



**MQ Health**  
MACQUARIE UNIVERSITY  
HEALTH SCIENCES CENTRE

# **Report**

## **2019–2020**

**IMPROVING THE LIVES OF OUR PATIENTS AND COMMUNITIES  
BY DELIVERING EXCELLENT CLINICAL CARE, UNDERPINNED BY  
WORLD-LEADING RESEARCH AND EDUCATION**

# Foreword

---



**Professor S. Bruce Dowton**

Chair, MQ Health Board

Vice-Chancellor and President,  
Macquarie University

MQ Health is Australia's only university-owned-and-operated integrated Academic Health Sciences Centre. Our approach is built on key learnings from best-of-class centres in Europe and the USA. It has been my privilege to experience firsthand – as a former clinician, academic and international consultant on the healthcare system – the first partnership of its kind in Australia between medical research, healthcare and higher education. These centres are hubs of healthcare excellence in which research informs clinical care and clinical need informs research. This is where our next generations of doctors, clinical staff and health professionals learn their crafts and excel in them.

Like other Academic Health Sciences Centres, MQ Health comprises a clinical component and an academic component. It combines the diverse range of MQ Health Clinics with Macquarie University Hospital. Teaching and research are led by Macquarie University's Faculty of Medicine, Health and Human Sciences.

As the chair of the MQ Health Board, I am delighted to see the rapid growth of MQ Health. MQ Health is well on track to realising its vision of genuinely integrating person-centred clinical care with top-quality research and distinctive education programs at undergraduate and postgraduate levels.

MQ Health is one of Macquarie University's flagship offerings and a point of distinction for us in the Australian higher education sector. I encourage you to explore some of its many achievements in this report. I look forward to sharing with you its continued growth and innovation in healthcare.

**Heal.  
Learn.  
Discover.**

**Cover image:**  
The new Clinical Education Building —  
a major educational facility for MQ Health's  
students and clinicians

