

# NZMSJ

New Zealand Medical Student Journal  
Te Hautaka o ngā Akongā Rongoā

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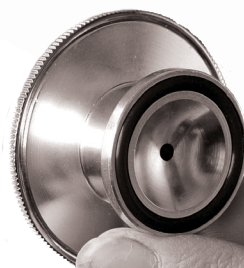
## The choice of medical specialty a guide for students

Should the Ministry of Health introduce  
a melanoma screening programme?

Adie's tonic pupil and Zika virus. Case report.

Learning the ropes of St John:  
The insights of a medical student volunteer.

Aviation medicine. Selective report.



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## Editor's welcome

**Aleksandra Turp**  
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**Cameron Wells**  
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Welcome to Issue 26 of the New Zealand Medical Student Journal (NZMSJ)! This is yet another issue containing a multitude of stimulating articles that showcase just a small sample of the high quality work that is undertaken by medical students and academics in New Zealand.

The main focus of this issue is on the approaches that students may take to their future choice of medical specialty. We are privileged to have a number of high-profile academics and clinicians contributing their thoughts on this subject. Professor Phillippa Poole offers a bird's eye view of the topic, reviewing the New Zealand data around student interests in different specialties and the main factors students have in mind when making career choices. The other three invited articles discuss the choice of specialty from the perspectives of general practitioners, physicians, and surgeons. Dr Medicott describes the satisfaction and variety that comes from the work of a general practitioner, addresses the student myths surrounding the profession, and outlines why talented individuals should think of specialising in general practice. Professor Beckert and Dr Claire present the unique nature and wide scope of work as a general physician as a dialogue between a student and a physician. Finally, Mr Lander, Mr Adams and Mr Barrett discuss the attributes of a surgeon and offer a glimpse of the future of surgery. Each of the articles briefly outlines the training pathway in each specialty.

The academic articles included in this issue feature two outstanding reviews and a study proposal which have won awards in their respective fields. William Muller elaborates on the pros and cons of introducing a melanoma screening programme in New Zealand. The work of Talitha Claassens, a nursing graduate, offers an opportunity for interprofessional learning. Her article thoroughly evaluates the tools available to the multidisciplinary medical team for the management of acute post-surgical pain. Olivia Thompson discusses the potential links between Adie's tonic pupil and infection with Zika virus in her case report. Finally, Aleksandra Turp proposes an investigation to further the understanding of the relationship between nicotine use, composition of gut microbiota, and ulcerative colitis.

The feature articles offer the reader a strong taste of adventure. Anthony Lau describes his long-standing passion for work as a St John ambulance officer and describes some of the most interesting cases he has encountered during his volunteering experiences. Jesse Tettero and Vera de Jonge, two medical students at the VU Medical Centre in Amsterdam, compare and contrast various aspects of medical training between New Zealand and the Netherlands. We also feature three

very interesting selective reports. Benjamin Booker gives us a deep insight into the work undertaken in the rural Kaitiāia Hospital, delivering health care to some of New Zealand's most needy communities. Danni Wang describes her fascinating experiences and cultural encounters whilst working in an Obstetrics and Gynaecology department in one of Beijing's hospitals. Alistair Lock offers a taste of the activities and training at the only aviation medicine centre in New Zealand, located at the Royal New Zealand Air Force base in Whenuapai.

In this issue we are proud to display the creativity of New Zealand medical students alongside our usual media reviews section. Rebecca Duncan uses her postgraduate training experience to evaluate a book by Rosemarie Tong, 'Feminist Approaches to Bioethics: Theoretical Reflections and Practical Applications'. Iain Miller reviews a podcast highly relevant to New Zealand medical students entitled 'Land of the Long White Coat' by Dr Joshua Smith. Last but not least, the two poems presented as part of the 'NZMSA/NZMSJ Creative Writing' competition won by Mosana Evagelia and Ethan Breinhorst, remind us of some of the strong emotions we can sometimes experience in our encounters with patients. These poems are excellent examples of translating these feelings and energy into a unique expression which captures both the personal aspect of these encounters and their universal nature, allowing each medical student to identify with the author.

The Editorial Board would like to thank the University of Otago and the University of Auckland for their ongoing support towards the journal. Without their financial and academic support, publishing this journal would not be possible. We would also like to acknowledge the MAS for their funding and NZMJ for their guidance and support. Finally, we are grateful for the input of, and collaboration with, the professional colleges, including the Royal New Zealand College of General Practitioners, the Royal Australasian College of Surgeons, and the Royal Australasian College of Physicians.

We hope Issue 26 will provide NZMSJ readers with a variety of engaging articles. 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.



# Choice of a medical specialty – a starting point

**Aleksandra Turp**  
Editor-in-Chief, NZMSJ

➤ Aleksandra Turp is a fifth-year medical student and the Editor-in-Chief of the New Zealand Medical Student Journal. Prior to her medical studies, she has completed a PhD in epigenetics in the United Kingdom and is keen to use her research skills towards supporting the evidence-based practice. In her free time, she enjoys spending quality time with her family, including a two-year-old son Ollie.

As medical students, we are all in the same position. Sooner or later we will need to make a decision regarding our choice of specialty. This decision will go a long way towards determining what we do for the rest of our life. This is how we tend to think and this thought can be quite daunting.

By the end of our medical education we will have gained a glimpse of most specialties. The world of medicine stands wide open in front of us. It offers a variety of career choices with different doses of hands on skills, patient contact, teamwork, opportunities for establishing long-lasting relationships with patients, work-life balance, ability to conduct research, teach, influence government policy, and much else. Whilst the medical curriculum introduces us to the key areas of medicine, it does not include formal advice about the considerations we should take into account when thinking about our future.

Many, but not all, medical specialties have stereotypes attached to them. In the pre-clinical years, aside from basic theoretical knowledge, this is, in many cases, all we have to guide us. As we build up our professional experience, we validate, refute, or reshape these stereotypes. We start as observers, and before we realise it we become 'doers', observed by the juniors we were ourselves just a few years ago. This process shapes us and confronts our preconceptions of the work of a doctor with the reality. And all this happens whilst our personal lives evolve, with many people finding a stable partner, thinking of setting down, and considering whether to start a family. What you may have envisaged for yourself as a perfect carer at the beginning of your medical training may be very different to the end product.

It is important to remember that we do not have to decide on the direction of our medical career during our medical-school years. An Australian study reports that 80% of doctors only select their specialty by the end of the third year, post graduation.<sup>1</sup> Interestingly, the specialties where a large proportion of individuals made their choices by the end of medical school included surgery (40.7%), ophthalmology (31.9%), paediatrics (28.9%), obstetrics and gynaecology (25.8%), and

general practice (24.5%).<sup>1</sup> The specialties that were chosen largely by the end of the second to third postgraduate year included anaesthesia, emergency medicine, radiology, adult medicine, obstetrics and gynaecology, ophthalmology, psychiatry, pathology, and general practice. The exact trends from this study are shown in Figure 1.

A large-scale UK study also showed that the majority of specialty choices were confirmed during the postgraduate years, with 60%, 78%, and 90% of doctors remaining in the chosen career they had identified in postgraduate years one, three and five, respectively.<sup>2</sup> Once again, the choice of practicing surgery tended to be made early on, with 90% of surgeons specifying their career choice in postgraduate year one. By comparison, although a high percentage of those who identified general practice and psychiatry as their career choice in postgraduate year one went on to succeed in these areas, only 50% and 54% of those who eventually selected general practice and psychiatry chose these at that early stage.<sup>2</sup>

Thus, if you are approaching your trainee-intern year and still have not formed a clear view of the specialty you would like to pursue, you might be less likely to become a surgeon. However, you can rest assured that your postgraduate work experience will be of significant help in forming this decision. In the meantime, you might benefit from keeping your options open and gaining a wide exposure to different specialties.

You should also bear in mind that your experience of different specialties may be very different depending on the settings you find yourself in. It is worth sampling the differences between different hospitals, rural clinical settings, and perhaps even different countries. Whatever choice of postgraduate placement you make, different doors and opportunities will open to you. These may include research, teaching, going to conferences, and meeting different clinicians who may become role models or mentors. This is the time to be proactive and use these opportunities as tools to formulate your personal career plan.

If you are someone who tends to benefit from reading books with outlines of all the specialties, discussions around what each of them entails, the sub-specialties available, and some practical advice around professional training, several resources are available. Books such as 'The Ultimate Guide to Choosing a Medical Specialty' by Brian Freeman, 'How to Choose a Medical Specialty' by Anita Taylor, and 'On Becoming a Doctor' by Tania Heller are good bedtime reads and may give you some good starting points.<sup>3-5</sup> Their downside is that they are all based on the United States health care and training system, which is significantly different to a New Zealand setting.

Your choice of future specialty may also be indirectly influenced by becoming involved in student organisations, such as the New Zealand Medical Student Association, the New Zealand Student Medical Journal, and other medical-interest groups. This will help you explore your strengths and weaknesses. You will find out how well you work with others, whether you are a team player and how good you are at organisational tasks, multi-tasking, and leadership. Whilst in your role, you will interact with many inspiring academics and clinicians and see a different side to their usual professional demeanour in the settings of a ward or a clinic. Importantly, you will also establish relationships with other students, some of whom may be a great source of support to you when making your career choices.

Whatever choices you eventually make regarding your training pathway, try to embrace the unknown and enjoy the process of navigating the complex landscape of medicine. Skills and knowledge in one area of medicine will be likely to become useful in another one, counteracting the daunting feeling of the irreversibility of our choices. We are very privileged to enter a profession which offers a wide variety of skills and a knowledge base with endless possibilities to further our professional development and to benefit others.

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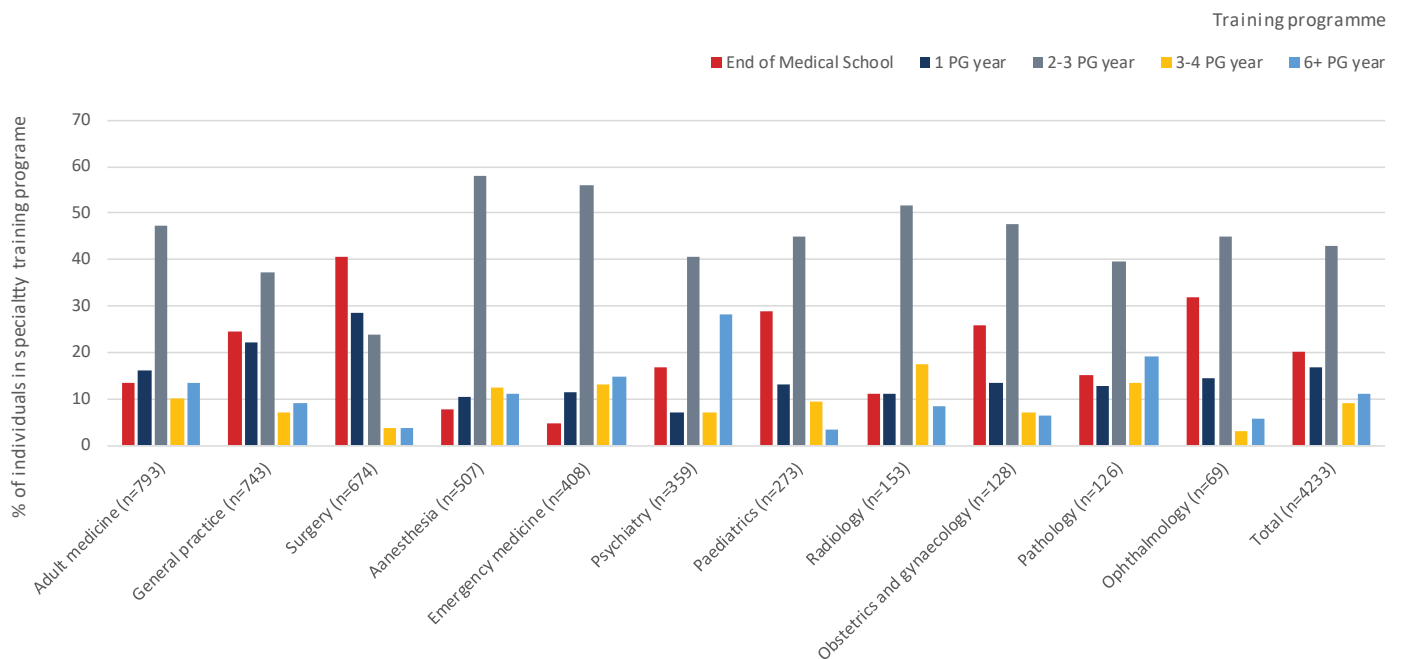


Figure 1 Percentage of individuals in specialty training programmes selecting the specialty route at different stages of undergraduate and postgraduate training (based on data provided in Harris et al.).<sup>1</sup>



# Choosing a medical specialty

## Professor Philippa Poole

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### Introduction

Choosing a medical specialty is a complex, dynamic process that happens iteratively over a period of years. The influencing factors may be clustered broadly into three groups: personal (e.g. background, personality and personal circumstances); experiential (e.g. curriculum and learning environment); or related to the nature of the training and work (e.g. patients, colleagues, work pattern, culture, rewards, curricular requirements, or job prospects). For each student or trainee, the relative contribution of these factors will vary.

This article draws on experiences over my career, as well as insights gained through surveying students for the New Zealand Medical Schools Outcomes Database and Longitudinal Tracking (MSOD) project for over a decade. We are indebted to those of you who fill out these surveys both as undergraduates and in the postgraduate years, as the data helps ensure Aotearoa/New Zealand (NZ) has the future medical workforce it needs.

Further information and MSOD reports may be found at <http://www.otago.ac.nz/medical-school/undergraduate/medicine/msod/index.html>

### The broader context of medical workforce development

Apart from students, doctors and patients, there are multiple stakeholders in the outcome of medical education and training. Medical schools and postgraduate training bodies such as the Medical Council of New Zealand (MCNZ) and Colleges and Colleges are expected to produce doctors who will go on to fill all the medical roles needed to deliver health care equitably across NZ. Another key stakeholder is Health Workforce New Zealand (HWNZ) which contributes funding to postgraduate training.

Specialists are needed in community and hospital settings, in clinical or laboratory type roles, and in public health. Note that the private health sector in NZ has stayed fairly static at around 20% of health care spend and is unlikely to expand, so most jobs are in the salaried public sector. A decade ago it was estimated that up to 50% of NZ's doctors would be needed in general practice/primary health care.<sup>1</sup> At the time, NZ was heavily dependent on doctors trained overseas to fill workforce gaps, particularly in general practice. This was the main driver for the government decision to significantly increase significantly medical student numbers and training places in general practice. As these increases are

relatively recent, the full effects have not yet been realised, including the extent to which they impact on job and training opportunities for individual graduates.

A diverse cohort of doctors is better able to meet the health needs of the population. Selection for medical school and successful degree completion are critical steps in this regard. While admission pathways for Māori and Pacific students have been in place for many decades, rural admissions are more recent. The latter were based on the strongest predictive evidence we have for future careers: students from rural areas are about three times more likely than their urban counterparts to go into some form of rural practice.<sup>2,3</sup> However, the same studies show that half of rural-background students do not return. Fortunately, these are more than offset by urban students who wish to move to rural areas, underscoring that factors other than background are important in career determination.

### Is there one ideal medical career or location?

You have been chosen for your potential to be a knowledgeable doctor with professional qualities. All medical roles are intellectually challenging and involve helping people. A hallmark of medical practice is analysing complex bio-medical-psycho-social information, often in situations of uncertainty, in order to make a diagnosis. Doctors develop and implement management plans, usually in consultation with patients and other members of the health care team. Teaching, research, innovation, and advocacy are satisfying avenues of medical practice, regardless of specialty.

Ideally, every medical student would end up as a happy and productive specialist for 30 years or more. This is a lot longer than you spend as a student. To achieve that fulfilment means you have to like the specialty, the location, the patients, and the colleagues from the health disciplines with whom you will work. However, at medical school it is not easy to imagine the kind of work you might be doing in 30 years. Not surprisingly, only 12% of NZ medical students are absolutely certain about their future career plans at the time of graduating, with 56% moderately certain and 32% not at all certain.<sup>4</sup> It is common for students to have approximately three specialty preferences at graduation, but these are usually in related fields such as broadly medical or broadly surgical.<sup>4</sup> Career confirmation occurs in the early postgraduate years.

Be assured that on the route to becoming a specialist, changes in career path or location are common and progression is not linear: People take time out, work part time, try different areas of medicine, or take longer over their training than expected. Serendipity may come into it and a job may find you. By this I mean an opportunity may present itself, or someone trusted may suggest a particular path that they think is a good fit for you.

Once in independent specialist practice, there is more scope to shape it to suit your interests or the time you want to spend in it. Examples include: working in two roles, one clinical and the other non-clinical, such as education or leadership; or having a special interest alongside a generalist career.

Given that many doctors change their minds about their careers but most would chose the same specialty again, it is likely that many of us could have had satisfying careers in one of a number of areas.

## The context of learning and working

Context is important in career determination. Table 1 shows MSOD data from nearly 1000 NZ medical graduates who perceived the most important influencing factor on their preferred career choice was the 'atmosphere/work culture typical of the discipline'.<sup>4</sup> This was closely followed by 'experience of specialty as a medical student'. Within these factors are several important elements including the other health professionals, patients, and the way the team works together. The implication is that students/trainees have to experience this atmosphere; they are to imagine themselves performing in this setting. Note the relative unimportance of financial influences.

It is almost certain you will move locations, whether as a student, in training, or as a vocationally registered specialist. Indeed, this is likely to be advantageous. You will learn a greater array of skills and become familiar with other settings that you may not have considered. This is

Factor	Mean Influence Score	SD
Atmosphere/work culture typical of the discipline	4.03	1.04
Experience of specialty as a medical student	3.96	1.10
Interest in helping people	3.95	1.12
Intellectual content of the specialty	3.80	1.09
Influence of consultants/mentors	3.77	1.08
General medical school experiences	3.74	1.10
Self-appraisal of own skills/aptitudes	3.72	1.01
Opportunity for procedural work	3.61	1.30
Perceived opportunity to work flexible hours	3.53	1.27
Perceived amount of working hours	3.48	1.19
Type of patients typical of the discipline	3.39	1.21
Self-appraisal of own domestic circumstances	3.21	1.22
Perceived career advancement prospects	3.12	1.24
Availability of a vocational training placement	3.09	1.22
Perceived job security	2.95	1.38
Opportunity for research and /or teaching	2.78	1.26
Geographical location of most preferred specialty	2.77	1.31
Number of years required to complete training	2.69	1.27
Perceived financial prospects	2.49	1.20
Perceived prestige of the discipline	2.32	1.21
Risk of litigation and associated insurance costs	1.98	1.10
Influence of parents/relatives	1.89	1.10
Financial costs of medical school education and/or debt	1.74	1.03
Financial costs of vocational training	1.69	0.99

Table 1 Factors influencing most preferred choice of specialty ranked from most influential to least. Scale from 1=not at all to 5=a great deal.<sup>4</sup>

one of the reasons that all NZ students now have one or more general practice or hospital placements in rural or regional settings, with some undertaking longer rural immersion programmes. As mandated by the MCNZ, more house officers are undertaking general practice or community placements. Keep your mind open as you move through the various specialties and health care settings. Imagine whether this is an environment in which you could see yourself living, training, and working. How well do your aptitudes fit with those working in this area? Some students find it easier to exclude specialty areas, but in so doing, ask yourself why that is; it may help you understand what you like about your preferred specialty or specialties.

