural causes: Is inequality making us sick?” that examined the social determinants of health and subsequent health inequities in the United States (US). From this, there is an online resource that has small video clips of the series itself and other web resources that supplement it.

On the website, the series is split into each hour. Unfortunately, there is no free public access to the entire documentary. However, the website functions well as a hub of excellent and diverse resources. The first-hour section focuses on presenting the basic framework and information on understanding the link between social determinants of health and health inequities. It includes Michael Marmot’s studies, which found a correlation between health status and wealth, where the poor have the lowest health status and the wealthy have the highest. The subsequent three-hour sections focus on individual stories. These range from the Pima people, a group of Native Americans living in Arizona, to Gwai Boonkeut, a Laotian immigrant in his 40s. Each section focuses on how a social determinant of health leads to health inequities. In the case of the Pima people, access to water is linked to high rates of adult-onset diabetes. For each section, there are transcripts and additional videos or web links.

The website itself was fairly straightforward to navigate and the small video clips are tasters for the range of public health and epidemiological information the series provides. My highlight was Kim Anderson’s story. Kim was a well-educated African-American woman and lawyer. She had her baby two and a half months early. This section focused on the link between maternal level of education and pregnancy health outcomes. Kim’s baby, Danielle, weighed just over three pounds, with a high risk of dying in the first few months. The study concluded that it only took one generation towards premature births that is beyond education level, perinatal care, and lifestyle? To answer the question — a study was created that was based on the idea of a “prematurity gene.”2 “African Born Blacks, US-born whites, US-born blacks” were compared. African immigrants and white women born in the US had similar outcomes.2 So, any genetic predisposition was found to not correlate with infant premature. This study concluded that it only took one generation of African migration to the US to have a higher risk of premature babies and poorer birth outcomes.2 The story then suggests that the driver of this was based on the effects that had accumulated over the mother’s lifetime.2

The socioeconomic correction for the differences between the study groups did not make the gap disappear. Instead, it widened as education improved. Lifelong minority status was postulated to be the answer. The two neonatologists in the story began to theorise how ethnic group was linked with birth outcomes. They determined that the answer was the unequal treatment of African-Americans in American society. Racism was taking a heavy toll on African-American children even before they had left their mothers’ wombs. This was also known as the “weathering effect.”4

Kim’s story was a step-by-step unveiling of how wider social determinants affect health outcomes. These stories reflected the theories that arise from the work of academics, doctors, and most importantly, the people who are part of the studies. The story was able to contextualise the academia in a digestible and personable fashion. Instead of telling the audience what the hard facts were, we were shown what they look like in person. It put a face to the research, cementing the vast inequities into reality.

In terms of the relevance of this resource for New Zealand medical students, it gives dignified personhood to the concepts we learn throughout medical school. Stressors from a lifetime of racism, immigrant health, and indigenous rights are not exclusive to the US, and apply directly to our social and cultural context in Aotearoa. As a profession, we are moving forward with a biopsychosocial model of health that is more explicitly linked with the wider determinants. As medical professionals, we must understand these concepts and, more importantly, these stories. Although this website is over ten years old and may not include the most recent research, it shows the basic epidemiological and public health concepts, which can still be translated into today’s practices and beyond.

If you are interested in exploring this resource more, the link is: https://www.pbs.org/unnaturalcauses/

References

About the author

Emily Yi is a fourth year medical student at the School of Medicine, Faculty of Medical and Health Sciences, University of Auckland and is based at Rotorua Hospital this year. She’s a born and bred Aucklander who is passionate about community health and improving health systems. In her spare time, she tends to her ever-growing collection of plants.

Conflicts of Interest

Emily is a student reviewer for the NZMSJ. This article has gone through a double-blinded peer review process applied to all articles submitted to the NZMSJ, and has been accepted after achieving the standards required for publication. The author has no other conflict of interest to declare.

Correspondence

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Just another diabetic

Rubayet Arefin

O what can ail thee, Med-student-at-arms
Alone and palely loitering?
It is now 1:00pm at the geriatrics ward
Smelling of urinary incontinence

O what can ail thee, Med-student-at-arms
So haggard and so woebegone?
Your body is strong
Yet your spirit is weak

I see ulcers on thy leg
With hopeful sorrow and reluctant pride
The time has come
Forego your pride

I met him on the ward
What happened — a faery’s child
His face was Parkinsonian but his smile was Angelman
Flowers were by his bed

Now I stand growing flowers of the strongest
Roses with the prick of the gab
He looked at me as he did understand
The pain of the strongest

Stand up Amputee!
The way I remember you
This is the language of the defeated
If only our roles were reversed, you would say there is no meaning...