# Contents

---

INTRODUCTION	1
--------------	---

HEAL. LEARN. DISCOVER. PIONEERING A NEW APPROACH	3
---	---

MQ HEALTH AT A GLANCE IN 2019	5
-------------------------------	---

<b>HEAL</b>	<b>7</b>
-------------	----------

OUR VIRTUAL NATIONAL MENTAL HEALTH CLINIC	8
---	---

SIMULATOR INFORMS SHOULDER TREATMENT	9
--------------------------------------	---

A FOOT IN THE DOOR LED TO PHYSIO'S DREAM JOB	10
---	----

HOLISTIC PATHWAY FOR HEALTHY WEIGHT	11
-------------------------------------	----

OUR HEALTHCARE CAPABILITIES	13
-----------------------------	----

WORLD FIRSTS IN LUNG DISEASE THERAPIES	14
--	----

NEW HOPE FOR LYMPHOEDEMA PATIENTS	15
-----------------------------------	----

PITUITARY CLINIC SNAPSHOT	16
---------------------------	----

GRATEFUL PATIENTS HELP OTHERS IN NEED	18
---------------------------------------	----

SUBSIDISED SURGERY FOR UNDER-INSURED PATIENTS	19
--	----

VOLUNTEERS PUT PATIENTS AT EASE, ACT OUT FOR STUDENTS	20
--	----

<b>LEARN</b>	<b>21</b>
--------------	-----------

CLINICAL SCIENCE A PATHWAY TO MEDICAL DEGREE	22
---	----

BENEFITS OF LEARNING AT MQ HEALTH	23
-----------------------------------	----

FACILITIES	24
------------	----

GRADUATE NURSES SOAR AT MACQUARIE UNIVERSITY HOSPITAL	26
--	----

OUR LEARNING AND TEACHING PHILOSOPHY	27
--------------------------------------	----

POSTGRADUATE INTERNSHIP LEADS TO ROLE AT MQ HEALTH	28
---	----

COURSES	29
---------	----

TRAINING DOCTORS	31
------------------	----

PROGRAM FOR JUNIOR DOCTORS EXPLORES SPECIALISATIONS	32
--	----

<b>DISCOVER</b>	<b>33</b>
-----------------	-----------

FROM STEEL TO STIFFENED ARTERIES	34
----------------------------------	----

RECENT RESEARCH HIGHLIGHTS	35
----------------------------	----

BACK TO BASICS IN SPINAL PAIN RESEARCH	38
--	----

LIQUID BIOPSIES AID CANCER DIAGNOSIS	39
--------------------------------------	----

NOVEL THERAPIES TRIALLED BY CLINICAL UNIT	40
---	----

AGED CARE RESEARCH FOCUSES ON QUALITY OF LIFE	41
--	----

AWARDS AND PRIZES	43
-------------------	----

CONTACTS	44
----------	----



# Introduction

---

MQ Health is an integrated healthcare and education provider like no other, incorporating Australia's first University Hospital and Clinics with Macquarie University's Faculty of Medicine, Health and Human Sciences. We draw upon the best people, teams, research, resources and innovation to deliver the latest in patient care and treatment, and student learning supported by evidence. Through our integrated purpose of *Heal. Learn. Discover*, we are determined every day to improve lives.

In striving for high-quality, evidence-based and connected care for our patients and distinctive educational programs that prepare our students to be tomorrow's health system leaders, the human element of what we do brings our story to life.

Throughout this report you will read stories from the people of MQ Health – our patients, students, researchers, clinicians, teachers and staff. These exceptional people have enabled us to achieve enviable growth in demand for our services and outstanding results in both patient and student satisfaction over the past year.

We provide care from general practice, allied health, medical imaging and specialty outpatient clinics to online mental health, day procedures and tertiary and quaternary hospital care. Our model of healthcare is integrated, innovative and transformative.

Since the establishment of the then Faculty of Medicine and Health Sciences in early 2015, we have rapidly grown our teaching and research activities. In 2016, our Bachelor of Clinical Sciences began.

We started our Doctors-in-Training program the same year, and the first cohort of our new Macquarie MD students and our Master of Public Health started in 2017. Our long-running Doctor of

Physiotherapy program continues to go from strength to strength as Australia's leading postgraduate physiotherapy degree.

Meanwhile, our research productivity and quality has increased. MQ Health attracted more than \$27 million in external funding in 2019, equivalent to 30 per cent of Macquarie University's research income for the year.

In early 2020, the faculty continued its growth with the addition of three new departments: Psychology, Cognitive Science and Linguistics. (Note that the data included in this report is for MQ Health prior to the addition of these departments.) This expansion is strengthening the available clinical education and health-relevant learning while broadening our research strength and clinical capability under the newly amalgamated Faculty of Medicine, Health and Human Sciences.

Our clinical services have experienced rapid growth and expansion as patients see the value of our unique model. The formal integration of the MQ Health Clinics and Macquarie University Hospital occurred in early 2019.

It is the real integration of our academic programs and research with our clinical services that makes MQ Health the provider of choice for patients and students, with tangible outcomes for their care and learning experiences.

This report provides some highlights of our achievements during 2019 and early 2020. It includes stories and data from MQ Health and the former Faculty of Medicine and Health Sciences and is only a small sampling of our busy endeavour. I hope it gives you a sense of what makes MQ Health an exhilarating place to work, study and receive healthcare.

I look forward to sharing equally compelling stories from the expanded faculty in future reports.

## **Professor Patrick McNeil**

Deputy Vice-Chancellor  
(Medicine and Health) and Managing  
Director, MQ Health





## OUR MISSION

Putting the patient first, we deliver clinical care, learning and research focused on progress through evidence.