### The intersection of jobs and training

In order to be able to train in a specialty, you need to have a job; you need to be employed by a District Health Board (DHB) or general practice. House officers and registrars are employed from year to year. Yet, postgraduate training in NZ is overseen and approved in the early years by the Education Committee of the MCNZ, then by the training committees of the respective specialty college (e.g. The Royal New Zealand College of General Practitioners, Royal Australasian College of

learning takes place. To be able to practice from postgraduate year one (PGY1) onwards requires an Annual Practising Certificate from MCNZ. The stages of training are shown in Figure 1.

At present, all the NZ resident medical graduates in NZ are matched to a PGY1 job somewhere in NZ. Provided they perform satisfactorily in core attachments in PGY1 and PGY2 and complete training requirements, they earn general registration with the MCNZ. During this time, most refine their career interests and start applying for specialty training programmes. Those who are successful are allocated the types of jobs that allow progression through training. Many specialty training positions are allocated by DHBs by agreement with colleges.

With the advent of Schedule 10 rosters (not working more than ten days in a row) there will be more house officer and registrar positions, but these may not necessarily be dedicated training positions. It is uncertain to what extent these new rosters will affect the number of training positions or training duration.

Thus, medical graduates might be considered to be operating in two markets, one to get a job and one to get on a training scheme. Consider what will make you an asset, both to the employer and the specialty training committee. Medical knowledge is a critical component of being a good doctor; but just as important are your skills and behaviour in the clinical setting. Evidence of this may be gained from supervisor reports, references, or performance in specific skills assessments. Your ability to self-care is very important, as are your capabilities in other realms such as leadership, advocacy, or research. In some ways, medical school is like a long job interview, both for you to scope out your preferences and build your capabilities, but also for your supervisors to see how you perform in their particular area. NZ is a small place and you will find the same familiar faces at various points in your training.

### Match between student choices and workforce needs

It is worth being informed about areas of workforce need. Based on recent data from MSOD and MCNZ workforce surveys, there are imbalances between graduates' most preferred career at the end of medical school and the current spread of medical jobs in the medical

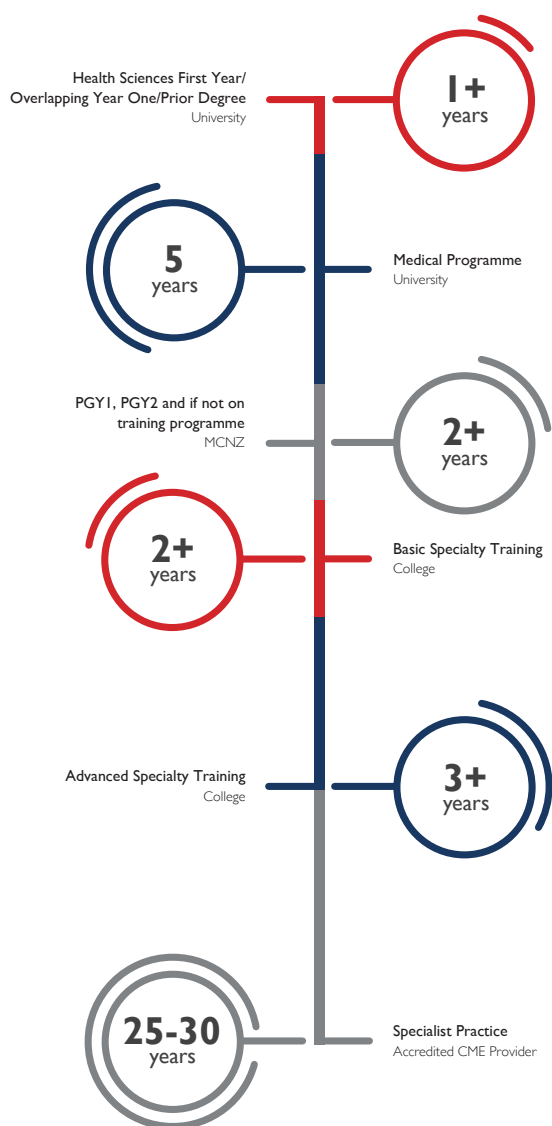


Figure 1 Outline of stages of medical training in New Zealand.

Physicians, Royal Australasian College of Surgeons etc.). Colleges may undertake selection for training, design curricula, and assessments, and set standards for supervision in the clinical setting where most of the

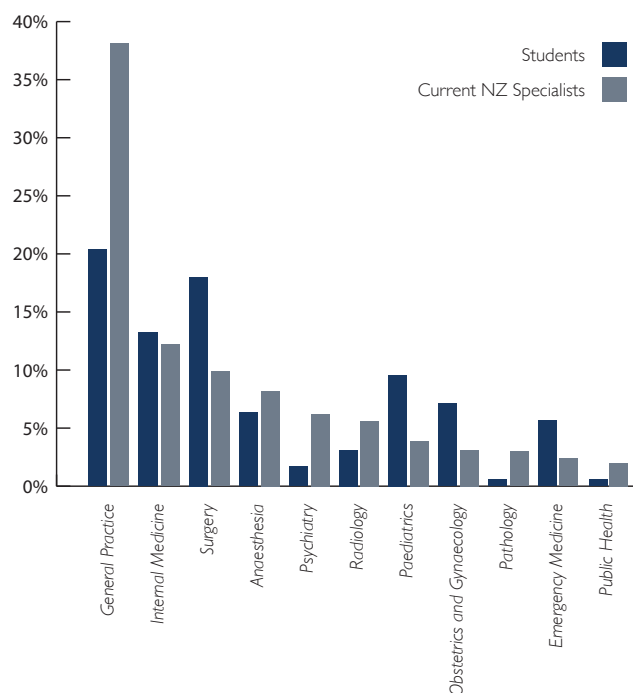


Figure 2 Match between specialties in current NZ medical workforce (black bars) and NZ student preferred careers at graduation (grey bars).

workforce (see Figure 2).<sup>4,5</sup> There is 'over-interest' in surgery, paediatrics and emergency medicine, and 'under-interest' in general practice, psychiatry, and pathology.

However, as well as being the most preferred choice, general practice is also the most common second choice.<sup>4</sup> Commonly, aspiring physicians or surgeons move later to general practice, with some of the reasons for change being:

- (1) Original specialty was not as hoped (many reasons);
- (2) Failure to get on a training scheme or to progress past barrier exams;
- (3) Change in circumstances and/or lifestyle reasons. Given that the years of training may overlap with settling into family roles, some seek a more predictable career structure.

The nature of work in any specialty changes along with population needs. For example, NZ has an aging population and will need more doctors managing patients with long-term conditions and frailty. Moreover, the general practice workforce is older, with about a third of general practitioners expecting to retire in the next five years.<sup>6</sup> Both of these suggest increasing opportunities for employment in general practice. On the other hand, both paediatric and emergency workforces are relatively young, suggesting competition for these jobs may be more intense than these data suggest. As this is a complex and changing environment, you are encouraged to seek out information through talking to those in the specialty, attending career fairs, or from information on College or HWNZ websites. The RMO tab on the website <https://www.kiwihealthjobs.com> is useful. This will keep you up-to-date with the medical careers and locations in NZ where there are training positions and jobs for specialists, as well as selection and training requirements, which change frequently.

### Work-life balance

Quite rightly, current generations of doctors are less prepared to endure long hours for little tangible reward.<sup>7</sup> Nonetheless, it is an inescapable reality that health care is a 24/7 activity. Furthermore, to become a specialist requires considerable time in the workplace, learning on the job through delivering patient care. As a specialist, you'll have more control over your working hours and the way you work, but must do enough to remain competent and to take your share of out-of-hours work.

Finally, medical professional and personal lives overlap considerably. Telecommunications and the internet may allow study and work to be done away from traditional environments and outside usual work hours. Conversely, it's easier to keep in touch with family and friends during work hours. The art is in balancing the need to be reliably present at work, with essential external activities such as family commitments. Choices and compromises need to be made every step of the way – there are only 24 hours each day and one can only be 'superhuman' for so long. Strategies include scheduling time for rest and outside interests. You must attend to your own physical and mental fitness for such a demanding job. There may be a case for managing your own and others' expectations of you, and for reducing unnecessary external burdens such as travel time.

Largely driven by the increasing number of women graduates, many of whom seek flexible work options at some stage, all colleges allow part-time or interrupted training. Unfortunately, this is not yet mirrored in the approach of DHBs. Those wanting to work less than full time may be seen as exceptions to be accommodated, rather than the reality of a diverse workforce. An additional problem is that some part-time jobs may not be suitable for training. All of this prolongs the time to complete training. Yet there are now many more role models who have managed flexible training and who can help you with navigation through the system and support for your path. Talk with those who

have worked less than full time and don't be afraid to put forward your case for more flexible training or work. Furthermore, use your advocacy skills to help shape health and training systems to better meet the needs of all doctors.

### Closing remarks

Enjoy your medical-student journey using the options presented to you, as well as seeking out others. Try studying somewhere different or outside your comfort zone. Build up your curriculum vitae in a range of areas.

Be informed by talking to doctors at various levels, and keep up with information about workforce, jobs, and training.

Be realistic in your self-assessment of the fit of your interests and aptitudes with particular specialties or settings. Be receptive to trusted mentors who suggest specific career paths. They may see your abilities in a way you can't.

Don't feel rushed into making a career decision, nor worry about changing your mind. In times of indecision, don't be forced into a decision. An important attribute in health care is to be able to cope with uncertainty and 'go with the flow' for a while. You may take a less preferred job, using it as an opportunity to refocus or as a stepping stone to another job.

Usually the path clarifies with time. All the very best on this exciting journey.

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# » General practice: a rewarding journey

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It's a question that gets asked almost on the day we are born – what are you going to do when you grow up?

Speculation runs rife – long fingers bring parental dreams of a concert pianist, a predilection for pestering the cat suggests maybe a vet, while a natural bossiness means treasured off-spring are surely going to be Prime Minister one day!

Aunties and uncles chuckle indulgently as answers come from gap-toothed school children – train driver, policeman, doctor, pop star, an All Black.

It's a question that is pregnant with anticipation and that hints at the potential the future holds.

But often what we do, what we become, is not the result of a single moment-in-time decision or verdict passed after the completion of a careers advisory computer survey. It is something that emerges as we take steps along our own unique journey of life. Most often, the path we forge is determined by random events, the influence of a single person, and a sense of curiosity.

My own journey into becoming a General Practitioner (GP) was due to such a serendipitous trifecta. I was working in the United Kingdom after finishing medical school while my wife-to-be was studying for her doctorate. I was doing a job that required me to interview doctors at hospitals around the country. Someone said to me 'Hey Richard, what are you doing after this? You should sign up for the GP training programme!'

My father was a GP, so I knew a bit about it. I'd done well as a student in general practice and saw myself as a bit of an all-rounder. I knew I enjoyed relating to people, and so the seed was planted. I applied for the local training program and was soon driving around Cambridgeshire villages in my little MG doing lunchtime visits.

And now I find my journey has brought me to a place where I can hopefully be the influence that encourages a new generation of medical students to join the rewarding and stimulating path of becoming a GP.

It is no secret that Aotearoa is facing a potential GP crisis. We are already in a situation where New Zealand's population does not have the number of GPs it needs. The ratio of full-time equivalent (FTE) GPs per 100,000 dropped from 84 in 1999 to 74 in 2012, and has remained at a similar level ever since. Of those currently practicing, more than half (57%) are over 50 and 27% intend to retire within five years.

The lack of GPs is not the only problem. Population growth is accelerating due to natural increase (births minus deaths), immigration, and an increase in maximum life expectancy. More importantly it is an aging population, and with increasing age comes increasing complexity of health conditions. The Royal New Zealand College of General Practitioners believes that 300 GPs (this number includes GPs returning to the workforce after extended leave, overseas trained doctors, and those completing their General Practitioner Education Programme (GPEP) training) need to be added to the workforce each year to be able to meet community need.

So why aren't more students answering that need? Why aren't young doctors regarding general practice as a desirable career?

There is a perception that becoming 'just' a GP leads to a life of isolation, restricts your earning potential, and is somehow not as glamorous as choosing a hospital-based specialty. Yet, like most perceptions, the reality of taking that path is very different.

First of all, there is no such thing as 'just' becoming a GP. It isn't a job for the faint hearted or for those who want an easy life or a career that can take a back seat to other pursuits – although there is more flexibility for those pursuits than most other specialties.

You need talent and tenacity to be a good diagnostician and physician, to build rewarding relationships with your patients that can extend across generations, and to play your part in a primary-care setting that is constantly pushing the boundaries.

Every day is different – we don't just deal with coughs and colds. For example, in one afternoon recently I administered the human papillomavirus vaccine to an older patient after talking about new at-risk behaviour and suggested ways a ten-year-old on Ritalin for her attention deficit hyperactivity disorder could put on weight (she was happy that nut and raisin chocolate should be on the menu). I also helped a depressed 49-year-old form a treatment plan, discussed fertility concerns with a 41-year-old woman, and made an appointment to excise skin cancer from an older gentleman. Persuading an anxious Hepatitis C sufferer to come for treatment, potentially diagnosing a guy with multiple transient ischemic attacks from subtherapeutic anticoagulation for his prosthetic aortic valve, and giving diabetic and dietary advice to a 76 year old who recently spent three months in hospital after pancreatic surgery rounded off the clinic.

It was an afternoon of immense satisfaction that I was doing good in the world. And that satisfaction will be compounded when these

patients come and visit me again and I can see what a difference the treatment I provided has made to their lives. That continuity of care you experience as a GP is something no other specialty can offer; I feel.

Funnily enough, when I saw the gentlemen two weeks later to excise that skin cancer, it had grown significantly and was clearly a keratoacanthoma. I can leave that and it should resolve by itself in a couple of months. It shows the usefulness of seeing things evolve – GPs have to be willing to 'wait and see'.

The huge variety of conditions you will be presented with also means that at some point or other you will come across something that really piques your curiosity and unleashes a desire to know more. There are many GPs with a special interest, such as skin cancer surgery or viral diseases, who have enjoyed the freedom to indulge their fascination and ultimately add to their skill set.

This freedom extends to being able to be more in control of your own career. For example, your choice of where to work is not restricted by having to be based at a tertiary hospital setting. You can work anywhere. You also have the privilege of choosing the team you work with when buying into a partnership, or decide to work alone. There is flexibility – maybe working as a locum for three months then taking three months off is an attractive proposition, or taking up a part-time role to allow more time for family or other pursuits.

The role brings opportunities too – to become a business owner, to be involved in governance, to help push boundaries of primary care technology, medicine, and treatment protocols.

Remuneration is another area where the perception that GPs earn a lot less than a public hospital specialist can be somewhat wide of the mark. In reality GPs working full time can earn an income comparable to hospital-based physicians. Making the decision to become a GP is not choosing a life of penury, that's for sure!

So for those of you who are again standing at the crossroads posed by the question of 'what you are going to be?', put yourselves on a path that will give you a challenging, fulfilling, and interesting career as a GP – and who knows what other opportunities you will meet along the way.

## About GP training

It takes three years of postgraduate study through The Royal New Zealand College of General Practitioners to become a GP.

The College's GP Education Programme (GPEP) is divided into two stages and combines on-the-job experience and mentoring with workshops and seminars.

In the first year, you'll get one-on-one teaching with an accredited GP teacher in two different general practices in New Zealand and attend seminars and workshops with other GP trainees. At the end of that year, you'll sit the GPEP clinical and written examinations. In the next stage of the programme (GPEP2/3), you'll work full time in clinical practice.

To qualify for GPEP you must have completed your undergraduate education in medicine and two years' postgraduate medical experience (at least one of these years must have been done in New Zealand). You must also be registered with the Medical Council of New Zealand in the general scope of practice and be a New Zealand citizen or a permanent resident.

Applications for the programme typically open at the beginning of each year, with interviews, offers and placements confirmed mid-year. The programme begins in December each year.

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## Here are four great reasons to choose general practice:

- 1** **Make a difference** – in general practice you can help more, help earlier, and be the helping hand your patients need.
- 2** **Change lives** – general practitioners do more than just fix what's broken – we're part of our patients' lives and the community. You're equal parts detective, coach and clinician.
- 3** **Have a balanced life** – general practice gives you more variety, and it fits in with your family and commitments outside of work.
- 4** **Do it your way** – general practice gives you more control over your life and your career – you choose where you live and work, you can follow your interests into a specialty, and even be your own boss.

To find out more visit: [www.rnzcgp.org.nz](http://www.rnzcgp.org.nz)



# Planning a career in surgery?

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A few years back a friend was killed in a car crash. He was a surgeon. Another colleague who was holidaying in the area was asked to speak at his funeral. He went to a local menswear shop looking to buy a suit to wear to the funeral, but when the manager heard why he needed the suit he said, 'just take any suit in the shop and bring it back after the funeral' – such was the standing of the deceased surgeon within that community.

Being a surgeon means different things to different people. For some there is a huge involvement in community, and often much kudos attached to this role. For others, there is the pursuit of academic excellence or participating in ground-breaking research. Many gain immense satisfaction from curing people by the action of their own hands. No doubt some see it as a pathway to significant income or at least the reassurance of having financial security for their family. Almost all surgeons feel they have a significant role in the training of their successors.

We each have our reasons for choosing our path and we each develop these at different stages in our careers. Some enter medical school knowing what their vocation will be; others discover it along the way. For those who aspire to a surgical career, the Royal Australasian College of Surgeons (RACS) provides oversight of the professional development and certification of surgeons in Australia and New Zealand, and delivers the only training programmes in surgery in these two countries.

RACS is a not-for-profit organisation that represents more than 7000 surgeons and 1300 surgical trainees and international medical graduates across New Zealand and Australia. It is the leading advocate for surgical standards, professionalism and surgical education in New Zealand and Australia, supports health care and surgical education in the Asia-Pacific region and is a substantial funder of surgical research. The attributes that surgeons aspire to are: service; integrity; respect; compassion; and collaboration. Most surgeons have a high degree of situational awareness and manual dexterity that complement these values.