My face remains dry
It just happens to be raining on a sunny day
Sorrow is not the legacy I wish to impart
As the clinks of whisky echo through the quiet room

I see pale warriors
My brothers and my men at arms
They cried — “La Belle Dame sans Merci
Thee hath in thrall”

They talk to me now, not in third-person of course
The glasses are a sign that I am not insane
Stand up Med-student for now is not the time to rest
If hell awaits me, I have no regrets

Can you understand that?
The house officer continues on
The registrar continues on
The consultant continues on
Perhaps then I can rest

For my starved hunger I fast
Be patient
Be patient
Flowers take time to grow

And this is why I sojourn here
Alone and palely loitering
It is now 1:00pm on the geriatrics ward
Smelling of urinary incontinence

About the author

Rubayet Arefin is an aspiring poet from Palmerston North studying at University of Auckland Medical school. His current residence is the North Shore where he can often be found playing with his dog on Milford Beach.

Inspired by the English Romantic poet John Keats, this poem aims to evoke how this medical student is captured in a cycle of routine regarding death much in the same way a young knight (In La Belle Dame sans Merci) is captured in a cycle of love by a femme fatale mystical figure. Rubayet is one of the winners of the Creative Arts Competition for Issue 29.

Acknowledgements

I would like to acknowledge the support provided by Dr Christopher Mysko & Simon during the preparation of this piece.

Correspondence

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CREATIVE ARTS: POEM

3.05pm

Robin Page

At 2.45pm the alarm went off.

“Is that a…?”

“Yes. Let’s go.”

We move at the pace of the awkward hybrid between a walk and a run.

With each step, more people merge into the queue like traffic on the motorway.

There’s a commotion on the far side of the ward.

Orders are being barked. Drugs drawn up. In the centre of the storm an unconscious man is having his chest compressed rhythmically by a house officer. His abdomen ripples with each compression.

“You over there, start.”

A heavily muscled orderly pushes past and takes his turn at compressions.

“Do we have IV access?”

“No.”

“Do we have a pulse?”

“No.”

“No shock advised. Commence CPR.”

I run to get the on-call anaesthetist.

“How long has he been out for?”

“15 minutes, no pulse. He has a suspected pulmonary embolism. Should we begin thrombolysis?”

“No.”

“…”

“He’ll be too far gone at this point. If there’s no pulse after the next cycle, we’re calling it.”

“Analysing rhythm. Stand clear. Analysing.”

“No shock advised. Commence CPR.”

“Call it. 3.05pm.”

“You good?”

“Yeah. You good?”

“Yeah.”

“Ok.”

“It’s done.”
About the author

Robin is a fifth year medical student at the University of Auckland. He has an interest in rural health, physician health and medical education. In his spare time, you'll find him writing or sitting at the top of some mountain, sometimes doing both at the same time. Robin is one of the winners of the Creative Arts Competition for Issue 29.

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CREATIVE ARTS: PHOTOGRAPH

Mljet IV

Michael Hayton

Michael is a Trainee Intern based in Tauranga this year. He is an undergraduate student originally from Hawkes Bay. In his spare time he enjoys surfing and playing football. This photograph shows Mljet Island in Croatia at sunset, taken while on elective. Michael is one of the winners of the Creative Arts Competition for Issue 29.

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Michael Hayton, MBChB (in final year), School of Medicine, Faculty of Medical and Health Sciences, University of Auckland.

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Michael Hayton: mefhayton@gmail.com
Information for authors

General information
The Editors of the New Zealand Medical Student Journal (NZMSJ) aim to support medical student development, be a forum for opinions and discussion, and publish the educational writing of medical students. To this end, the Journal accepts submissions in the form of original research articles, academic review articles, case reports, feature articles (including elective and conference reports), media reviews (of medical literature, documentaries, podcasts, and apps), and letters. We also have our ongoing NZMSA/NZMSJ Creative Arts Competition, with three winners announced per issue. The Journal commits to rigorous peer review and freedom from commercial influence.

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› Include figures, legends and tables
› Save as a word document (*.docx, doc)
› Photographs are to be included as separate files (jpeg, jpg, png or tiff)

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› Academic review articles (<3000 words)
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› Case reports (<1500 words)
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All original academic articles (including systematic and literature reviews) will be eligible and judged by the NZMSJ team.

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