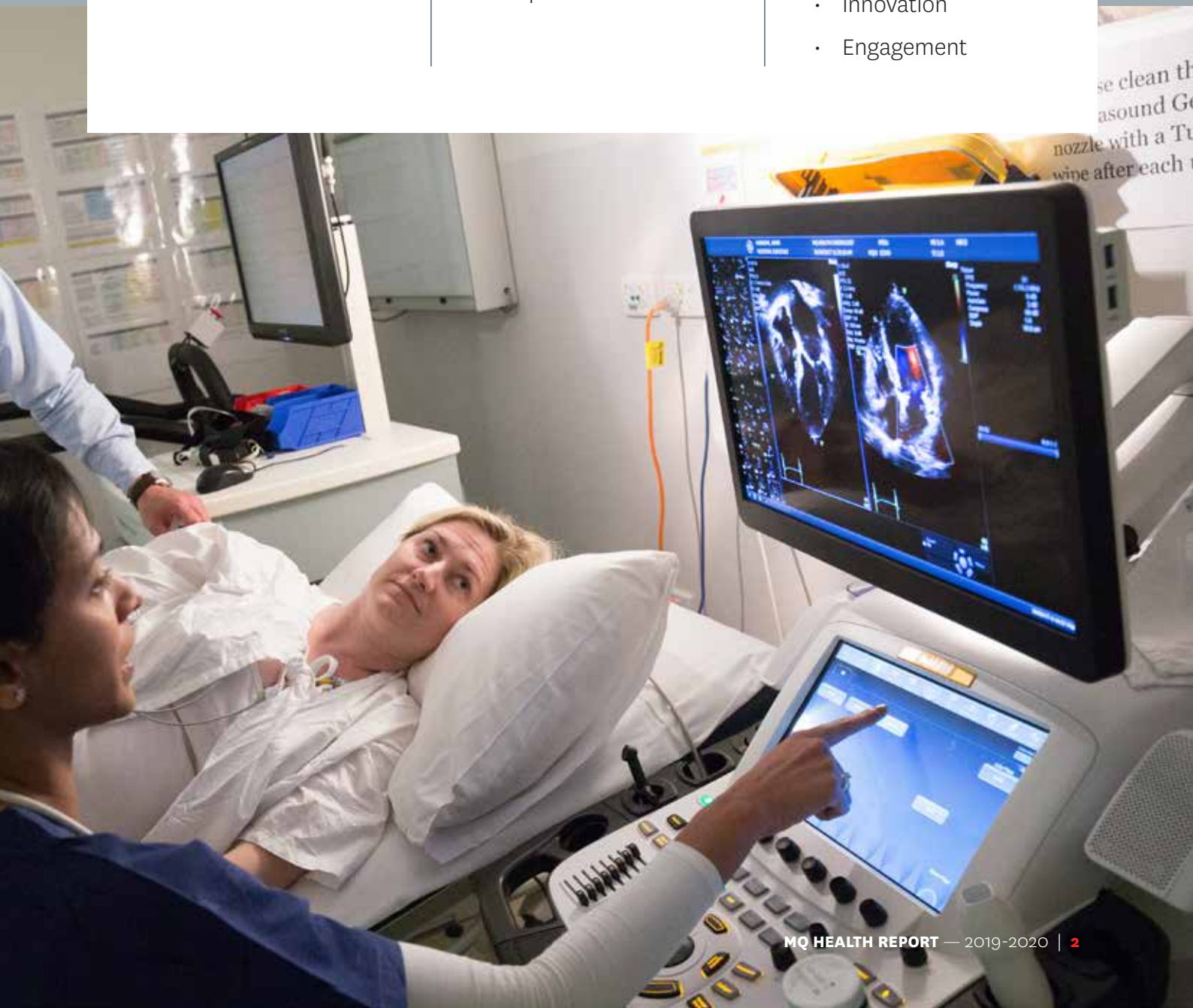
## OUR VISION

To be a world-class university health sciences centre, integrating clinical care, learning and research to improve lives.



## OUR VALUES

- Caring
- Integrity
- Teamwork
- Ambition
- Innovation
- Engagement



# Heal. Learn. Discover. Pioneering a new approach

As Australia's first and only fully integrated academic health sciences centre, MQ Health is a trailblazer in healthcare, education and research.

An academic health sciences centre combines education, research and clinical care. It means clinicians using the latest technology and therapies to diagnose and treat patients, as well as researching and developing those treatments – and teaching the next generation of health professionals.

The visionaries behind MQ Health studied the world's best academic health sciences centres to come up with their own fully integrated, unique model which has continued to evolve over the past ten years.

## SYMBIOSIS

MQ Health is Australia's only university-owned and operated not-for-profit health enterprise on a university campus. It's a symbiosis between healthcare, education and research. More than 200 clinicians provide evidence-based inpatient and outpatient care at Macquarie University Hospital (MUH) and the MQ Health Clinics as part of our practice plan.