## Training in surgery

RACS has training programmes in cardiothoracic surgery, general surgery, neurosurgery, orthopaedic surgery, otolaryngology head and neck surgery, paediatric surgery, plastic and reconstructive surgery, urology, and vascular surgery. Each of these training programmes has a comprehensive curriculum and expansive syllabus. The training programmes are accredited by the Medical Council of New Zealand (MCNZ) and the Australian Medical Council, and a Fellowship of RACS is recognised as one of the qualifications for vocational specialist registration by the MCNZ.

A career pathway in surgery starts with medical school years (one to five), followed by a trainee intern year (six) (Figure 1). Both postgraduate year one and two (PGY1 and PGY2) are rotating house officer positions through medical and surgical specialties, and PGY3 and PGY4 are usually rotating registrar positions in surgical specialties. This is followed by application to an advanced surgical training programme overseen by RACS, which can be done at from PGY3 onwards. Each specialty training board has a different set of requirements and prerequisites prior to application, but all require a curriculum vitae and references. The specific specialty selection requirements are listed on the RACS's website under 'Selection Requirements and SET Application'.<sup>1</sup> Some training boards require applicants to have undertaken some basic research prior to application.

Applicants are then shortlisted and interviewed prior to acceptance. There are limited numbers of accredited training posts, so the process is competitive, especially in the smaller specialties such as cardiothoracic surgery and neurosurgery. Orthopaedic surgery is also a sought-after specialty. Workforce planning and the number of funded and accredited posts available will determine the number of applicants accepted onto the various training programmes. If accepted on to an advanced programme, Surgical Education and Training (SET) trainees then undertake an advanced surgical training programme for between four to six years, depending on the chosen specialty.

Each of the nine surgical specialties has a similar programme of requirements that need to be met during training. Assessments include specialty-specific exams, direct observation of procedures, clinical encounters (MiniCEX), in-training examinations, quarterly supervisor assessments, mock examinations, and completion of a logbook. Training sessions and pre-examination courses are common. All nine specialties hold a summative end-of-training examination called the Final Fellowship Examination that includes both written and clinical components. If all the requirements of training are met, trainees are awarded a Fellowship of RACS.

The surgical training programmes are both competency- and time-based. Training is usually full time, although many programmes have some degree of flexibility. Competency is based on the CanMEDS Framework's principles and for RACS these are: medical expertise; technical expertise; judgment and clinical decision making; communication, collaboration and teamwork; professionalism and ethics; scholarship and teaching; health advocacy; and finally, management and leadership.

Post-Fellowship subspecialty training for one to two years is often undertaken to improve surgical skills, widen experience, increase exposure to surgical procedures, and promote networking. Many surgeons undertake their post-Fellowship training overseas in centres of excellence.



Figure 1 Timeframe for progression through training to be a Consultant Surgeon

Following post-Fellowship training, most surgeons then take up a consultant position in either a public or private practice (or both).

### The practice of surgery

Surgeons need a high degree of technical expertise, particularly visual-spatial ability, psychomotor ability, and a strong working memory.

In addition to medical knowledge and technical skills, non-technical skills are essential to surgical practice. Of particular importance is situational awareness, especially in a busy operating theatre where there are many things happening at the same time. Surgeons work as part of a team so their communication and leadership skills need to be exceptional. Surgeons are expected to be decisive, as events in the operating theatre happen quickly and decision making is critical. Learning to do a procedure well takes practice, so simulation of procedures has become commonplace.

The rapid expansion of the internet has resulted in open access to an enormous growth of information. The use of written material has diminished and it is now commonplace to instantaneously access information on conditions, data, guidelines, and treatment protocols, not only in the operating theatre but also the consulting room. Auditing and data collection to optimise clinical outcomes has enhanced evidence-based surgical practice.

The old concept of 'see one, do one, teach one' is long gone and the future of surgical teaching combines both technological advances and modern educational principles. The flipped classroom, e-learning materials, the use of mobile devices such as tablets, fast mobile internet, and artificial intelligence are all gaining popularity. Super-high definition multimedia, including video lectures and virtual tutorials with rich educational content, supplements simulation and high-impact clinical experiences. Streamed student progression occurs in an adaptive curriculum with rigorous standards-based assessment – it is benchmarked internationally and has resulted from increasing global collaboration.

### The future of surgery

The current generation of surgeons have seen considerable change and so will the next generation of surgeons. The practice of surgery is in evolution. Public expectation has changed. Patients are now more demanding of autonomy than they used to be. Patients tend to be more educated and are less tolerant of poor surgical performance. Disability as a result of injury or disease is much less tolerated. Life expectations have changed, there are many more active elderly patients with the expectation that they will live well into their 80s in good health and enjoying life. Urbanisation has resulted in more people living together in stronger communities and collaborating together to support each other. Average remuneration has increased, but this has not kept pace with spending on health care, so in the public sector the breadth and scope of publicly funded health care has changed. As most surgical training occurs in the public sector, this change in scope has narrowed the scope of conditions seen during training. The gender balance is also changing in the surgical workforce – in generations past, surgery has been a male dominated profession. This is now changing for the better with both an increase in gender and cultural diversity.

Not only has there been a change in the demographics of surgeons, so has there been a change in their patients. Obesity and comorbidities such as diabetes mellitus, hypertension, and other cardiac conditions, are all on the increase. These conditions have increased the risk of performing surgery, particularly the risk of perioperative complications.

The rapid expansion of knowledge has led to an increase in specialisation. In the last 100 years we have seen the practice of surgery move from the generalist, to the emergence of obstetric, maxillofacial, ophthalmic,

cardiothoracic, vascular, plastic, urology, orthopaedic, ear, nose and throat, and neurology surgeons. Within each of those specialties, sub-specialisation has occurred, especially in metropolitan areas. However, there are still many parts of the world where a surgeon is needed to perform a caesarean section, do an emergency laparotomy, and stabilise an open fracture.

The biologic manipulation of disease will no doubt change the role of the surgeon of the future. As we have seen in the past with infectious diseases, many conditions can be eliminated. One day there may be ways of treating degenerative conditions, lessening the need for reconstructive procedures such as joint arthroplasty and destructive surgeries for cancer.

Imaging of the body for disease and injury has made huge advances in the last 20 years. We have seen the emergence of the computed tomography and magnetic resonance imaging scan. The future will bring even less -invasive imaging modalities to probe every nook and cranny of the body for the early detection of conditions amenable to medical and surgical treatment.

Many of these changes are positive and the future of surgery is exciting. A career in surgery will not only be challenging, but also very rewarding.

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# So, you want to be a physician?

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**Physician:** So, you want to become a physician?

**Student:** Well, I am thinking about it. However, I am not sure. I also like the concept of becoming a general practitioner and I enjoy some of the surgical subjects.

**Physician:** That is alright – enjoy that you have so many options.

**Student:** Would you choose to become a physician again, if you had the chance?

**Physician:** Definitely!

**Student:** Why?

**Physician:** I greatly enjoy being at the cutting edge of medical care. I want to work in a field where things are constantly evolving, and not in a mundane job that is the same year in and year out. There are more than 20 sub-specialties within internal medicine and most are changing rapidly. I am not an oncologist, however, let's take it as an example because it is a field that is changing beyond recognition. We are at the beginning of a revolution of cancer care. After chemotherapy and targeted tumour therapy, a third wave of therapies, the biological agents – antibodies against regulatory targets of the cancer cells – are entering the arena and will undoubtedly be transformative. I foresee that cancer care may even become the management of chronic illness, much like human immunodeficiency virus infection has changed from a death sentence to a chronic illness.

**Student:** Yes, I have followed the news in oncology. But is this the only sub-specialty that is making progress? Aren't physicians known for admiring the effect of illnesses and not really being able to do much to treat them?

**Physician:** Let me challenge this perception. Some medical specialties are clearly interventional. Cardiology and gastroenterology have even evolved to the point where physicians are undertaking practical procedures to treat illnesses that in the past have been the domain of surgeons – just think of cauterising bleeding gastric ulcers, coronary artery stenting, and the management of structural heart disease with procedures like transcatheter aortic valve implantation.

Similarly, in the less interventional specialties things are changing. Perhaps neurologists were said to admire their patients, a tongue-in-cheek comment on their excellent descriptive powers. However, there are now virtually no neurological illnesses left that do not have good and/or evolving treatment regimes; just think of stroke, migraines, multiple sclerosis, and myasthenia gravis. Rheumatology now has a variety of powerful and effective treatments for most illnesses.

The field of internal medicine as a whole has the advantage that there is a type of physician sub-specialty to suit all interests. Interventional procedures, imaging, laboratory work, pharmacology, physiology, counselling – you can find a medical sub-specialty that lets you do what you enjoy doing.

**Student:** Is there anything else which sets being a physician apart from other specialties?

**Physician:** Underpinning everything that all doctors do is a desire to help our patients. General practice has this in common, but more than in most other areas, many physician sub-specialties require the longitudinal management of patients. This is one of the joys of becoming an established consultant – you establish a bond with your patient that can persist over years, and even decades. Your unique opportunity to observe and modify the management of their illness and the way they cope with it, becomes one of the great pleasures of the job. Much of the recent improvement in medicine, and the future, will be the improved management of chronic illness.

**Student:** That is an interesting perspective. But what else is different about being a physician. Tell me – how can I tell whether becoming a physician is right for me?

**Physician:** There are two aspects which are central to the life of a physician. One is a love of the mental challenge of solving clinical puzzles. Patients may come to you with an indiscriminate problem and there is then a process of trying to piece together all the clues you can gain from history, examination, and investigations. I still enjoy the intellectual exercise of weighing up the potential relevance of all these factors and then moving towards a diagnosis, or differential diagnosis. Experience helps and this is sometimes where medicine can be both an art and a



science. The greatest problem solvers are probably our endocrinology, neurology, and infectious disease colleagues.

The second key aspect is a love of working in teams. Physicians almost always work in teams with some challenges and great revelations. A challenge is the, often humbling, experience that the sum of a team is much stronger than your own personal judgement. Working in a team gives you the power to develop opportunities for colleagues, to improve the overall quality of a health care system, and to move into leadership roles. With working in a team you develop a sense of camaraderie, which makes the job so much more enjoyable. On a more practical level, not working in isolation means there is always the option of seeking support and advice from colleagues for those difficult cases. You tend to get your curiosity and intellect piqued by having some sort of exposure to all the interesting cases and there is the continual opportunity to benchmark your management and performance against others, and to continue lifelong learning from this. So, solving problems and a love of working in teams are useful attributes to work out whether physician training is for you.

**Student:** You have spoken about the advances in internal medicine and the work in teams – does it mean that if I commit to internal medicine, I have to commit to living in a large town and bigger centre?

**Physician:** No. Once you are qualified as a physician, you have opportunities to work in a major centre or a district hospital. There are also many opportunities to work partially in the community or a rural centre, and opportunities to work part time.

You haven't asked about earning potential, which is polite of you. All doctors earn well compared to the New Zealand average salaries. Physicians have good earning potential, particularly if they consider private practice in an interventional specialty. You won't find many physicians complaining about their salary.

Spare a thought for a very non-interventional specialty that is at the forefront of changing the landscape of New Zealand health care: palliative care – while we are having this discussion, the New Zealand people are discussing passionately the role of euthanasia. Palliative care is in the middle of the discussion embodying much of what is great about physicians: care and empathy; constant improvement; and team work.

**Student:** If we are getting so good at treating diseases, is there a risk that if I train as a physician I will run out of work in the future?

**Physician:** An interesting thought, but that scenario is very unlikely to happen. Our population is getting older and many of the conditions that physicians manage are diseases of ageing. There will be no shortage of work available. In addition to all of the new investigations and therapies that are becoming available, we are going to need more doctors to oversee them.

**Student:** I have already been working pretty hard the last couple of years – what is the work-life balance like for a physician? Do they take their work home with them?

**Physicians:** A career as a physician means a commitment to lifelong learning – but this is a genuine highlight of the job, not a burden. Physicians all learn from each other; as you will have seen at grand rounds, and we are fortunate in New Zealand that senior doctors are currently well supported to attend conferences and educational activities.

Hospital-based physicians tend to be part of an after-hours (weekends and overnight), on-call roster in addition to scheduled weekly duties. Much of the time this primarily consists of providing advice to junior doctors over the telephone; with the increasing ability of technology to allow us to review results and imaging remotely, this is becoming easier. For some sub-specialties – an interventional cardiologist treating

a ST-Elevation Myocardial Infarction or a gastroenterologist treating a gastrointestinal bleed – this may involve a greater burden in having to come back to the hospital. For other sub-specialties, such as dermatology or clinical genetics, the after-hours roster tends to be less taxing.

**Student:** You have talked a lot about sub-specialties. Will I have to pick one?

**Physician:** No. There is, and always will be, a strong demand for general physicians. Many patients present to hospital with an undifferentiated problem where it is not clear which organ-based sub-specialty would suit them best. Increasingly we see patients with multiple comorbidities and having skilled physicians with a more generalist outlook, rather than sub-specialists who know a lot about a small field, is most productive for ensuring they have the best overall care. Most general physicians, even if they do not train formally to completion in a sub-specialty, develop an interest in something such as diabetes, stroke, or bone metabolism. In New Zealand's smaller hospitals, most physicians, even trained sub-specialists, are required to participate in a general medicine on-call rota. In the tertiary hospitals in the larger centres (Auckland, Waikato, Wellington, Christchurch, and Dunedin) there are separate general physicians and there are enough of the individual sub-specialists for them to group together to form their own out-of-hours rosters.

**Student:** I have become interested in research during my training. Is being a physician a good choice if I want to pursue an academic career?

**Physician:** Absolutely. If nothing else, a lot of research boils down to money and the two areas that attract the most funding attention are the physician sub-specialties of cardiology and oncology. I have already told you that in the decades since I trained, many of the sub-specialties such as cardiology with cardiac resynchronisation pacemakers, and rheumatology with targeted monoclonal antibodies have changed beyond all recognition and all of this has come about because of research. As a physician, you can apply a true bench-to-bedside approach to research, and have opportunities ranging from evaluating the biochemical properties of a new peptide under a microscope, to large multicentre randomised drug trials of thousands of patients.

**Student:** You are convincing me. What should I do over the next few years to become a physician?

**Physician:** You are about to embark on two years as a house officer. Look at doing general medicine or sub-specialty attachments in your second year, but I think it is also important to do at least three months of something completely different, to gain some perspective. In fact, I would argue that any time spent in anaesthesia, critical care, or the emergency department would give you invaluable skills for a future life as a physician in terms of being more confident looking after critically unwell medical patients and being able to interact well with other non-medical specialties. In your third or fourth year out of medical school, you want to begin basic training as a medical registrar working towards the Fellowship of the Royal Australasian College of Physicians' written and clinical exams after a further two or three years. Time spent in these early years in a district hospital doing general medicine, where you get a very good overview of managing conditions across the entire spectrum of internal medicine, can be very rewarding. From a training perspective, you often get much more of an opportunity to be actively involved than you would in a similar position in a bigger centre. However, as you come to sit your exams most people prefer to be in a tertiary centre. You should take advantage of the opportunity here to work alongside experts in a range of sub-specialties, as this will build up your overall general skills and knowledge base.

Throughout this whole time, you should be on the lookout for role models and mentors. No two physicians are identical and you will find people, or even simply certain aspects of the way they conduct themselves, that you wish to incorporate into your own practice. You



will hopefully also find yourself being attracted towards a particular sub-specialty; this can be because of the nature of the sub-specialty itself or often it's simply the positive working environment created by the individual personalities that you have worked with that draws you in. With the exams completed, now is when you begin advanced registrar training. This involves a further three to four years and to get the complexity of cases you need, the majority of it needs to be done in a bigger centre. You may also wish to take time out along the way to perform some research. For some sub-specialties, undertaking a further overseas fellowship for one to two years is recommended to round off your training and experience. Training paths are variable, but at the end of all this you will be a medical consultant.

**Student:** That does sound like quite a long road. What happens if I were to change my mind about being a physician along the way. Would I lose out?

**Physician:** Absolutely not. You don't have to make a decision now for the rest of your life. Even if you start physician training, the first few years of general training involve rotating through a number of the medical sub-specialties. If during this time you were to change your mind and would prefer to work as a general practitioner, surgeon, or psychiatrist, you have only gained in terms of experience. I have good friends who are radiologists, anaesthetists, and pathologists with a background of a few years' general physician training, and they would all agree that the greater understanding they have developed from their additional medical training has made them better doctors in the specialties they now pursue.

Yes – you are right that most medical sub-specialties will take a significant time to train in, but so do other specialties. Embrace this time – as you train in New Zealand, you are in a well-paid job with good working conditions and educational support.

**Student:** Thank you for your time.

**Physician:** Thanks for your trust, and don't forget to enjoy this period where you have a whole world of opportunities.

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# Should the Ministry of Health introduce a melanoma screening programme?

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## Abstract

New Zealand has the highest incidence of melanoma in the world. It poses a significant burden both to patients and to the health system, and therefore, there has been debate regarding whether a national screening programme for melanoma in New Zealand should be implemented. This article discusses some of the criteria required for a screening programme, some of the issues that may arise with melanoma screening, and whether one would be appropriate for New Zealand.

## Background

Melanoma is a cancer of melanocytes, usually in the skin, and has a significant risk of metastasis.<sup>1</sup> Patients with metastatic melanoma have markedly reduced survival.<sup>2</sup> Each year in New Zealand approximately 56.2 per 100,000 people will develop melanoma (age-standardised rate), a staggeringly large number compared with the age-standardised global incidence of about 5 per 100,000 people.<sup>3</sup> This likely relates to an amalgam of risks factors, including much of the New Zealand population having fair skin, a population that spends a significant amount of time exposed to the sun, and high amounts of ultraviolet radiation in New Zealand.<sup>4</sup>

Diagnosis of melanoma is usually made by clinical suspicion, with consideration of the patient's history, inspection of pigmented skin lesions in examination, and confirmed with biopsy. Treatment is variable and depends on the stage of the disease; often surgical excision is sufficient. If there is advanced metastatic spread, treatment may involve immunotherapy or other targeted therapy typically aimed at controlling symptoms and the rate of progression of the disease, rather than the cure.<sup>5</sup> There are many non-modifiable risk factors for the disease such as a patient's genetics and family history. And while melanoma can be fatal, it is also preventable, and some modifiable risk factors include excessive sun exposure, tanning bed use, and severe sunburns in childhood. Primary prevention may be brought about by a societal reduction in these modifiable risk factors in New Zealand, decreasing the incidence and overall burden of melanoma to our society.<sup>6</sup>

Secondary prevention, however, involves treatment of melanoma once it has been diagnosed. In general, treatment is more effective when performed earlier during a disease, which is made easier when it is detected earlier. Therefore, there is a potential place for a melanoma screening programme. Screening is the testing of an asymptomatic population for a disease before symptoms develop and while there are still features that may be detected clinically. This allows earlier diagnosis, meaning an intervention can be initiated earlier. However, not every disease or population is suited for a screening programme. In 1968, Wilson and Junger delineated ten features of a good screening programme for the World Health Organisation, which are widely referred to in screening programme development, globally, and are outlined with reference to a potential melanoma screening programme in New Zealand below:<sup>7</sup>

### 1. The condition should be an important health problem

Melanoma does present a significant public health burden in New Zealand. It has a relatively high incidence in New Zealand and is often fatal for many patients.<sup>8</sup> Moreover, there will be an increasing incidence of melanoma as the population ages. As such, melanoma poses a significant enough threat to warrant a national screening programme.

### 2. There should be treatment for the condition

Melanoma, particularly in its early stages is treatable and curable with excision. Therefore, screening for melanoma does not pose the ethical dilemma of identifying patients with an incurable and untreatable disease who are otherwise asymptomatic, and many patients would be able to receive curative treatment.

### 3. Facilities for diagnosis and treatment should be available

There are facilities to diagnose and treat melanoma in New Zealand, including general practitioners and specialist services, in both the

public and private sectors. Therefore, most people would have the opportunity to receive follow-up diagnostic investigation and treatment where indicated if they receive a positive screening result.

#### **4. There should be a latent stage of the disease**

This means that for a screening programme to be effective, there should be a period where the disease is clinically detectable before the disease progresses beyond cure. Melanoma has a latent period where there are malignant cells present that may be detected, while there is no deeper invasion nor metastatic spread.<sup>1</sup>

#### **5. There should be a test or examination for the condition**

One issue with a potential melanoma screening programme arises when deciding what would be the screening test. The diagnosis of melanoma is often made upon clinical suspicion. Suspicious lesions may be examined visually for changes consistent with melanoma, such as asymmetry, irregular margins, variable colour, a large diameter, and evolution. These features are not pathognomonic for melanoma, but an increased number raises clinical suspicion and the likelihood of the disease.<sup>1</sup> However, clinical inspection for the diagnosis of melanoma is not consistently accurate, even among experienced dermatologists; it has been shown that the sensitivity of history and examination of the diagnosis of melanoma is about 70% for dermatologists.<sup>9</sup> If there was to be a national melanoma screening programme and the method of screening was to be clinical inspection, it should be noted that there will be limits to the accuracy, namely the sensitivity and specificity of the screening, which will present problems with high rates of false positive and false negatives.

This also presents the question of who would administer the screening programme. It could be assumed that specialist dermatologists would be able to provide the most accurate screening of melanoma. However, this does not appear to be an efficient allocation of resources, as there may be too few dermatologists in New Zealand to meet the demand that screening would impose.<sup>10</sup> Another alternative is to train people to perform melanoma screening, such as is the case with the national childhood vision and hearing screening programme. Alternatively, general practitioners could administer the screenings, such as is already done with cervical cancer screening.<sup>11</sup> These two options may not be as accurate as dermatologists, but would be more readily available as a national programme.

#### **6. The test should be acceptable to the population**

Confirmation of melanoma is often by biopsy. While this is the ideal method of diagnosing melanoma, it is not necessarily an appropriate method of screening. The process of screening and detecting a case should be acceptable to the population, and one may assume that excision of every pigmented lesion, regardless of clinical suspicion, is both superfluous and exposes the population to many unnecessary procedures which are not without complications, cosmetic or otherwise.<sup>12</sup> Using inspection of lesions as a screening test would be more acceptable to the population, but is less accurate.<sup>9</sup>

#### **7. The natural history of the disease should be adequately understood**

The natural history of melanoma is well elucidated and will usually progress unrelentingly to metastatic disease, which is appropriate for a screening programme.<sup>1</sup>

#### **8. There should be an agreed policy on whom to treat**

Given the natural history of melanoma, a melanoma screening programme will presumably treat anyone diagnosed as a positive case, regardless of severity.

#### **9. The total cost of finding a case should be economically balanced in relation to medical expenditure as a whole**

The cost of screening needs to be balanced against total medical expenditure, meaning that the process of screening is cost effective. This depends on several factors, such as the cost of the resources involved in screening and the cost of the cases of melanoma that are not diagnosed as early as they would have been during the screening. Therefore, appropriate calculation of the cost-effectiveness of the programme is more suitable once the proposed programme is established, particularly regarding the cost of human resources that would be required, and until the change for the outcomes of melanoma is known. Until then, whether a melanoma screening programme is cost effective remains uncertain.

#### **10. Case finding should be a continuous process, not just a 'once and for all' project**

The screening will be an ongoing process rather than happening only once. It is easy and appropriate to continue to screen people continually at either different times, or different points in patient's lives.

The proposal of a melanoma screening programme appears to meet all the Wilson Criteria, except for the fifth and sixth, which are arguably the most important. If there is no appropriate screening test for a disease, then a screening programme cannot be suitably administered, regardless of the number of the other criteria met.

#### **Other Issues with screening**

Screening itself is not without significant issue. Screening is a tool to identify those who are likely to have a condition, rather than make definitive diagnoses. Therefore, there will always be limited accuracy in screening programmes. The two significant inaccuracies in screening are false positives (i.e. a patient is told they have the disease when they do not), and false negatives (i.e. a patient is incorrectly reassured they do not have the disease when they do). If screening is to be based upon visual examination, there will almost certainly be significant numbers of false positives and negatives. Since melanoma has a rather low prevalence compared to some diseases, most patients being screened will not have the disease. Therefore, significant numbers of patients being screened will be falsely screened as positive. This has the potential to create unnecessary stress and anxiety while waiting for diagnostic confirmation.<sup>13</sup>

The other risk with screening programmes is over-diagnosis – identifying patients who do have the disease even though it is not likely to have ever affected the patient's life. Over-diagnosis leads to over-treatment, treating the patient with potentially harmful procedures or medication when it would have no impact on survival. However, the issue of over-diagnosis is less in a melanoma screening programme, as it is a rapidly advancing disease with high metastatic potential, and in general, treatment (even in very early disease) will be life prolonging and disease modifying.<sup>1</sup>

There has been a trial in Germany that assessed mortality rates before and after implementing a screening programme between 2003 and 2013.<sup>14</sup> Following implementation, there was a transient decrease in mortality from melanoma within about the first five years of the programme, but the mortality rate did return to the rate prior to screening. This probably represents a lead-time bias where cases are

identified earlier (and thus patient survival seems increased), despite having no impact on mortality. No randomised control trial assessing a melanoma screening programme has ever been performed, and so there exists little high-quality data regarding the benefits and harms of implementing a screening programme.<sup>15</sup>

## Conclusion

Melanoma is a major public health concern in New Zealand and it has been suggested that a screening programme may be a practical solution in reducing the burden and adverse consequences of this disease. While a melanoma screening programme would meet most of the criteria outlined by Wilson and Junger for an acceptable screening programme, the main issue remaining is the screening test itself, both in terms of what the test would involve and who would perform it. Other issues with screening, such as the impact of false positive tests, also present concerns and on balance, the benefits of screening do not seem to outweigh the costs. Therefore, public health efforts should continue to remain focussed on primary prevention rather than a screening programme, at least until a time when more is known about the benefits and harms of a melanoma screening programme.

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## Conflicts of Interest

William Muller is the NZMSJ Web Editor. This article has gone through a double-blinded peer review process applied to all articles submitted to the NZMSJ and has achieved a standard required for publishing. The author has no other conflict of interest.

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# Treating a patient with acute post-mastectomy pain

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➤ Talitha is a recent nursing graduate, currently continuing her post-graduate studies in nursing through Auckland University while living and working in New Plymouth, Taranaki. Her article was completed as part of her Bachelor of Nursing course requirements through Massey University in Manawatu as a final year nursing student. The article formed part of an entry to the Undergraduate Awards programme based in Dublin, Ireland in 2016 and was highly commended and awarded the regional Oceania prize under the midwifery and nursing category. Talitha is passionate about nursing and aspires to continue her research to better understand the patient experience within a nursing context.

## Abstract

The management of acute pain is essential within clinical practice, particularly when dealing with post-mastectomy patients. Post-mastectomy pain is associated with the physical removal and subsequent damage of tissue, psychological distress, and inadequate pain management. Acute pain is the perception of pain for three months or less following mastectomy. An examination of pain definitions and theories, together with the use of a hypothetical post-mastectomy case study, allowed for a broad understanding of acute pain. Pain management strategies are guided by pain pathway concepts. However, the emotional and psychological aspects of pain suggest that post-mastectomy pain is a multidimensional and unique experience, and therefore pain management is also guided by an understanding of how pain is experienced. This is done through a pain assessment, either verbal or non-verbal in nature. Yet, some assessment techniques lack specific descriptive information, which can lead to the under or overestimation of the patient's pain. Acute pain can worsen or persist if the health professional only focuses on the physical aspects of pain, disregarding the psychosocial influences. Therefore, a holistic assessment is required to comprehensively evaluate post-mastectomy pain. Post-mastectomy pain is complex, requiring several analgesics with different mechanisms of actions. Non-pharmaceutical interventions can be used in collaboration with medication to control and manage post-mastectomy pain without further side-effects. Some effective post-mastectomy pain interventions include: hot or cold therapy; patient support; transcutaneous electrical neural stimulation; and music therapy. These holistic pain-management strategies have been shown to improve patient outcomes, making the health professional, and especially nurse, instrumental in preventing the persistence of acute pain. Central to holistic pain management is tailored patient care,

addressing individualised aspects of pain to prevent post-mastectomy pain developing into chronic pain.

## Introduction

Acute pain management is a vital component of patient care for all members of the medical team in the clinical setting. Patients are known to experience high levels of pain after mastectomy procedures.<sup>1</sup> A mastectomy is a surgical procedure that removes breast tissue to prevent or treat breast cancer.<sup>2</sup> This treatment may result in acute post-mastectomy pain, which may lead to chronic pain if left untreated. Acute post-mastectomy pain can be better understood by analysing definitions and theories regarding acute pain. Before treating pain, it is important to understand how the patient experiences their pain. Several assessment techniques are used, but pain is multidimensional. Therefore, assessment tools focusing on the whole person are just as important as those focusing solely on pain. Acute post-mastectomy pain may require pharmacological interventions in conjunction with non-pharmacological therapies to offer the best possible chance of recovery for the patient. Considering post-mastectomy pain as a unique experience and tailoring the pain management to the individual, gives the patient the best possible chance of a full recovery.

## Definitions of acute pain

Formulating a definition of acute pain is fundamental in analysing post-mastectomy pain. Appropriate treatment is provided based on how pain is classified.<sup>3</sup> Without the use of pain definitions, health professionals are at risk of providing unsatisfactory pain management

to their patients.<sup>3</sup> Pain can be described as an unpleasant sensation, physical or emotional in nature, and related to possible or genuine tissue damage.<sup>4</sup> Li et al. supported this notion and additionally inserted a multidimensional element.<sup>2</sup> Acute pain refers to sharp pain that is short in duration, while chronic pain is associated with a dull pain longer in duration.<sup>5,6</sup> Farrell and Dempsey's definition of acute pain stipulated a duration of up to six months, which contrasts with Fishbain et al. and Riskowski's classification of equal to or less than three months.<sup>7,8,9</sup> Even though pain definitions found in literature incorporate similar aspects, an absence of an overall consensus remains. As such, the following article will utilise the subsequent combined definition when discussing acute pain: equal to or less than three months in duration, caused by a surgical procedure.<sup>4,7,8,9</sup> This definition will be used in assessing the patient's experience of acute post-mastectomy pain.

A mastectomy procedure involves the removal of breast and/or lymph tissue and could result in nerve, muscle or tissue damage.<sup>2,10</sup> Although mastectomies can be provided prophylactically to prevent breast cancer, women in their 40s are more likely to undergo a mastectomy following a diagnosis of breast cancer.<sup>11</sup> Schreiber et al. outlined that the majority of mastectomy patients state pain as their most distressing symptom.<sup>7</sup> This may lead to psychological anguish, physical disability, and impediments to their pain management.

### Pain theories

To fully appreciate post-mastectomy pain, one needs to consider theoretical models of pain.<sup>12</sup> The Specificity Theory (TST) by Charles Bell formulated a concept of specificity, where each neuron responds to a distinct stimulus.<sup>12,13,14</sup> Central to TST is the idea that pain travels along a pathway from the periphery to the spinal cord and into the brain.<sup>12</sup> The Gate Control Theory of Pain (GCTP) by Melzack and Wall uses the idea of a pain pathway to theorise that the pain signal can be inhibited through sensory stimulation.<sup>13</sup> These theories can be applied to the post-mastectomy patient through careful selection of pain management techniques. However, TST and GCTP do not explain the complexities of pain experienced by post-mastectomy patients.<sup>15,16</sup> Vilkolm et al. suggested that this could be due to both nociceptive and neuropathic involvement in post-mastectomy pain sensation.<sup>17</sup> The majority of pain theories overlook the situational, physical, and psychological aspects of pain, which are central to the Theory of Unpleasant Symptoms by Lenz et al.<sup>18</sup> This theory raises the idea that pain, including post-mastectomy pain, is multidimensional, supporting a holistic view of pain.<sup>18,19</sup> Furthermore, Khan argued that pain is a unique experience which cannot be shared or measured, suggesting that pain should be assessed and valued as a distinct experience.<sup>20</sup>

### Pain assessment

The concept that pain is an idiosyncratic experience is reinforced by assessing how the patient experiences their pain. Pain can be assessed verbally, through observations or by using holistic patient assessment methods. The first type of assessment to be considered relates to verbal pain assessment tools (VPAT). A VPAT commonly used in the clinical environment is the numeric rating scale (NRS).<sup>21,22</sup> The NRS requires the patient to assign a number between zero and ten, based on their current pain.<sup>23</sup> Eriksson et al. argued that the NRS is open to interpretation, as the post-mastectomy patient and health professional may have subjective interpretations of the same pain score.<sup>24,25</sup> Regardless of the criticism, NRS is a valuable tool that formulates a common language between the health professional and the patient, allowing changes in pain to be tracked.<sup>26</sup> Describing pain is an alternative, if the post-mastectomy patient finds it difficult to assign numerical values to their pain<sup>24</sup> and pain-descriptive tools can be used to assess the patient's pain.<sup>15,27</sup> The verbal descriptor scale is similar to the NRS, but instead of using a numerical scale it uses descriptive phrases such as 'intense', 'mild' or 'no pain'.<sup>15</sup> However, despite its descriptiveness, it lacks specificity.<sup>15</sup> In contrast, COLDSPA

is a comprehensive mnemonic used to assess the character, onset, location, duration, severity, pattern, and associated patterns of pain.<sup>27,28</sup> COLDSPA can be used to better understand how patients experience pain. Acute pain is often undetected or inadequately treated, which has led some to suggest that pain assessment should be considered as a fifth vital sign.<sup>23,29</sup>

Pain assessment is important for patients unable to communicate their pain.<sup>22</sup> Immediately post-surgery, the patient may be drowsy or sedated, therefore highlighting the need for non-verbal pain assessment tools such as the behavioural pain scale (BPS) and non-verbal adult pain assessment scale (NVAPAS).<sup>22</sup> Arbour et al. stated that vital signs are not an adequate predictor of pain, hence why BPS and NVAPAS also use a combination of behavioural and physiological observations to assess the patient's pain level.<sup>22,30</sup> Acute pain can lead to physiological and behavioural changes such as increased blood pressure, increased respiration rate, increased heart rate, flushed skin appearance, pupillary dilation, decreased body movements, and facial grimacing.<sup>22</sup> Even though Pudas-Tähkä et al. found BPS to be the most valid indicator of acute pain, its applicability in assessing post-mastectomy pain is yet to be determined.<sup>22</sup> Acute pain experienced by the patient could be due to the mastectomy procedure itself. Alternatively, it could be indicative of a potential post-operative complication.<sup>31</sup> Adequate wound assessment could highlight possible infection, rather than assume that the causation of post-operative pain is due to the surgical procedure.<sup>31</sup> Furthermore, it may be suitable to assess the patient's circulation, neurological function, and respiration, as these can impact post-mastectomy pain and complications.<sup>32</sup> Non-verbal pain-assessment tools may underestimate the patient's pain, however this could be due to the assessment tools focusing on the physical aspects of pain and disregarding the biopsychosocial components of pain.<sup>6,22</sup>

Pain has been described as being multifaceted in nature, highlighting the need for a holistic pain assessment.<sup>33</sup> Schreiber et al. demonstrated a strong correlation between psycho-social aspects and the development of chronic post-mastectomy pain.<sup>6</sup> They observed that acute pain is particularly associated with psychological anguish, anxiety, depression, disturbed sleep, and dysfunctional coping strategies.<sup>6,8</sup> It is theorised that the emotional and sensory neurological pathways act independently, while simultaneously functioning in parallel, giving rise to a strong association between the emotional and physical feeling of pain.<sup>8</sup> This provides a possible explanation for why some post-mastectomy patients often describe both the physical and psychological elements of pain.<sup>18</sup> The patient may report intensified feelings of pain due to psychological and social distress related to an altered body image, separation from family, or coping with a breast-cancer diagnosis.<sup>34</sup> If pain is assessed purely from a physical standpoint it is possible that post-mastectomy pain could worsen or persist.<sup>4,35</sup> Jia-Rong et al. illustrated that pain assessment tools incorporating coping strategies can empower post-mastectomy patients, thereby improving their pain.<sup>34,36</sup> The whole-person assessment (WPA) is such a tool, although it also covers physical, emotional, environmental, spiritual, and social aspects of health.<sup>19</sup> By treating the patient holistically, the health professional is able to address each component of the patient's health.<sup>37</sup> Kress et al. showed that holistic care is able to improve the patient's emotional anguish, quality of life, and overall recovery.<sup>38</sup> As such, by taking into account the psychological, emotional, and physical aspects of health, health professionals are ideally placed to provide care that can vastly improve the overall health outcomes of patients.<sup>39</sup> Even though the WPA was redesigned to address chronic pain, Hayes et al. advised that it can also be used to address acute post-operative pain.<sup>19</sup> And despite the WPA being time consuming to complete, Newson stressed its importance, as cultural and spiritual elements could influence how the patient expresses their pain.<sup>33</sup> The use of suitable pain assessment can ensure appropriate pain-management strategies are put in place.