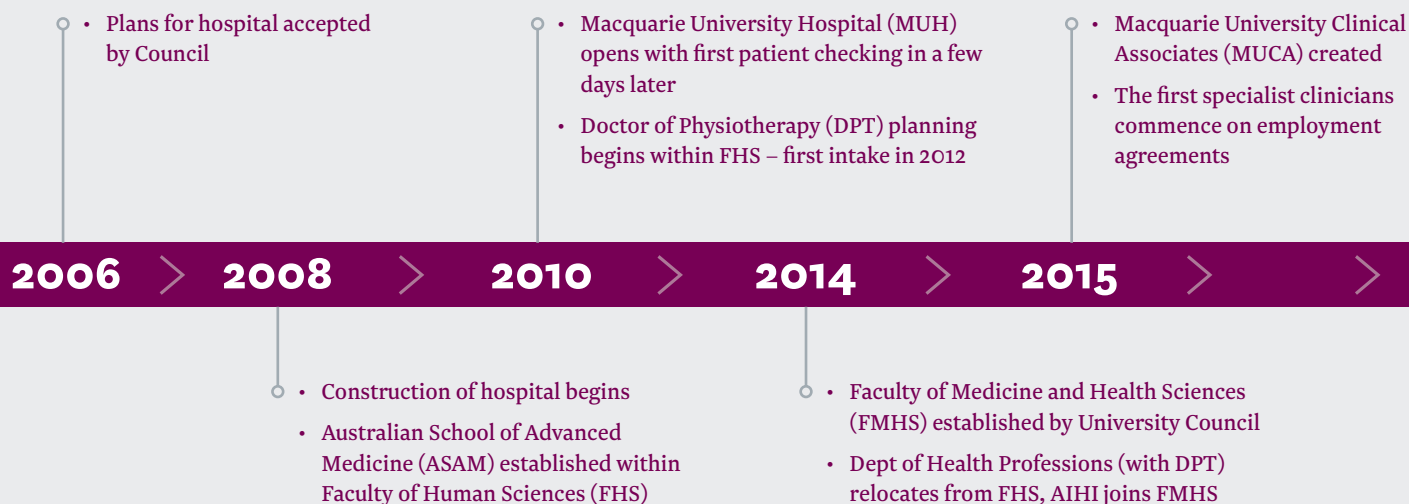
Our researchers are involved in cross-disciplinary research in key areas of cancer, neurosciences, clinical services, cardiovascular, hearing, mental health, and health systems. In 2019, the MQ Health Clinical Trials Unit ran over 86 trials involving more than 300 participants.

The teaching program includes degrees in medicine, clinical sciences, public health

and physiotherapy, including our Doctor of Medicine, Doctor of Physiotherapy, Master of Public Health and Bachelor of Clinical Sciences degrees. MQ Health offers a full pipeline of training for medical professionals from student to Intern, Resident, Registrar, Fellow and Specialist or General Practitioner. Students and trainees are immersed in clinical practice as well as research in a learning environment.

## EVOLUTION

The genesis of MQ Health dates back to 2006, when Macquarie University initially approved plans to build MUH and establish the Australian School of Advanced Medicine (ASAM). MUH opened in 2010 as a private teaching hospital. Since then, the vision has evolved into MQ Health.



The University's initial intention was for MUH and ASAM to be integrated, but this had limited success as they followed traditional private hospital and medical research pathways. In 2015, the University dissolved ASAM and created the Faculty of Medicine and Health Sciences (FMHS) and Macquarie University Clinical Associates (MUCA) with the purpose of integrating MUH and the new faculty.

MUCA took over operations of the Clinic and during 2016 launched MQ Health as the brand name for the Macquarie University Health Sciences Centre. In 2017, Professor S. Bruce Dowton, Macquarie University's Vice-Chancellor and President, led a review of MQ Health's governance. Dowton had first-hand overseas experience working in academic

health science centres at Harvard Medical School and Washington University at St Louis.