## Pain management – Pharmacological

Invaluable information obtained through pain assessment can assist to formulate appropriate pain management for the patient. Applicable pain-management techniques can include pharmacological and non-pharmacological interventions that are continuously monitored and tailored to the individual. The first management approach to be discussed deals with pharmaceutical interventions. Opioid analgesics function by reducing the perception of pain signals in the central nervous system.<sup>40</sup> According to Amaya et al., most analgesics suppress acute post-operative pain, however, post-mastectomy pain may require several analgesics to target both nociceptive and neuropathic receptors.<sup>15,41</sup> The analgesia ladder is a useful paradigm in addressing pain in the patient by using non-steroidal anti-inflammatory drugs, paracetamol, and adjuvant medications in conjunction with opioid analgesics.<sup>15</sup> Legeby et al. showed that administering several different analgesic medications can significantly reduce post-mastectomy pain.<sup>42</sup> Using a combination of medications to treat acute pain allows for effective pain relief at a reduced dose.<sup>15</sup> A lesser dose can also decrease the analgesic side-effects, such as nausea and vomiting, experienced by some post-mastectomy patients.<sup>43</sup>

Nausea and pain should be considered in unison, as both can have the same physiological consequences. Montgomery et al. suggested that pain and nausea are particularly unfavourable for post-mastectomy patients, as they can significantly prolong patient recovery, delay hospital discharge, and lead to unforeseeable readmissions.<sup>44</sup> The adverse health effects of nausea can be worsened by the presence of emesis.<sup>45</sup> Vomiting can impact the patient's overall health, as it can lead to dehydration, reduced nutritional intake, and pulmonary complications.<sup>46</sup> Amaya et al. argued that the inclusion of anti-emetic medications into post-mastectomy recovery treatment is therefore just as important as analgesia.<sup>41</sup> The health professional's role in pain management relates to the administration of medications, monitoring of side effects, and providing patient education.<sup>25</sup> Timmerman et al. showed that patients are more likely to adhere to treatment regimens if they are provided education, specifically related to the medication, and associated side effects.<sup>47</sup> Some medications are prescribed on an 'as needed' basis, which requires the medical team to use their assessment skills to analyse suitable pharmaceutical interventions.<sup>48</sup> Alternatively, the health professional can administer medications to assist the patient with mobilisation, hygiene cares, or nutritional intake.<sup>42</sup> Pharmacological strategies can be used in conjunction with non-pharmacological interventions to help manage acute pain post-mastectomy.

## Pain management – Non-pharmacological

As medical professionals, and in particular nurses, provide holistic patient care, it is important to consider non-pharmacological interventions to help manage post-mastectomy pain. Vilkhom et al. found that patients experiencing pain have intensified cold and warm detection thresholds, supported by the findings of Kaunisto et al.<sup>17,49</sup> As such, hot or cold therapy can be used to treat post-mastectomy pain.<sup>49</sup> Silva et al. on the other hand found that transcutaneous electrical neural stimulation (TENS) has a similar analgesic effect, particularly for intercostal pain in post-mastectomy patients.<sup>50</sup> Both hot or cold therapy and TENS support the GCTP by using a non-noxious stimulus to disrupt the pain signal.<sup>14,51</sup> Other non-pharmacological therapies have a psychological focus. Clarke et al. showed that post-mastectomy patients experience increased feelings of depression and anxiety.<sup>52</sup> After receiving emotional support, these patients reported lower levels of pain.<sup>52</sup> This could be due to actual decrease in pain, better coping skills, or distraction.<sup>2</sup> Regardless of the mechanism of pain relief, addressing a patient's emotional and psychological health plays an integral part in post-mastectomy pain management.<sup>52</sup> Hovind et al. found that post-mastectomy patients reported the need to discuss the recovery process, therapy options, and risk of developing ongoing chronic pain.<sup>1</sup> The nurse, or other health professional, can address the patient's psychological health

by creating instances to communicate these concerns, which could lead to further educational opportunities.<sup>53</sup> Hayes et al. showed that post-mastectomy patients provided with adequate information are able to cope better with their acute pain, while Cho et al. showed that it could lead to better health outcomes.<sup>19,53</sup> Another useful pain treatment option addressing psychological aspects of pain in the post-mastectomy case study is music therapy.<sup>2</sup> Music therapy is effective and non-invasive with no added side-effects, and can also be used to treat depression, anxiety, nausea, and vomiting.<sup>2</sup> Even though some of these non-pharmacological therapies may be useful, it is imperative to understand that each individual has a unique response to treatment.

To provide suitable holistic patient care, interventions must be individualised. Pain is a subjective experience and should be recorded and treated as it is described by the patient.<sup>21,54</sup> Two studies found a difference in pain threshold between various ethnicities.<sup>9,10</sup> This was attributed to potential socio-economic influences, discrimination, or physiological differences.<sup>9</sup> Newson suggested that acute post-mastectomy pain can lead to chronic pain due to cultural attitudes forming barriers to pain management.<sup>33,55</sup> In some cultures, it is considered inappropriate to show weakness such as pain.<sup>56</sup> This could influence pain management, thereby prolonging the patient's recovery. Another influencing element of post-mastectomy pain is identity. Patients must overcome Erikson's crisis stage of generativity versus stagnation.<sup>57</sup> Developing resiliency, a coping mechanism in itself, can lead the patient to experience improvements in acute post-mastectomy pain.<sup>8,58</sup> At this stage there is already a heightened sense of self-awareness, which is further compounded by the loss of breast tissue, highlighting a potential risk for the patient to develop body image concerns.<sup>57,59</sup> This highlights the importance for health professionals to assess and provide holistic care, tailored to each individual's comorbidity that may arise.<sup>38</sup> As breasts are associated with motherhood, femininity, and sexuality, removal could adversely impact body image.<sup>60</sup> Schreiber et al. noted that an altered body image could lead to feelings of anxiety, stress, and depression which can worsen post-mastectomy pain.<sup>6,52</sup> Pre- and post-operative counselling or breast reconstructive surgery can not only help mastectomy patients to feel more attractive, but can improve their pain and overall well-being.<sup>59,60</sup> Addressing acute post-mastectomy pain prevents the risk of it developing into chronic pain.

If post-mastectomy pain is not adequately treated, it can persist and develop into chronic pain. Clarke et al. outlined that mastectomy patients have a high risk of developing chronic pain, which Mohamed et al. suggested could be due to uncontrolled acute pain.<sup>35,52</sup> This was supported by Schug et al. who stated that 64% of post-mastectomy patients experience pain for six months or more post-surgery, implying that chronic pain is inevitable.<sup>4</sup> Even though Li et al. suggested that chronic pain post-mastectomy was mostly associated with tissue damage, Schreiber et al. argued that untreated psychological factors have similar risk factors for developing chronic pain.<sup>2,6</sup> As such, it is paramount for mastectomy patients to receive treatment tailored to their own situation.<sup>54</sup> An essential component of post-mastectomy recovery requires the involvement of a multidisciplinary team, each focusing on certain aspects of overall health.<sup>26</sup> Milby et al. found that post-operative pain management handovers are often incomplete, which negatively impacts the patient's recovery.<sup>61</sup> Thus, an important aspect of managing post-mastectomy pain involves accurate documentation to ensure continuity of care.<sup>62</sup> Both Mularski et al. and Nworah suggested that it is not adequate to simply document pain, but to act on the information with appropriate interventions.<sup>55,63</sup> Eaton et al. recommended the use of evidence-based pain management strategies in cancer patients, taking into account clinical experience, research findings and patient predilections.<sup>64</sup> They also stipulated the need for continuous research development to establish and strengthen robust evidence-based practice, further allowing nurses to independently implement holistic pain management strategies.<sup>64</sup> The adequacy of the patient's pain management regime can be further



enhanced by referring them to a specialised pain team.<sup>23</sup> This team will assess the patient's pain and response to treatment, while also taking into consideration how the pain impacts the patient's sleep and psychological well-being.<sup>23,46</sup> Establishing interventions that deal with all aspects of health allows the individual to receive the appropriate treatment for their unique situation, with the hope of preventing the persistence of post-mastectomy pain.<sup>6,54</sup>

## Conclusion

Pain is an unpleasant sensation, often associated with surgical procedures such as a mastectomy.<sup>4</sup> Acute post-mastectomy pain is comparatively short in duration and mostly a direct result of the mastectomy procedure. The medical team can incorporate the knowledge of pain manifestations and influences into their clinical practice by providing tailored, research-based pain-management interventions. Even though there are pain theories that describe how pain is perceived, post-mastectomy pain continues to be a subjective experience. Therefore, health professionals should assess pain either through verbal assessment, non-verbal assessment, or a WPA. Tailoring treatment to the patient can occur through careful selection of pain-management techniques. Post-mastectomy patients may find pharmacological interventions beneficial, however non-pharmacological measures can be invaluable for their analgesic relief. By offering these therapies in conjunction with one another, the patient is able to access pain management suitable for them. Tailored pain management strategies give the patient a greater chance of recovery from post-mastectomy pain, without the development of chronic pain. Central to this recovery process is the role of the medical team and how they assess, manage, and document the patient's pain. Without appropriate pain management, the patient runs the risk of experiencing persistent post-mastectomy pain. Numerous pain-management strategies are available to health professionals, requiring ongoing research and tailored utilisation, with the view to ultimately improve patient outcomes.

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Te Hautaka o ngā Akongā Rongoā

# Adie's tonic pupil and Zika virus

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## Abstract

A 57-year-old patient presented with blurred near vision, and on examination, with a constricted right pupil with intact pupillary accommodation, consistent with Adie's tonic pupil. Two weeks prior to presentation, the patient had a serologically confirmed Zika virus infection, where the patient developed pain and swelling affecting the right orbit. The close temporal relationship of Zika virus infection and Adie's tonic pupil suggests ciliary ganglionitis, secondary to Zika virus infection. Ciliary ganglionitis and Adie's tonic pupil have not previously been described as sequelae of Zika virus infection, but are plausible, as Zika virus has already been linked to neurological conditions in adults, such as Guillain-Barre syndrome. This case highlights the possibility of lasting neurological changes in some adults following Zika virus infection.

## Introduction

We report a patient presenting with Adie's tonic pupil in the context of recent serology-confirmed Zika virus infection, affecting the orbit.

Adie's tonic pupil is a condition characterised by anisocoria, with the affected pupil having poor or absent reaction to light, segmental palsy of the iris sphincter, cholinergic super-sensitivity of the iris, and a normal near response.<sup>1</sup> Although most cases of Adie's pupil are idiopathic, it has also been related to infection and inflammation of the ciliary ganglion, ocular or orbital lesions, neuropathies, oculomotor nerve palsy, and trauma; Adie's pupil has also been more specifically linked to neurotropic viral infections, which cause inflammation and damage to the neurons of the ciliary ganglion.<sup>1</sup> Although there are reports of neurotropic viral causes such as varicella,<sup>3</sup> this report is the first to describe a link between Adie's pupil and Zika virus infection.

## Case report

A 57-year-old Brazilian male presented to the Dunedin Hospital Eye Department, Dunedin, New Zealand on referral from optometry – he initially described blurry vision during near work and a mid-dilated tonic right pupil was noted by the optometrist at the time of referral, within a

week of the onset of symptoms. He had not been seen by ophthalmology in the past and denied any long-standing eye problems. Examination by ophthalmology four months after symptom onset discovered anisocoria, with the right pupil appearing smaller than the left; this was confirmed upon measurement in a dark room, with the right pupil measuring 4.0 mm and the left 4.7 mm. The right pupil had minimal response to light exposure via infrared video pupillometry (4.0–3.9 mm) and a normal response on the left (4.7–3.3 mm), using a NeurOptics PLR-2000 pupillometer.<sup>1</sup> There was a normal near response in both pupils with neither ptosis nor ocular motility disturbance, but delayed dilation of the right eye when transitioning from near to far focus. Visual acuity was 4/8 on the right, 4/3 on the left. Visual fields were not assessed. Upon administration of dilute (0.125%) pilocarpine eye drops, there was a reduction in the size of the tonic pupil to 3.7 mm in dark conditions and no response in the left eye (pupil size remained 5.1 mm in a darkened room).

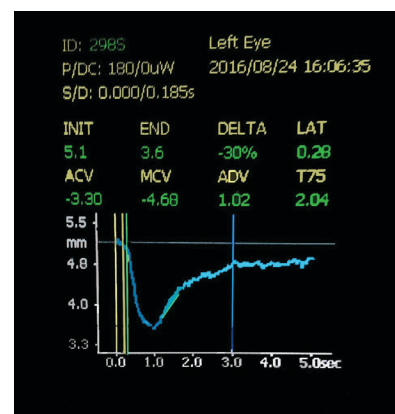


Figure 1 Photograph of the pupillometer output for the patient's left eye, showing normal pupillary response to light exposure.

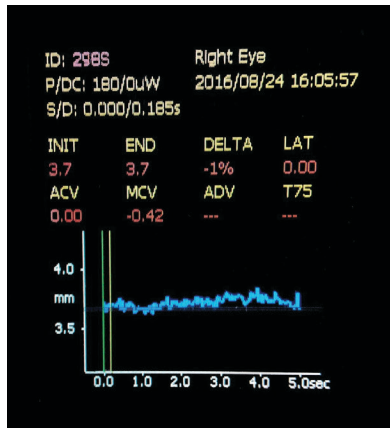


Figure 2 Photograph of the pupillometer output for the patient's right eye, showing minimal pupillary response to light exposure.

Pupillometry was repeated with results consistent with a tonic pupil (Figures 1 and 2). Intraocular pressures were normal (13 mmHg in the left eye and 15 mmHg in the right, normal range 12–20 mmHg) and no abnormalities were found on dilated fundoscopy.

Upon targeted questioning of recent illnesses, he reported that he had experienced an illness while in Brazil two weeks before the onset of blurred vision, with right orbital pain and swelling being described along with nausea, fever, and malaise. Serology in Brazil at the time confirmed Zika virus infection. There was no history of ocular medication or trauma. His medical history included medicated hypertension and hyperlipidaemia, notably, no history of diabetes, and denied any other recent illnesses.

## Discussion

The disease course of Adie's tonic pupil closely mirrors the history of this patient: an enlarged tonic pupil following a viral illness and that responds to dilute pilocarpine solution, then shrinking to a small tonic pupil over time. Adie's pupil is caused by a paresis of parasympathetic pupillary fibres, thought to be due to inflammation of the ciliary ganglion lying just behind the globe of the eye, within the intraconal space of the orbit.<sup>1</sup> As this has no definitive treatment, management is limited to glare reduction during the mydriasis phase, which disappears as the pupil becomes miotic.<sup>1</sup> This condition is related to Holmes-Adie syndrome, which includes the same ocular signs with additional loss of deep tendon reflexes.<sup>2</sup>

Adie's tonic pupil of viral cause is most commonly associated with neurotropic viruses (those that affect the nervous system) such as herpes zoster and syphilis.<sup>1</sup> As this patient denied any recent illnesses aside from Zika infection, specifically including those causing skin changes and ulceration, the aforementioned viral causes become less likely.

Zika virus is known to cause nervous system pathology, including microcephaly and other brain changes in fetuses. Ocular manifestations can occur in these fetuses, with abnormalities affecting the optic nerve, macula, and peri-macular areas.<sup>4</sup> These pathologies have been most apparent in Brazil, which was the location of the 2015–2016 Zika virus epidemic, and the home country of this patient. Guillain-Barre syndrome has also been found to occur as a result of Zika infection in adults.<sup>5</sup> The temporal relationship in this case, combined with a lack of other recent illness, suggests a Zika-induced ciliary ganglionitis resulting in tonic pupil, although a causal relationship has not been proven. An indirect mechanism may be ciliary ganglion trauma from orbital inflammation and soft-tissue swelling during active Zika infection.

## Conclusion

This case is the first description in the literature, to the best of our knowledge, of an association between Zika virus and Adie's tonic pupil. Zika virus should be considered a possible cause of Adie's tonic pupil and further cases described. Confirmation of a causal relationship may lead to improved virological understanding of Zika.

Verbal and written consent was gained from the patient to write and publish this case report.

## Pupillometer key (for Figure 1 and Figure 2)

INIT = Initial pupil diameter (mm), END = Maximal pupil constriction (mm), DELTA = Percentage change between INIT + END, LAT = Latency between flash and onset of pupil constriction (s), ACV = Average pupil constriction velocity (mm/s), MCV = Maximal pupil constriction velocity (mm/s), ADV = Average dilation velocity (mm/s), T75 = Time to 75% redilation (s)

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# Effect of nicotine on gut mucosal microbiota in ulcerative colitis: a study proposal

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> Aleksandra Turp is a fifth year medical student at Christchurch School of Medicine. She has a research background in epigenetics and maintains a keen interest in medical research. This essay has won the Robin Carrell prize for an innovative research proposal, awarded by the Department of Pathology at the University of Otago.

## Introduction

Ulcerative colitis (UC) is an inflammatory condition involving mucosa of the rectum variably extending to the colon. It has a complex aetiology, which involves genetic predisposition, environmental factors, immune dysfunction, and changes in the normal gut microbiota. One of the environmental factors associated with UC is smoking. Interestingly, smoking has been proposed to result in a more benign progression of UC. Compared to non-smokers, smokers experience fewer flare-ups and lower hospitalisation and colectomy rates.<sup>1</sup> Furthermore, smoking cessation also aggravates the condition.<sup>1</sup> Fewer clinical findings, including lower stool frequency, less episodes of rectal bleeding, and a lower histologic disease activity index, were seen in the population of patients with active UC who were administered nicotine patches on top of the usual treatment, compared to those receiving placebo.<sup>2</sup> This suggests that nicotine may have a direct effect on the progression of the disease. Although the precise bacterial phyla associated with UC when compared to healthy subjects vary between different studies, UC is firmly associated with a reduced microbial diversity.<sup>3</sup> Smoking cessation has been found to induce profound changes in the composition of intestinal microbiota in healthy subjects, with an increase in Firmicutes and Actinobacteria and a decrease in Bacteroidetes and Proteobacteria phyla. Furthermore, microbial diversity increased after smoking cessation.<sup>4,5</sup> It is likely that smoking cessation and uptake of smoking would also result in changes to the composition and diversity of microbiota in patients with UC. Given the beneficial effects of the nicotine patches on the progression of the UC, it would be interesting to know whether nicotine by itself can have an impact on the composition of the human microbiome in UC.

## Proposal or hypothesis

This research aims to investigate whether nicotine administration can alter the composition of gut mucosal microbiota in patients with UC. It will also test whether the potential changes to microbiota induced by

nicotine administration are associated with the severity and progression of the disease.

## Methods of testing

A cohort of 50 non-smoking patients with mild to moderate UC will be recruited for the study. This will be a pilot study that will help with refining of the methods and inform on the size of the future patient cohort needed to detect a statistically significant effect. Subjects with active UC will be assessed and given a score based on severity level, taking into account their clinical symptoms and sigmoidoscopy results according to the protocol described before.<sup>2</sup> Patients with positive pathogenic stool cultures and those on antibiotic treatment will be excluded from the study. In addition to the normal clinical treatment, including 5-aminosalicylic acid and steroid treatment, patients will be randomly allocated to either nicotine replacement therapy in the form of a nicotine patch (22 mg for three weeks, based on a previous study which has shown a promising effect) or a placebo patch.<sup>2,6</sup> Treatment and placebo groups will be matched for disease severity, smoking history, and treatment. Microbiota identification will be carried out according to a protocol described previously.<sup>3</sup> In short, stools will be collected from both treatment and placebo groups before and after the nicotine treatment. DNA will be extracted from faecal pellets and the variable region V1–V2 of the 16S ribosomal RNA gene will be amplified. Each polymerase chain reaction product will be tagged with a unique identifier and purified on agarose gel for high throughput next-generation Illumina MiSeq sequencing. Taxonomy of the microbiota from each sample will be assigned by comparison against the Ribosomal Database Project (RDP) release 10. Changes to the composition and diversity of microbiota will be assessed in the individual patients before and after the nicotine therapy, and collectively in the treatment versus placebo group. The effects of nicotine therapy on the composition and diversity of microbiota will also be compared with the progression of

active disease by a follow up sigmoidoscopy and gathering of clinical history from the treatment and placebo group. A standardised score, as described above, will be used to monitor disease progression over time and to compare the outcomes of the nicotine and placebo treatment.

### Significance of results

This study aims to explore the relationship between nicotine therapy and changes in the intestinal microbiota, and whether this accompanies an improvement of symptoms of UC. The results of this pilot study will inform a larger study evaluating the above. A long-term goal of this research is to provide further support for nicotine therapy as one of the treatments for active UC. Nicotine replacement therapy is cheap and easy to administer. It counteracts the negative effects of tobacco smoking, whilst still preserving the benefits described above. The results will also add to further elucidation of how microbiota changes are implicated in the pathogenesis of UC.

### Ethics

The Health and Disability Ethics Committee will be approached to gain the consent for the study proposed above.

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### Conflict of Interest

Aleksandra Turp is the NZMSJ Editor-in-Chief. This article has gone through a double-blinded peer review process applied to all articles submitted to the NZMSJ and has achieved a standard required for publishing. The author has no other conflict of interest.



# » Learning the ropes of St John

## Anthony Lau

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➤ Anthony Lau is a fifth year medical student from the University of Otago, he has particular interests in aviation as well as volunteering for St John ambulance. The following article highlights several areas of what volunteering for St John is all about, and you can be the judge of whether it's worth doing or not!

As busy medical students combating a complex curriculum during office hours with a high study workload after hours, we often try to maintain a hobby; something, somewhere outside of medical school. That may be music, sports, Netflix, or chilling on the beach. For me, it's St John ambulance.

### How did I get involved?

A good friend of mine who used to volunteer for St John asked if I wanted to give it a crack. He said, 'I reckon you'd enjoy it'. Initially, I wondered who in their right mind would work 12 hours a day for free, but the more I heard about his 'work' stories, the more I thought 'why not?', and that was nearly ten years ago.

After an intensive interview, a series of assessments, and several weeks of waiting, I was finally accepted. The training sessions were intense, yet exciting. They were very practical, with hands-on skills and critical problem solving. For example, in a team of five we performed cardiopulmonary resuscitation (CPR) for 45 minutes, as well as a log roll to move the patient onto their side, suction, and bag masking. You may argue that in most cases, you'd call it after 20 minutes of resuscitation, but it reinforced the need for teamwork and communication.

The skill and knowledge I have learnt with St John have been invaluable to my medical school training. Indeed, using my time at St John to complement my medical training was initially my goal. I set aside time each month to attend training, and spend time crewing an ambulance to increase my clinical exposure with acute cases. After several years in the service, my aim has changed somewhat to using my spare time to help the community. Whether that be at large events to provide simple first aid, or being at the frontline to attend emergencies, every little bit helps, and it has become more of a passion than a volunteer 'job'.

### Memorable cases

As an emergency responder there are a lot of memorable moments – some are good, and some can be haunting.

I still remember my first cardiac arrest callout. This was in my first year of service before I gained my ambulance practice qualification. I

was crewing an ambulance with a paramedic and another volunteer one evening. As the other volunteer finished up at midnight, the paramedic asked if I'd like to stay on. This would mean there was an extra double crewed ambulance on overnight, and for me, more first-hand experience. I leapt at the opportunity. Sure enough, soon after midnight we were dispatched to a cardiac arrest. I still remember how excited I was and at the same time very scared of not knowing what to do. When we arrived, two other ambulances were already there before us. I walked in and I froze; I did not know what I needed to do. It felt like I was standing there for a long time, but it was seconds before I was tasked by the paramedics to prepare for extrication. The patient was defibrillated back into sinus rhythm 17 times on the way to the hospital. They were discharged a week later.

Another case comes to mind. We were double crewed in an ambulance. We were dispatched to a purple call; this is when someone is imminently dying. I was focused on getting there under lights and sirens, meaning we didn't get a chance to read the notes on what we were going to. This case was most unusual. The person waving at us on arrival was crying and screaming, whereas usually when people see us arrive, they are relieved. My gut feeling was telling me this wouldn't be good. As we arrived the patient was lying on the floor obviously cyanosed, and bystander CPR was in progress. The person had attempted suicide. With the experience we have built up over the years, we acted almost spontaneously into DRSABCs (emergency response protocol). The basics, but done well was an absolute priority until a senior paramedic arrived. It was a very stressful situation, there was a lot of tension and emotion in the room. Those are the type of experiences gained that we cannot learn from a book or Undergraduate Medicine and Health Sciences Admission Test. Inevitably we may come across similar situations in our career as doctors, so it's critical that we can debrief about these scenarios and have someone that we can talk to about these types of cases.

The 2010 and 2011 earthquakes, from a learning perspective, stood out from my time with the ambulance service. I remember telling myself, 'this is what we trained for'. I remember walking in the Christchurch central business district, with collapsed buildings and crushed cars on either side. We were doing maximum hours to assist. I was initially based in front of a collapsed building helping to triage people being rescued

from the building. The next day I helped set up a welfare centre for those that lost their homes. I remember the large amounts of food and water that was generously donated. Those positive moments of the community pitching in stand out in what was a difficult time for all of us.

Some of the most memorable cases are not always the dramatic or life-threatening events. I think of the elderly ones that have taken a tumble and just need our help to get them up, check them over, and make them a cup of tea. It's truly about being out there and helping the community.

### **What can an ambulance officer do?**

As a volunteer ambulance officer, you can start doing event first aid and primary-care duties. Some events are more enjoyable than others. For example as I am writing this, my next event is Warbirds Over Wanaka – accommodation is provided, as is free entry! That is an excellent perk.

Other events you could volunteer at include car racing, horse riding, marathons, music concerts, and more. After about two years of that you are eligible to be selected to join the frontline ambulance. An ambulance qualification allows you to administer drugs ranging from a weak opioid and inhaled anaesthetic, to life-saving intramuscular adrenaline. There is also a range of skills such as laryngoscopy for airway obstruction and fractured femur splinting that you can do. Emergency medical technicians can deal with 60%–70% of the calls coming to the ambulance service.

### **Are there limitations?**

It's not a limitation, but being an ambulance volunteer certainly does require commitment. Despite being a medical student, I am still required to attend training up to once a fortnight. There is a requirement to do at least two shifts a month, whether that be a three hour rugby game or a 12 hour ambulance shift. Then there is authority to practice requirements. This aims to keep up our clinical exposure and applied knowledge. There is also yearly continuing education – this is topical around the updates in practice, it may be new research about resus or an essential skills refresher. There is one limitation – I cannot go to Wellington School of Medicine, mainly because they use Wellington Free Ambulance, while the rest of New Zealand are covered by St John.

### **What do I like about St John?**

St John is like a huge extended family to me. I have so many mentors and people that I look up to that I'd like to thank, but that would take up every article in this journal! There is so much that I have learned as a St John member that I could not have learned from medical school. St John volunteer members all work for the common good but come from extremely diverse backgrounds. There are retailers, tradesmen, health professionals, pilots, and many more. That means I get to meet lots of people and have made friends from a huge range of backgrounds. St John has been one of the most trusted charities for many years now, and it's the way I contribute to charity.

### **How to join**

St John often advertise for volunteers and the interest is generally very high. Applying for a volunteer role is similar to a job application. There are basic requirements such as passing a physical test, you must have a current first aid certificate, and a New Zealand full driver's licence for three years or more. If you are passionate about emergency services, want to learn some practical hands-on skills, and generally want to help the community, give St John a call on 0800 780 780.

As medical students, we learn a lot of material and store a tremendous amount of knowledge in our head, but we are not always as hands-

on as we could be. I believe that the ambulance experience has significantly increased my hands-on experience and complemented my theoretical learning.



# Crossing borders: from Amsterdam to New Zealand

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## Introduction

Back in the 17th century, a fellow Dutchman, Abel Tasman, became the first explorer to arrive in New Zealand. The country never turned into a copy of the Netherlands, even though we have been in contact for a long time. The differences between our countries are enormous. In the Netherlands, we travel by bike instead of car; soccer is the most popular sport instead of rugby; and our highest 'mountain' is not even a tenth of the height of Aoraki/Mount Cook. These differences in our countries are also seen within medical education and research. This exchange paper will hopefully give you some insights into how medical education and research works in the Netherlands.

## Medical education

In the Netherlands, our journey to become a doctor begins shortly after we graduate from high school. We apply for a three-year-long bachelor's degree in medicine at one of eight universities. However, places are limited (each university offers ~350 places a year) and competition is fierce. The annual tuition fee for university is €2060 euros or \$3480 NZD, with another substantial amount being paid by the government (~€100,000 for six years). The Netherlands has eight academic medical centres that offer the six-year course: the Academic Medical Center (AMC) and VUMC are both located in our capital city of Amsterdam; Erasmus Medical Centre in Rotterdam; Leiden University Medical Center in Leiden; Maastricht University Medical Center+ in Maastricht; University Medical Center Groningen in Groningen; Radboudumc in Nijmegen; and University Medical Center Utrecht in Utrecht (see Figure 1). Very soon, AMC and VUMC are planned to merge into one centre in Amsterdam. The bachelor's programme consists of three academic years, mainly filled with theoretical courses. At the end of the three years, students write a systematic literature review in a chosen field of interest. This is known as their bachelor's thesis and is the first medical research experience for most students.

After completion of the bachelor's degree, all students have to complete a master's degree to become a medical doctor (MD). Due to the high number of medical students in Amsterdam, waiting periods for students to start their rotations are as long as four to eight months. Many students utilise this period to gain extra experience in research or to travel abroad. The master's degree programme is three years and consists of two and a half years' clinical rotations, followed by six months of research.

During the rotations, medical students get to see many different departments within the hospital. They rotate every six to ten weeks to a different department, mostly also in a different hospital, located in different cities. In the last year, students can choose an internship of four months in the field they're interested in. The goal for the research internship, which can be done before or after the clinical internships, is to work on a scientific research project in a self-chosen aspect of medical science. During this research internship, students are supervised by PhD students, post-docs, research fellows, or faculty staff.

## Travel opportunities in the curriculum

During their bachelor's degree, 40 students from VUMC have the opportunity to follow a minor degree abroad. Several universities are connected to this project, including universities in the United Kingdom, United States of America and Australia.<sup>1</sup> Students from other countries who are interested in medical sciences and health care are welcome to join the exchange semester of VUMC.<sup>2</sup> More information can be found on the website of VUMC ([www.vumc.nl](http://www.vumc.nl)).

Medical students from both universities in Amsterdam (AMC and VUMC) conduct part of their clinical rotations in one of the University Medical Centres, and another in out-of-town regional placements. These include smaller hospitals in surrounding towns. The travel

distance to surrounding towns are a maximum of one to one and a half hours by train.

Besides these placements, medical students have the opportunity to go on a clinical rotation abroad. Common countries for VUMC students are Aruba, Surinam or South Africa. AMC students often go to Surinam, Malawi and Tanzania.

### Research opportunities

In addition to the bachelor's and master's thesis, there are many opportunities to gain additional research experience in parallel to the mandatory clinical internships. Motivated and academically-able students get the opportunity to join the university's 'honours program', which is a research project for the final two years of their bachelor's degree, along with their first half-year of their master's degree. Students can also join a research group during their bachelor's degree as an extracurricular activity that they can stay in for their research internship. Sometimes, students continue activities from their research internship during their clinical rotations.

The Amsterdam Medical Student Journal (AMSJ) is a scientific medical journal facilitating the academic development and scientific writing skills of medical students. AMSJ enables students to publish their own research and become more experienced in the process of submitting research to peer-reviewed journals. AMSJ was founded in 2014 and is a collaboration between the two academic medical centres in Amsterdam, AMC and VUMC. Our editorial staff consists of 25 medical students, each supervised by a Doctor of Philosophy (PhD) student or doctor in a specialised field of medicine. Our editorial staff peer-reviews submitted articles, which contributes to our standard present items such as a clinical image, radiology image, or expert opinion. Every three months, a new edition is published and circulated throughout Amsterdam.

### After becoming a doctor

After completion of the master's degree, a specialisation track needs to be done before doctors can work in a particular field of medicine. Due to the enormous number of graduated doctors and the low number of available positions for a speciality, newly graduated students will mostly not be able to start specialisation directly after graduation. Therefore, the majority of students gain experience in the clinical field or start a PhD program. Both options give students more experience in the field of medicine that they enjoy prior to enrolling for their specialisation.

### Work experiences

A third of the medical students in the Netherlands aspire to become general practitioners (GPs),<sup>3</sup> with general practice being by far the largest specialisation in the Netherlands in terms of numbers. The Dutch health care system promotes primary health care through GPs in general, and limits access to hospitals without GP referrals. A visit to the GP is always free of additional charge, apart from the compulsory and partially subsidised health care insurance fee.

Medical specialists who work in one of the eight academic medical centres of the Netherlands tend to combine their clinical work with research and educational activities. Most academic research is focused on specific areas of expertise that differ in all university medical centres across the Netherlands. For instance, the VUMC in Amsterdam has several research institutions specialising in neuroscience, cancer, cardiovascular science, and public health. VUMC Cancer Centre Amsterdam (CCA) is a leading centre for research in cancer and immunology. Important themes researchers work on in the CCA are cancer biology and immunology, imaging and biomarkers, and treatment and quality of life.<sup>4</sup>

Another innovative research project is the 100-plus study that aimed to find hereditary factors that protect against dementia in people older than 100 years<sup>5</sup> Many have noticed that hospitals that are unaffiliated with a university contribute less to research, but more toward clinical work.

### Social experiences

Several organisations organise social events for medical students. First, every medical faculty in the Netherlands has its own student association, organising the orientation week in the beginning of September for the first-year students and social and career events throughout the year for all students. For the master's students, there are special boards organising workshops, career events and social events. Furthermore, health care and career events are also organised by the Dutch Royal Medical Association, which works closely with politics and government and several other organisations in health care, such as patient organisations and health care insurance companies.<sup>6</sup> In their spare time, most students are also members of a student-lead sport association, such as a rowing association.

### Conclusion

Differences in New Zealand and the Netherlands are seen in cultural habits and geographic characteristics. Also, differences in the medical curriculums between New Zealand and the Netherlands might be found. With this exchange paper we aimed to give insight into the Dutch medical curriculum and common ways of living for medical students. Experience this for yourself and come visit us in the Netherlands for a semester abroad!



Figure 1 Map of The Netherlands with approximate locations of each academic medical centre.<sup>7</sup>

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Te Hautaka o ngā Akongā Rongoā



## Impressions from a foray into Kaitāian medicine

### Benjamin Booker

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➤ Benjamin Booker is presently a final-year medical student at Whangārei Hospital, where he divides his time between superficially appearing to be vaguely useful and accidentally standing in the path of fast-walking surgeons. He found himself studying medicine following studies in classical piano performance from Victoria University, and has a particular interest in politics and philosophy.

While many people who enter medicine do so from a strong, if vague, inclination to make the world a better place, it proves remarkably difficult to articulate the exact role of a doctor in a society where we no longer just cure disease – where letting die, for example, may be kinder than stoking the perishing embers of a well-lived life. It is even harder to hold to this altruistic inclination amongst the competition, theoretical memorisation, hierarchical machinations, and existential weariness that medical school invokes; perhaps hardest of all is retaining the ability to truly see people walking through the doors, when the temptation is to see chest pains, broken femurs, renal failures, and smokers in order to find temporary solace from medicine's encroachment on our time and, more taxingly, our hearts.

It is tempting too, to get swept away amongst the bravado of the latest magnetic resonance (MR) scanner or the most powerful immune mediator; but behind the awesome forces of investigative diagnostics and sci-fi treatments remains an old truth: the powers of clinical endeavour amount to very little when compared to the powers of a patient to heal himself. Nowhere in my training over the last six years have I seen this principle upheld to such an extent as it was during two placements in rural generalism and general practice in Kaitāia. As such, these placements served as a worthwhile reminder of higher motivations in medical study and challenged me in a more urgent way to consider patients once again as people complete with their own particular vibrancy and complexity, as well as their own medical trials and triumphs.

Kaitāia is a town that has seen great successes and challenges in hauora, with a relatively high level of deprivation, comorbidity, and social difficulties. The urbanisation of industrial and manufacturing jobs has added to the high unemployment rates and Te Tai Tokerau in general appears to receive promises triennially around election time that vanish quickly in the shadow of Auckland highways and ostensible 'tough economic times'. Generations of cultural marginalisation have left many Māori in the region with systemic barriers to maintaining tikanga of profound significance; however, the loss of traditional fabric

has not been met with adequate governmental support to replace it with a new fibre of hauora whānau to weave from. Be that as it may, the people are exquisitely welcoming and friendly, the landscape raw and beautiful, and the rush hour completely non-existent.

The physical health challenges are also slightly unique. Rheumatic fever, erased from most Western undergraduate courses, snarls away despite the enterprising efforts of telehealth teams, as do chronic skin and lung infections. For many, the name Kaitāia – literally 'ample food' – is grimly ironic. And perhaps underlying most adolescent consultations is the practitioner's awareness of the region's smouldering underbelly of suicidality, which periodically ignites into a powerful and horrible explosion of destruction, directed within, but devastating many without, too.