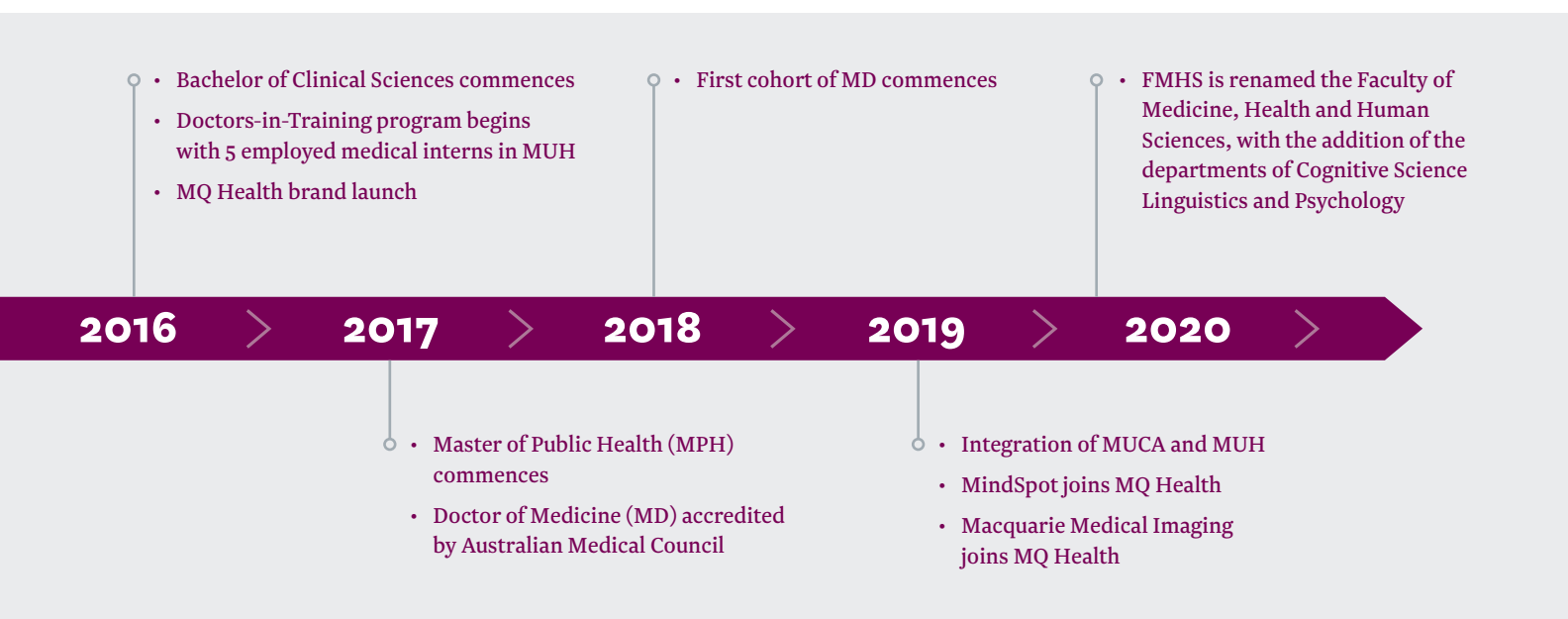
Following extensive consultation and research into overseas models, the University Council decided to fully integrate all the components of MQ Health. So on 1 January 2019, MUCA and MUH merged to become MQ Health Pty Ltd. The significant point of difference is MQ Health now has one governing body and executive.

#### PATIENTS BENEFIT

MQ Health's integration of research, education and care most importantly benefits patients. Research is embedded in clinical practice and patients have

access to the most recent treatments by participating in clinical trials. Students also enjoy a wide choice of clinical and research experiences and learning from experts in their field. Already, students and patients have voiced their strong satisfaction with this unique system. Researchers also benefit from the model because they can see the immediate translational effects of their research on patients.

The biggest challenge MQ Health faces now is cultural change. To continue its success in research, teaching and patient care, it needs to carry everyone along in a shared vision for the future, inside MQ Health and in the community, government and industry.



# MQ Health at a glance in 2019



**24,247**

HOSPITAL  
ADMISSIONS



**65,447**

CLINIC OCCASIONS  
OF SERVICE



**23,055**

MINDSPOT CLINICS  
Number of patients in 2019

## PATIENT SATISFACTION



**97%**

overall satisfaction with the  
hospital and their stay



**96%**

satisfaction with the doctors  
and nurses



**95%**

overall satisfaction with  
the quality of their visit to  
the clinics



## STAFF NUMBERS

Non-clinical  
(hospital & clinics)

309

Academic staff  
(faculty)

304

Professional  
staff (faculty)