Kaitāia Hospital's status as a rural hospital means it is unable to maintain computed tomography (CT) or MR scanners, full-time specialists, round-the-clock laboratory or radiology access, specialised blood tests, or advanced treatment units. In lieu, however, it has some of the more impressive communicators, general diagnosticians, and even, if patient reports are to be believed, hospital meals that this country has to offer. Like many rural hospitals, it practises a type of medicine which I had envisaged (before medical school) would be the norm – a practice based on a flexible broad-based clinical knowledge with the option of pursuing further interest areas in greater detail, and where the doctor takes an active interest in the long-term and general health of her patients and society. There is also an active interest in cultivating multi-disciplinary relationships and understandings, and also a collegiality with general practitioners, rather than the more common 'professional separation' – perhaps often used as euphemism for 'private condescension'.

A typical day in the hospital medical team consists of a morning multidisciplinary handover, followed by a ward round of the entire hospital with the medical and nursing staff. Such an effort necessitates caffeine before setting to work completing morning paperwork and



ward jobs. The rest of the day usually entails clerking and admitting or discharging patients from the emergency department and performing therapeutic procedures if required.

Rural general practice differs from the urban practices, too. Late presentations, combined with a characteristic staunchness and sometimes a poor understanding of the possibilities of medicine, appear to create a subset of patients who do not expect to reach retirement age – generations of early familial deaths, it seems, have convinced many that their fate cannot be different. As such, much hinges on the integrity of the therapeutic relationship as well as clinical rigour at each visit, no matter how rare the visits may be. After all, in a community of this size, it is not at all unlikely that the mother of a practitioner hears of a misdiagnosis before the practitioner himself does!

Since the emergency department is the first port of call for a relatively wide catchment area, a correspondingly wide range of cases find themselves presenting through its doors and with them, the responsibility to assess whether more severe cases can be managed on site (with or without specialist help from Whangārei or Auckland) or sent elsewhere by ambulance or helicopter. The absence of CT scanners often makes initial clinical findings and their formulation crucial, and offers a useful reminder of the importance of a good history-taking and examination technique (dare I say 'proper' medicine?), which is also on display after business hours when laboratory and radiological staff are on call, and decisions about the necessity of further tests need to take into account the potential wrath of a sleepless radiologist faced with a gratuitous request.

The effects of this in a more chronic setting are worth consideration. All the doctors I worked with had beautifully refined their natural talents in discussing palliative decisions with patients and one factor involved was the toll of constant travelling on the quality of the last days of life and whether this would negate any perceived benefits of intervention. Similar issues apply to operations or specialist appointments booked in larger cities. All this, I suppose, is raised more to illustrate the capabilities and admirable achievements of Kaitiāia's health service with comparatively sparse specialist resources on site, than to emphasise its medical remoteness and to show what a privilege it is to learn from the practice of doctors whose clinical acumen and thoroughness is at a premium.

A premium was also placed on a slower unshrouding of social history. It was maybe the first time I have seen *whakawhanaungatanga* put properly to practice – where 'where is your family from?', for example, is used as a means of building social connection through shared experience rather than emphasising difference. Discussions about depression and death, then, were an unfurling of a tapestry of experience and perception, rather than identification of symptoms and formulation of treatment. While this really is not any particular revelation theoretically, its translation to practice is surprisingly rare – and the habits and role-modelling that junior doctors receive in some bigger hospitals undoubtedly perpetuate old practices, even when modern ideas may be taught in theory.

Another interesting aspect of the selective was the opportunity to see the impressive work of community organisations. I spent a day with iMoko, a telehealth company providing remote diagnosis and prescriptions for those such as children with superficial skin infections, sore throats, or headlice. In this way, some low-complexity medicine can be practised by communities in their own settings, while still by and large maintaining the speed and accuracy of treatment in a clinical setting. Another day was spent with the nurses in the B4 School Check programme, checking children for gross health, vision and hearing, co-ordination, and spatial skills. This offered an insight into health promotion separate from the more downstream interventions that we more often practise at the hospital. I was fortunate enough to get a chance to join the St John's paramedics for experiences in the

ambulance and helicopter. This was yet another chance to see health care out of the doctor clique, where redoubtable skills in patient stabilisation take priority over tests and plans. One memorable case entailed collecting and delivering to Auckland a woman who had had a large heart attack in the middle of a church sermon. I will leave the reader to adjudicate the aetiology of this event.

At this level of training, my impression is that successful learning in clinical practice does not usually consist of a series of quantised lightbulb moments, but rather a series of normal moments viewed in a new light, stimulating the slow formulation of a new perspective on patients and oneself. While I cannot predict where my medical journey will take me to, I know that throughout the trip I shall look back on my time at Kaitiāia as one of these special turning points, where people in hospital beds and their situations were able to be seen with a new acuity. Perhaps this is all to say that if the reader should find him or herself with a sort of existential fibrous pericardium induced by medical school, where protecting an idealistic heart from disillusionment and emotional ischaemia has left it slightly subdued in passion and *joie de vivre*, a selective or general practice placement in Kaitiāia may be just the tincture the doctor ought to order.

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Sarah Clarke, Joel Pirini, Kath Rollo, Kevin Rodgers, and all the Kaitiāian health care team.



# Aviation medicine – the specialty you didn't know existed

### Alistair Lock

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> Alistair Lock is a Trainee Intern at the University of Auckland, currently placed in the Waitemata cohort. He was a previous academic editor for the New Zealand Medical Student Journal and has an interest for a career in academic surgery, with a focus in orthopaedics. He hopes to apply for a job at Waitemata District Health Board later in the year.

My medical selective was with the Royal New Zealand Air Force (RNZAF) on their base at Whenuapai, Auckland. The Base has over 1000 personnel and is the largest RNZAF base in New Zealand. It is the home of three flying squadrons: Number 5 (P-3K2 Orion); Number 6 (Seasprite Helicopter); and Number 40 (C-130 Hercules and Boeing 757-200). My role on base was with the Aviation Medicine Unit (AMU), New Zealand's only aviation medicine centre, to perform a literature review on the health effects of fatigue. The aim was to review the evidence and recommend fatigue risk-mitigation strategies, not only to reduce short and long-term health risks in employees of safety-critical industries such as aviation, but also to create more efficient, productive, and effective defence force personnel with longer and more fulfilling careers. The results from this review are planned to be published elsewhere, and this publication will focus on the experience of a medical selective on an RNZAF base.

### Defence health centre

As this was an academic task, I wanted to keep up my clinical knowledge with some time at the base's Defence Health centre. The centre had four civilian general practitioners (GPs) and 10–12 uniformed medics. I spent one morning a week at the Defence Health centre.

The health centre has walk-ins in the morning, called 'the sick parade'. I was able to see these patients alone in my own consultation room. I would take histories and perform relevant clinical examination, then present my differential diagnoses to the overseeing GP with a management plan for appropriate diagnostics investigations if required. Each morning I would see up to five patients alone. The ability to independently assess and make differentials and management plans for patients was beneficial for my learning and my confidence. I noticed that as I was not being watched, I could ask questions in my own way and not worry about the semantics too much – I could focus more

on rapport building and thinking of the next question. In addition to the sick parade, I also helped with minor surgeries. I performed several core biopsies and wide excisions independently, with supervision.

I became very passionate about general practice on this placement, which is something I previously had not considered. I noticed that the patients presenting to the clinic were young, often with acute injuries. There were not many chronic-disease cases and patients valued exercise and well-being. I felt that people would act on my recommendations and education, which gave me a lot of satisfaction. The patients were also very engaged and asked appropriate questions, which further added to my satisfaction as it felt like a process of shared decision making, rather than having the whole burden on myself. The clinic was also not too busy and the doctors had scheduled morning, lunch, and afternoon breaks. I felt that the Defence Force cared about doctor and patient well-being and this translated into better patient care.

I worked in a team at the centre and would often meet with the medics for wound dressing, vaccinations and other tasks. The medics themselves were interesting, as they also saw patients by themselves, despite only having a three-year medic course from the Defence Force, with no prior medical training. Their efficiency and knowledge were incredible considering this time frame and it made me really question the efficiency of my six-year medical degree.

### Aviation medicine initial course

I wanted to assist with and learn from any AMU training courses that occurred on my selective. One such course that occurred during my third week was the aviation medicine initial course (AVMEDI). This is a course for any base employees who need to work on an aircraft. The personnel included pilots, navigators, and flight attendants. The

course consisted of various lectures and practical sessions over four days. The content of the lectures covered flight safety, fatigue, hypoxia, hyperbaricity, flight clothing, alertness management, noise, human factors, visual hazards, and motion sickness, just to name a few. I learned a lot of new information in these sessions, much of which I had no prior knowledge about.

The most interesting practical sessions for me were the motion sickness simulator session and the reduced oxygen breathing apparatus session, both of which I was able to partake in. While these principles are not often thought of in conventional medicine, they are at the forefront of aviation medicine. I was able to use this new knowledge and information to make connections with previous experiences I have had in hospital. I noticed that the signs of hypoxia I saw in the practical session (reduced cognition, sleepiness, deep heavy breathing) were also seen in clinical conditions such as chronic obstructive pulmonary disease (COPD). This further strengthened my understanding of the pathophysiology behind COPD, which I believe will support my further clinical decision making when seeing patients with this condition.

The knowledge obtained from this course was also applicable to my work with the Defence Health centre. I was able to educate patients who asked me questions about the course, and any medical requirements to undertake it.

### Selected base activities

I visited all three of the base's Squadrons (5, 6, and 40) during my selective. I wanted to see all of the available aircraft and working environments, and ask staff for their opinions on fatigue in the workforce and possible mitigation strategies.

**Ride on Seasprite Helicopter.** I was very lucky to be given a ride on a Seasprite Helicopter<sup>1</sup> with six Squadron. It was a 12:00 flight, to return at 14:30. I had to arrive an hour before for the safety briefing. I learned from this that safety is very important in aviation. They spent a lot of time discussing the weather, other aircraft in the vicinity, our plan for the trip, and back-up plans for any complications that might occur along the way. This made me think of the surgical safety checklist and time out. We could add to the safety checklist by having a mandatory discussion of procedures for critical situations, such as for example allergic reaction, malignant hyperthermia or major bleeding. From my experience in surgery, the safety checklist seems like a requirement that nobody wants to do. However, for six Squadron, it was clear that the crew were passionate about the safety briefing because they knew the severe implications of omitting it.

There were four crew members. A pilot, a navigator, a crewman, and myself. The flight consisted of a flight around the harbour bridge, Devonport, central business district area, then over the Hauraki Gulf. We then flew over Redwood Forest and I was winched out of the helicopter in a simulation of what would happen when a medic is dropped down to an injured person.

One thing I noticed from this trip was how fatiguing the equipment was. Wearing the flight suit, the life jacket, and the helmet with the seatbelt on was very restricting and heavy. I felt physically exhausted on my return and I incorporated this into my research on fatigue.

**Ohakea Air Tattoo Show.** During my selective, the RNZAF celebrated its 80th birthday, and to celebrate they hosted the Air Tattoo Military Air Show at Ohakea RNZAF Base, Palmerston North.<sup>2</sup> International air forces from the United Kingdom, United States of America, Australia, Canada, Singapore, Japan, and New Caledonia were invited to bring a wide array of aircraft and performed spectacular air and ground displays. I was taken down to the Ohakea base from the Whenuapai base in a Canadian C-130J Hercules – it was far from the coffee and cookie with Air New Zealand! It is the type of plane that wounded personnel are

taken on in stretchers. It showed me a taste of what being a medical officer in the RNZAF would be like. At the air show, I assisted with the medical personnel in triaging anyone requiring medical treatment. It was mostly heat exhaustion and handing out sunscreen, however, I did manage to see one patient with chest pain and make a differential and management plan for the over-seeing doctor. In my free time I was able to visit the planes from other countries. Selected photos are shown in Figure 1.

**P-3K2 Orion simulation.** I spent one afternoon piloting the P-3K2 Orion via simulation. This was a very fun experience and one that made me consider whether I should have been a pilot instead of a doctor. The experience showed me how much concentration is required to pilot a plane. There are a lot of instruments and dials which need to be checked and observed in flight and after only a couple of hours I felt very drained. This was an important insight for my research in fatigue.

**Ride on P-3K2 Orion.** Five Squadron allowed me to fly on their P-3K2 Orion,<sup>3</sup> which was even better than the simulation. There was a 16-man crew and the flight was about seven hours. The trip consisted of a flight to the east coast of the North Island, then a turn and up to Cape Reinga, then a turn again and low-altitude flying (around 200–500 feet) over the sea on the way back to Auckland. I was able to roam around the plane and speak to the pilots, flight engineers, and technical rail crew (radar operator, camera crew, etc) about their experiences and thoughts on fatigue. Various fatigue mitigation strategies were described to me, some of which I used in my research. Another point I considered on this flight was noise. Despite wearing earplugs the noise itself was still loud and quite fatiguing.



Figure 1 Selected images from the 2017 Air Tattoo Air Show. A – Two Royal Australian Air Force F-18 Hornets. B – Japan Air Self Defence Force KC-767. C – Selected older aircraft, no longer in service. D – Singapore Air Force C-130J Hercules.

**40 Squadron Visit.** Although I never got to fly on any of the 40 Squadron aircraft, I was taken on a tour by their warrant officer and I had a detailed discussion to him about fatigue in the Defence Force. I was taken on the Boeing 757-200,<sup>4</sup> which is the New Zealand equivalent of the American Air Force One. I was also shown the C-130 Hercules,<sup>5</sup> the same plane I had been on to go down to the Ohakea air show (but this was the New Zealand model). I was taken inside the flight deck and this showed me the conditions that pilots work in. It was very hot and cramped – not ideal for napping and general comfort. I was also shown the hangar and spoke with some of the flight mechanics on their opinions of fatigue and how to manage it.

I was able to learn about the legal aspects of fatigue on this tour; the maximum hours of flying in one day is 18 hours, and if this full time is taken then a mandatory 12 hour stand-down period begins. The concept of stand down could be applied to medical practice, as doing a long day as a registrar, then doing a 10 hour day the following day with no stand down, is far from ideal. The pilots were shocked when I told them this is what happened on acute and post-acute days.

## Conclusions and future thoughts

I had a fantastic time on my selective. It was nothing like the kind of clinical medicine I have been used to and I really enjoyed the run and miss the people I worked with. I built great relationships with the staff at AMU and the Defence Health centre and the selective ignited a spark inside me for aviation medicine. I would definitely consider returning to the RNZAF in some capacity, possibly as a reservist. The AMU offers at least two on-list selectives every year, so I would highly recommend it for anyone considering it as an option for a non-hospital based medical selective.

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# >> A glimpse of women's health in China

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> Danni Wang is a final-year medical student studying at The University of Auckland. She was born and raised in China. In 2017, she went back for her fifth year selective in Obstetrics and Gynaecology at Peking Union Medical College Hospital. She describes it as a very educational experience and hopes to inspire more students to go on elective attachments in Asian countries.

### Introduction

In 2017, I had a fantastic opportunity to go back to my homeland China for a six-week selective in Obstetrics and Gynaecology at Peking Union Medical College Hospital (PUMCH) in Beijing. I was involved in many rare cases in different subspecialties during the clinics and surgeries. It was eye-opening to observe the impacts of culture and a different health system on women's health in China. Hopefully, my selective experience described below is helpful for those considering an elective in China.

### Background – Comparison of the health care systems between New Zealand and China

Unlike New Zealand (NZ), primary health care does not play a very important role in China as many patients would present straight to tertiary centres to book specialist appointments available that day. Therefore, the outpatient department is always full of patients starting to line up for appointments very early in the morning. The advantage of this type of system is that people with serious conditions get attention and treatments on the presenting day. However, it is a very inefficient way of spending health care resources if people present with minor illnesses that could be easily managed in the primary setting.

The government provides partial funding for the costs of health care if the patient is eligible (taxpayers and people receiving special benefits). However, patients still need to pay for the majority of the cost they spend in hospitals, such as the medications, investigations, and treatments. Therefore, it is not surprising to see how some patients refuse life-saving treatments, purely because of the high cost.

### Selective clinical experience

#### *Week one – delivery suite/inpatient obstetrics*

The obstetric centre at PUMCH is a tertiary centre that looks after women with complicated pregnancies referred from other centres all over China. There are no midwives in this hospital as each patient is assigned to a resident during labour. Each day began with a handover of all patients and then a ward round with every one of the department present (including all the junior doctors, nurses, and medical students). The system was very efficient as residents pre-rounded the patients

prior to senior review. During this week, I had the opportunity to assist in many vaginal deliveries, caesarean sections, and life-threatening obstetric cases such as amniotic fluid embolism.

What I found interesting during this week was the impact of Chinese culture on the management of pregnant women. Many people, especially the older generations are influenced by the Chinese culture, which believes the birth process should have as little intervention as possible. As a consequence, I noticed a number of patients avoided any form of analgesia during labour. An extreme example of this was recently reported in the media, about a pregnant woman who signed divorce papers during labour because her husband's family was strongly against the idea of an epidural. The health professionals were aware of the impacts of culture on maternal health. PUMCH has held several public tutorials in order to reduce misconception on analgesia used in labour as well as clinical indications for caesarean sections. However, most doctors did not feel very opportunistic in seeing a significant change at this stage due to the long history of the cultural beliefs.

The pressure of having a healthy baby is very high on Chinese women due to the birth control policy. In Chinese culture, boys are preferred as they are considered to be the continuation of the family, so many women were forced to abort or abandon female babies. In some rural areas, it is still not surprising to see women who gave birth to girls getting blamed or abused. To reduce the stigma of this, the government has legislated that it is illegal for doctors to disclose the gender of the fetus unless there is a clinical implication such as a positive family history of a sex-linked condition. We have been promoting gender equity all over the world, yet I still hear tragic stories happening to women in my motherland. The gender inequity highlights the negative aspects of the traditional culture, and there is an urgent need to discourage gender selection in China. In rural areas, the government has been promoting respect and gender equity during pregnancy to protect women from perinatal abuse.

#### *Week two – maternal-fetal medicine clinics*

During my second week of selective, I was attached to the maternal-fetal medicine team. I observed many prenatal counselling sessions



on the diagnosis of chromosomal disorders and genetically-linked defects. Due to the strict one-child policy, there is a comprehensive screening programme in China. Pregnant women over the age of 35 are recommended by the government to receive diagnostic testing (rather than screening) for Down syndrome by either chorionic villus sampling or amniocentesis. I assisted my supervisor in three procedural clinics with 40 amniocenteses and 25 chorionic villus samplings.

I was excited when my consultant asked me to 'perform' one amniocentesis with her hands over mine. My hands were shaking and sweating because I was terrified of going in too far into the abdomen. I was holding my breath the whole time until I finally felt the 'loss of resistance' my consultant had mentioned. I thought it would be easy after seeing my consultant doing it so many times in the clinics, however, it was only when I was the person next to the patient that I realised – it is always easier seen than done! I have learned that seeing how things are done is not enough in clinical medicine. We gain skills from hands-on experience and practise makes perfect.