Total  
1564

245

Nurses

409

297

Doctors & allied health  
professionals



## STUDENT NUMBERS

Master of Research

PhD

112

Bachelor of  
Clinical Science

231

Graduate  
Diploma of  
Anatomy

11

Doctor of  
Medicine

109

Master of Public  
Health

231

Doctor of  
Physiotherapy

265

Total  
1008



**303**

number of volunteers  
supporting MQ Health



## Total research income

**\$27.3**  
million

## Total number of research publications

**553**  
journal articles

**20**  
conference articles

**16**  
book chapters

## Total patents



provisional patent applications



patent families entered national phase

## Clinical trials

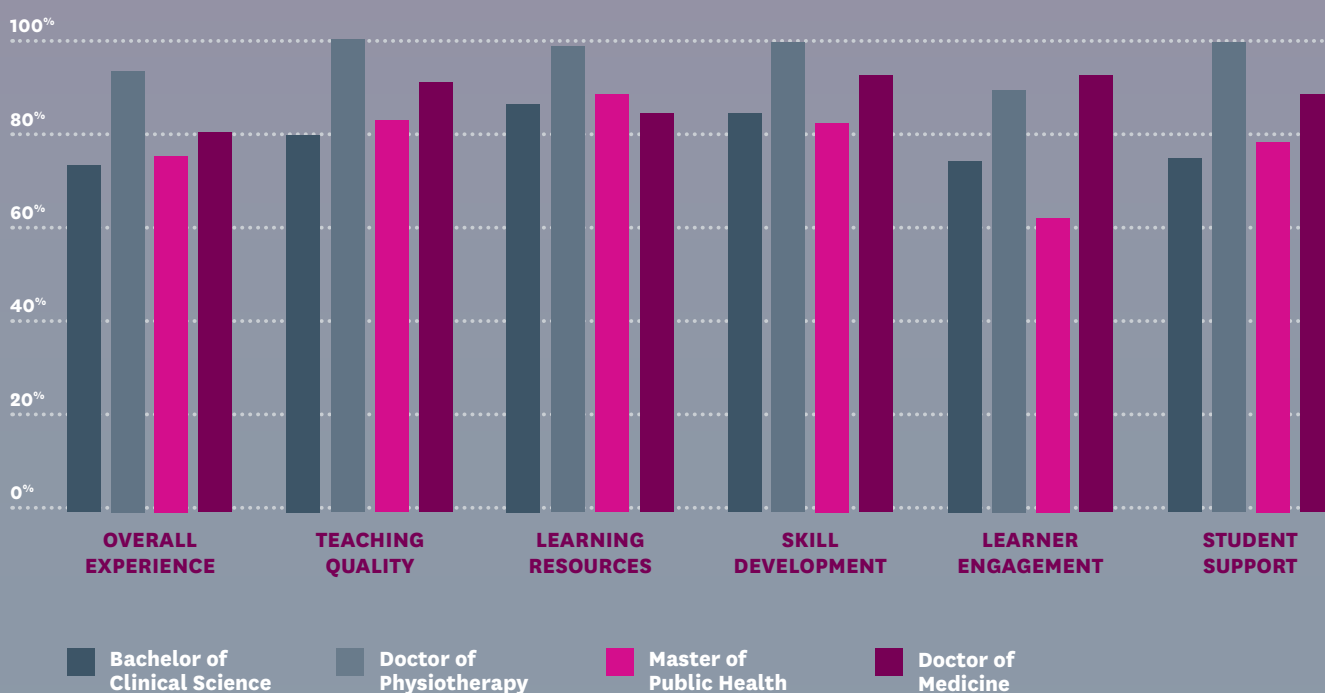


active clinical trials



patients participated in trials

## QUALITY INDICATORS IN LEARNING AND TEACHING (QILT)



# Heal

We put our patients first. By combining excellence in clinical care with unique learning experiences and the latest breakthroughs in medical research, we deliver the best outcomes for our patients and the community.



# Our virtual national mental health clinic

MindSpot, Australia's first virtual clinic for adults with depression and anxiety, moved under the MQ Health umbrella in 2019.

Taking the lead from programs overseas that used online tools to treat people with anxiety and depression, a group of clinical researchers started examining the effectiveness of treatment for people with anxiety and depression in 2006.

"The impetus for conducting our early trials was recognising that many people in Australia – one in five every year – had conditions such as anxiety or depression or substance abuse, but only a minority of those people were getting access to treatment," says Professor Nick Titov, MindSpot Executive Director.

His team discovered that people responded really well to psychological treatment over the internet. "And so we built an online, virtual research clinic – a translational research model where we addressed this unmet need in the community."

To date the clinic has conducted more than 80 clinical trials involving more than 9,000 people and proving the veracity of their approach.

In 2013, Titov's team received government funding to set up Australia's first national digital mental health service. Since then, MindSpot's clinics have worked with more than 125,000 people, from every state and territory. Forty per cent lived outside cities and 40 per cent had never spoken to a health professional about their symptoms.