I also went to an antenatal counselling clinic with the medical genetics team. It was for couples who have had a child with a genetically-linked disease and were considering genetic screening before having a second child. In order to break the child control policy, parents must obtain the confirmed results of a genetic disease in order to be eligible for a second child.

There was one child, which attended the clinic, with a rare condition called mucopolysaccharidosis. It is an autosomal recessive condition characterised by connective tissue damage from the defective lysosomal enzyme. The parents of this child were embarrassed because of his distorted facial features and short stature. This is another example of the impact of Chinese culture, where people in some rural areas of China perceive that the parents who have disabled children are being punished for sins in their previous lives.

I felt sad. The health literacy in China is poor in some rural areas and amongst the older generations. Many people go to temples to pray for the cure of their diseases and some older people are strongly against Western medicine. For example, they think they would lose the 'internal energy' if the abdomen is being cut open in surgeries. The young generations of doctors in China are aware of the collision between Western and Chinese health views and have initiated educational programmes on social media. Some examples include sexual health in schools, the efficacy of western medicine, and the research evidence on traditional Chinese medical practice.

#### *Week three/four – general gynaecology ward and theatre*

I was placed in the general gynaecology ward for two weeks. Some of the common conditions I saw on this ward included endometriosis, ovarian cyst, fibroids, congenital agenesis of the female reproductive tract, and urogynaecological conditions. The ward was very busy with 30 beds, three assigned operating rooms, and various clinics run daily by different consultants.

On my first day, I was shocked by the efficiency of my consultant seeing 60 patients in one afternoon clinic. Patients from all over China travelled to PUMCH to have appointments with my consultant because she is an expert in performing hysterectomies and endometrial ablations. My consultant asked me to help her prepare patients for speculum exams so we could save time for each patient. I was very nervous in the beginning because of my limited experience in NZ. However, I knew that one of the main objectives for me doing the selective in China is to gain more hands-on experience, so I took a deep breath and did the first one successfully. My consultant was happy with my skill and even asked me to do the swabs and smears for most of the patients. I had a lot of practice that day, and I felt more competent with speculum exams. A bit of pressure made a difference.

The gynaecology department at PUMCH receives referrals from all over China, so I had the opportunity to observe and assist in many rare gynaecological surgeries. I was very lucky to be involved in the care of an 18-year-old patient who had an extremely rare phenotype of Mayer-Rokitansky-Kuster-Hauser (MRKH) Syndrome. Unlike other MRKH girls with absent uterus, this patient had two moderately sized uteruses with functioning endometrium. After suffering for four years of monthly abdominal pain, she finally had the opportunity to receive the hysterectomies and vaginal reconstruction at PUMCH. I scrubbed in her surgery and was surprised to see the two uteruses connected by a cord in between, surrounded by a pool of menstrual blood in the pelvic cavity.

The post-op care was critical in this patient as she had to insert a penile model every day to keep the vagina patent. This caused embarrassment and concern for the patient as she was about to start university with other girls living in the same dorm. Her concerns highlight the significance of psychological impacts of congenital gynaecological conditions. Most girls are diagnosed in their teens, and they often experience emotions such as fear, sadness, anger, and hopelessness.<sup>1</sup> The information and consequences that come with the diagnosis can be overwhelming and devastating for some girls. Therefore, psychological support systems such as counselling service and peer support groups are important for adolescent gynaecology patients as parts of their long-term gynaecological follow ups. Unfortunately, I was frustrated to see that youth mental health services are not readily available to these girls in China as most of them travelled to PUMCH solely for the surgery. With most of the prestigious specialists working in bigger cities such as Beijing and Shanghai, the doctors in China are used to this 'migratory' method of seeking medical advice. The lack of follow up (both medically and psychologically) and poor handover of care to local hospitals are the downsides I see in the Chinese health system.

#### *Week five – colposcopy clinics*

During my fifth week, I attended colposcopy clinics with the cervical oncology team. Similar to the outpatient clinics I went to in the previous weeks, there were 30 patients in each half-day clinic. The registrars had to work on a 'streamline' and I was responsible for speculum insertions and the sterilisations for all the patients before my consultant began the procedures. I even had the opportunity to apply the stains in some of the patients.

According to the World Health Organisation statistics from the human papillomavirus (HPV) information centre, cervical cancer ranks the eighth most frequent cancer among women in China with a crude incidence rate of 9.4 per 100,000 women per year and mortality rate of 4.5 per 100,000 women per year.<sup>2</sup> Therefore, I had the opportunity to observe many large loop excision of transition zone procedures and cone biopsies. Unlike NZ, there is no national cervical screening programme in China. Patients have to pay for their smears and pathology analysis (costing approximately 200 NZD in PUMCH). Therefore, the frequency of screening depends on the income and health literacy of the patients. The government has been implementing public health campaigns on cervical health, so the majority of women in China have had at least one cervical screening at some stage. However, the follow-up rate for most women is very low, and unfortunately, the diagnosis would have already deteriorated to high-grade lesions or cancer by the time they come back with bleeding. Furthermore, the HPV vaccine is not readily available in most parts of China. People would have to go to Hong Kong or major cities for the vaccine, and the total cost, including transport and accommodation, would be about 10,000 RMB (\$2000 NZD). The majority of the general population could not afford it.

From this week's experience, I realised the huge benefit of health screening programmes. The rate of cervical cancer in NZ has dropped significantly since the introduction of national screening programme



in 1990 – ranking 13th most frequent cancer in women in NZ with a crude incidence rate of 6.4 and mortality rate of only 2.4.<sup>2</sup> It will continue to decline after our new guidelines in 2018 with boys also included in the vaccination programme. Health screening programmes are affordable and effective ways to detect early abnormalities of the screened conditions with the aim of preventing serious health events in individuals as well as minimising the economic burden of those conditions.

#### *Week six – gynaecology endocrinology outpatient clinics*

I spent my last week of selective in gynaecology endocrinology clinics. It is a subspecialty of gynaecology looking after women with hormonal or developmental problems. Some of the common conditions I saw were infertility, amenorrhoea, polycystic ovarian syndrome, and puberty-associated problems.

There was a special patient with congenital adrenal hyperplasia that I saw during one of the clinics. It was a 16-year-old girl who came in with her older sister for results of her initial investigations. Her sister was also diagnosed with 21-hydroxy dehydrogenase deficiency. She was found to have a malformed uterus and absent ovaries on the ultrasound scan. My consultant explained the necessity of the clitoral reduction plastic surgery if she were to consider having sexual relationships in the future. To our surprise, she burst into tears in the clinic. It was a lot to take in for the patient because her family was too poor to afford the surgery and medications for both her and her sister. My consultant sighed. I asked if there was any form of funding for the treatments or financial aids she could get from the government. Sadly, she explained that it was impossible to fund for everyone due to the population size and limited resources. Many patients leave the hospital after being diagnosed with cancer because they know they could not afford the surgery and adjuvant therapies. Some desperate patients seek help from families, friends, or public fundraising programmes.

I felt so helpless seeing her leaving the clinic. It was frustrating for us because we had the skills to help her but her socioeconomic situation was beyond our control. If she were in NZ, she would have received hormone treatments earlier on without suffering from all the complications. There are millions of patients like her in China who are desperately seeking money for their medical treatments. It was hard to know what we can do for them. I feel grateful that I will be working in a country where my patients do not have to worry about the bills for life-saving treatments. Moreover, I will utilise the precious resources I have in NZ wisely and with gratitude.

#### **Conclusion**

It was interesting to observe the differences in the health care systems between China and NZ. Due to the large number of patients in China, doctors in China had to sacrifice communication in order to increase efficiency. In my opinion, the health care in China is more like running a Kentucky Fried Chicken, because it is fast, efficient, and with the whole team streamlined. This may have adverse impacts on the doctor-patient relationship, accurate clinical judgements, and informed consent, as there is less time to build rapport and obtain detailed histories. In NZ, the health care is more like dining in a restaurant with excellent communication, favourable environments, but slower turnovers. Every clinician is required to comply with the Code of Health and Disability Services Consumer's Rights, which ensures the quality of health care each patient receives. However, the downside of the more patient-focused care is the long waiting time for specialist appointments in the public system. It is demanding to achieve both efficiency and quality simultaneously. I believe each system has its own value to be more adaptive to the population it serves.

Overall, I had a fantastic selective experience in China. I had a much broader view of the obstetrics and gynaecology specialty, as I was able

to observe clinical practice in the different sub-speciality areas. I also had the opportunity to gain practical experiences such as doing a countless number of speculum exams and assisting in amniocentesis and rare gynaecological surgeries. It was a fulfilling selective experience that reinforced my pursuit of becoming an obstetrics and gynaecology specialist.

#### **Tips for students who are interested in an elective in China**

China is definitely a good place to do an elective in if you want to gain more clinical or practical experience. The conditions we consider as rare in NZ may be the bread and butter presentations in China. It would be helpful if you know a little bit of Mandarin, especially when you interact with the patients. But you will still get a lot of teaching as most of the consultants were very fluent in English with the other international exchange students.

Most hospitals that host international elective students have accommodation available on site. There are a lot of places to visit during the weekends if you are interested in exploring ancient Chinese culture. The public transport is very cheap and convenient. And most importantly, you will not be disappointed with the authentic Chinese food!

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# Feminist Approaches to Bioethics: Theoretical Reflections and Practical Applications by Rosemarie Tong

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> Rebecca is six years deep in her intercalated MBChB and PhD, focusing on adolescent access to long-acting reversible contraceptives (LARCs). Her interests include women's rights, health-care inequality, abortion, contraception, and medical education. Rebecca has no personal interests because she has no spare time.

Ethics and bioethics are disciplines that aim to provide guidance in challenging situations and when faced with seemingly unanswerable questions. This book suggests that bioethical theory often neglects the role that gender has to play in navigating ethical conflict.<sup>1</sup> Tong challenges traditional bioethical schools of thought with the 'woman question': what impacts will attitudes or actions have on women? In doing so, Tong juxtaposes the thinking of non-feminist ethicists and bioethicists against that of feminist ones.

*Feminist Approaches* flows through what bioethics looks like; where feminism fits within bioethics; what feminist bioethicists think; and finally, how we can use these ideas to navigate issues. Tong encourages collaborative discussion between feminist bioethicists with a focus on the 'woman question' i.e. how does a procedure, programme, or practice affect women and the lives they lead? For example, reproduction impacts all individuals, but is a major point of difference between the sexes. Tong encourages considering each reproductive-technology issue in the context of the people it impacts. How does the detection of a chromosomal abnormality impact the surrogate who is carrying the fetus? How does the same scenario affect the commissioning couple? Whose opinions are most important when discussing abortion? Who do abortion rules and regulations affect? The answers to these questions may not always be straightforward or unanimous amongst feminists, but each requires one to ask the 'woman question'.

This book does not give a feminist framework per se, but does make suggestions on how a bioethicist may make judgments in a feminist manner. The overall goal is to encourage inclusiveness and consideration in bioethical theory. This can be done within a feminist framework, acknowledging that many pre-existing (so called non-feminist) theories ignore, or do not serve women. The closest that Tong comes to creating a feminist bioethical framework is in the epilogue of *Feminist Approaches*, where she recommends discussion as

a means of working through bioethical problems. In her words, 'There is no such thing as feminist armchair bioethics. Feminist approaches to bioethics require actual discourse, preferably face-to-face but at least computer-to-computer or phone-to-phone'.<sup>1</sup> To have a feminist approach to bioethics is to engage with the problem at hand and the people that are impacted, rather than to deduce the best course of action from afar. There is also no attempt to leave the reader with a clear view on how to approach bioethics in a distinctly feminist manner. *Feminist Approaches* does not add to feminist thinking; it merely offers a summary of feminist schools of thought.

*Feminist Approaches* is well laid out, guiding the reader through theory and application of bioethics in a way that is easy to follow. Each concept is presented in a simple and accurate fashion. Even in describing medical procedures, the book only includes the relevant details, avoiding unnecessary jargon. This allows readers to spend time making their own judgments about the complexities at hand, instead of spending time deciphering what is on each page.

Unfortunately, this book largely focuses on the issues at hand within the context of the United States of America. It reviews the impact of state and federal laws with very little information on the global views of various practices. This is very clear when Tong discusses genetic therapies, as she worries that the costs associated with these health services could add to the existing socioeconomic divide. Those of higher socioeconomic status would have more control over the effects of their genome and genetic makeup than those of low socioeconomic status. However, what she neglects to mention is that in many countries, such as New Zealand, there is universal health care,<sup>2</sup> and so the discussion needs to be adapted to meet this context.

In *Feminist Approaches*, Tong delivers a succinct summary of the overlap between women's health issues and bioethics. She establishes how individuals' reproductive experiences call for feminist input, as the non-

feminist approaches to these matters fall short. *Feminist Approaches* offers a solid foundation to build conversations around women's health on.

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# Land of the Long White Coat

## by Dr Joshua Smith

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> Iain Miller is a fourth-year medical student at the University of Auckland, based currently in Counties Manukau District Health Board. Outside of medicine, Iain enjoys listening to podcasts such as EM Cases, 99% Invisible, and White Coat, Black Art, as well as being an armchair cricket pundit.

*Land of the Long White Coat* is a six-part, three-topic podcast series produced by Dr Joshua Smith,<sup>1</sup> which aims to equip medical students with the knowledge and skills needed in clinical attachments – particularly those aspects that Smith felt, while completing his final year of medical school, needed more attention. *Land of the Long White Coat* starts cautiously with two very brief episodes, 'Mihimihi' and 'Introduction', tending toward a highly-structured approach. Over the course of the four subsequent episodes, the listener is initially told of basic clinical logistics in 'How Hospitals Work', then is provided with details needed for planning a long-term medical career in 'The Road Ahead: Doctor Jobs and the Training Pathway' (part one and two), and finally learns about the wider medical workforce in 'Nurses and Doctors'.

As a first foray into the world of medical podcasting, *Land of the Long White Coat* is a respectable effort. It fulfils many of the conventions of medical podcasts: guitar riffs separating segments, an interview with an expert in the field, and frequent summaries to recap new information. Smith's relative inexperience does, however, show. There are some understandable teething issues with production like volume fluctuations and editing that leave room for improvement. That being said, the initial production quality was good and further improved with upgraded equipment funded in part by the New Zealand Medical Students' Association Student Innovation Fund.

A particular strength of *Land of the Long White Coat* is the two-part exploration of medical careers in 'The Road Ahead'. In these episodes, Smith explores the pathways from graduation to specialisation, stopping at each of the stages and titles in between. By covering each of these roles and how they train, Smith does incidentally cover some of the same material as the earlier episode, 'How Hospitals Work', but does so in a more succinct manner. This double up in content matters little – soon Smith manages to uncover a section of wider medical education that remains largely hidden for undergraduates. Even experience in a hospital does not necessarily reveal how the training schemes work for various specialities. If a medical student wants to learn about speciality training schemes, then these episodes are a good place to start.

A striking trait of *Land of the Long White Coat* is that it maintains remarkable cultural sensitivity throughout the six episodes. After beginning with a Mihimihi, Smith continues with elements of Te Ao Māori incorporated seamlessly into the podcast. Of particular note is the Te Reo name for the podcast, Te Whenua Korowai Kōtuku. This takes on a greater metaphorical meaning than its English counterpart, expressing the rare and precious knowledge that physicians possess while still retaining an allusion to the coat pun of the English title.

The single largest downfall of *Land of the Long White Coat*, however, is that Smith struggles to define a target audience. In the introductory episode Smith suggests the content will be of most use to New Zealand medical students in their 'fourth and fifth years' of training,<sup>1</sup> but also suggests pre-clinical and even high school students would find it useful. The content of the subsequent episodes, however, does tend toward this earlier end of the medical education spectrum, since much of it can be learned rapidly with clinical experience. As a result, much of the podcast may not be especially relevant to students in their clinical years, with the exception of 'The Road Ahead'.

Overall, *Land of the Long White Coat* is very much what one expects of a new medical podcast and proves that there is capacity in the medical-podcast market for an informative, student-led podcast. The listener will recognise the podcasting conventions and rigid structure that befit the genre of medical podcasting as a whole, while also acknowledging some of the flaws stemming from a novice producer. Sadly, no new episodes have been released since May 2017. However, if new episodes were released they would certainly be both informative and enjoyable.

### References

1. Smith J, Land of the Long White Coat [Podcast] May 26, 2017 [cited March 28, 2018]. Available from: <https://soundcloud.com/landofthelongwhitecoat>



# Sacrifice or save

### Ethan Breinhorst

School of Medicine  
Faculty of Medical and Health Sciences  
University of Auckland

> Ethan is a medical student who is completing a BMedSci (Hons) year in between his third and fourth years. Outside of medicine he enjoys camping, spearfishing, reading sci-fi novels and photography. In the future he hopes to follow a career in orthopedics or pediatrics.

We are faced with a choice  
Not life or death  
We all live, we all die  
The choice is sacrifice or save  
Something has to give way...

At the beach on holiday, the water sparkles in my eyes  
They lose their sight, never to see the beach again

A moment to collect my thoughts  
Seconds to help trickle away

Trying to catch up on my sleep  
They will soon sleep forever

A memorable moment with my family  
Their last moments in this world

No time for my loved ones, I'm losing them  
A family about to lose someone forever

The smile of my child on Christmas day  
Tears as parents say goodbye

In the end, doctors don't choose  
No.  
We sacrifice and save  
Nothing gives way



# Who am I?

### Mosana Evagelia

Christchurch School of Medicine  
Otago Medical School  
University of Otago

> Talofa lava! Sana is a fifth year medical student in Christchurch who has never really been into writing essays, let alone poetry, but she tries. She gained inspiration for this short poem from an interview she did on her Addiction Medicine run in her fourth year. Outside of medicine she enjoys spending time with her Pacific community, as there are never-ending laughs all around and the spirit of alofa (love) is always present. In the future, she hopes to give back to this very community, as they have already given so much to her. Fa'afetai. Thank you.

I am a daughter of an alcoholic  
A wife to a violent man  
I am a product of a vicious cycle  
A drinker. A lover of wine. An addict.  
Who am I?

I am educated  
Marginalised  
Stigmatised  
Ostracised

I have been beaten  
With iron fists  
Shoved into closets  
My body twists

I am scared  
Hated  
Never liberated  
Incapacitated

I drown in my sorrows  
Welcoming the numbness it brings  
I swim through each identity I borrow  
Hoping to take away the sting

Who am I  
But a drunk  
A victim  
Who am I?  
A question that lingers

I scream  
I shout  
I cry  
And yet...

No one hears  
No one listens  
No one cares

Who am I?





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