"We try to empower people to understand and take as much ownership as they can over their mental health," Titov says. "Our role as mental health professionals is to support people to learn practical skills and awareness of their needs, to manage symptoms and increase their resilience. This reduces their vulnerability in the long term."

MindSpot achieves this through assessment, education about existing services and guiding participants through seven different online treatments. "It's like having your own personal mental health trainer to teach you practical psychological skills," he says.

Throughout this process, the MindSpot team regularly measures the participants' symptoms and satisfaction. "We measure clinical outcomes against world best practice," he says. "And we are certainly among the world leaders."



Professor Nick Titov

## MINDSPOT'S NATIONAL REACH

New South Wales	32.1%	South Australia	7%
Victoria	24%	Tasmania	2.6%
Queensland	19.5%	ACT	2.5%
Western Australia	11.1%	Northern Territory	1.2%



# Simulator informs shoulder treatment

A surgeon-scientist is on the path to developing a world-class centre of excellence in shoulder and elbow surgery.

As a New Zealander, Associate Professor Sumit Raniga super-specialised in shoulder and elbow surgery with an aim to work with the All Blacks. But when MQ Health asked him to develop an orthopaedic research program and set up a Shoulder and Elbow Clinic, he seized the chance to apply his skills for a wider reach.

“I could see a significant opportunity to develop a program that would essentially be groundbreaking in terms of doing translational research in Australasia, and build a unique academic practice from scratch,” Raniga says.

He received a \$600,000 research grant to build Asia-Pacific’s first six-degree-of-freedom, eight-muscle-actuated cadaveric shoulder simulator. This funding has allowed the assembly of a multidisciplinary team to enable an intensive collaboration between academic shoulder surgeons, radiologists, physiotherapists, biomechanical engineers, basic scientists and industry to improve patient outcomes through translational orthopaedic research.

“The new shoulder biomechanics lab and research program will have a strong

focus on improving patient outcomes through evidence-based evolution of all aspects of shoulder surgery and rehabilitation,” says Raniga. “It gives us the basic science evidence to explore what we do, and why we do it and how we could make things better for patients.”

To put his research into practice, he’s established the MQ Health Shoulder and Elbow Clinic that includes orthopaedic shoulder and elbow specialists, pain specialists, infectious disease specialists, radiologists and physiotherapists.

“We’ve basically got a multidisciplinary team to cover every element of patient care,” he says. Raniga also teaches most of the orthopaedic curriculum in the University’s Doctor of Medicine program, which involves lecturing, and providing clinical and operating theatre experience.

“It’s been an amazing year and a lot of hard work, but I feel really happy that I’m combining my passion to do research and practice evidence-based shoulder and elbow surgery and teach,” he says. “I have no regrets about abandoning my All Blacks dream.”



Associate Professor Sumit Raniga





# A foot in the door led to physio's dream job

A life-long involvement in sport – and a grandfather who was a bilateral amputee – played a part in Bridget Dean's motivation to pursue a career in physiotherapy.

From a young age, Bridget Dean played sport, which led her to competing in Oztag, hockey and athletics at international, national and representative levels. Her love of sport motivated her to train as a high school PE teacher, and while she was teaching, she enrolled in MQ Health's Doctor of Physiotherapy.

She knew right away it was her ideal career because every class was practical. "There are physio beds in the classroom and you're practising one-on-one with your patient, who is another student," she says. "It's not like you just sit taking notes."

Dean had four placements during her three-year degree, but her favourite was her placement at Macquarie University Hospital. There, she had the opportunity to work with Associate Professor Munjed Al Muderis, the renowned orthopaedic surgeon and NSW Australian of the Year 2020. Al Muderis is a pioneer of osseointegration, which involves inserting a titanium implant into the remaining bone of an amputee which connects through a skin opening to a robotic limb prosthesis.

"I realised this was really the field I wanted to be in," says Dean. Al Muderis' work had personal meaning to her because her grandfather – who had been a Dutch naval sprinter – had both his legs amputated due to complications from diabetes. "It was hard to see the strong man that I grew up admiring, becoming frustrated and grumpy and not being able to walk because of the pain and fit of his sockets."

After the placement, she continued to work at the University's physiotherapy clinic as a receptionist and physiotherapist aid. By the time she graduated at the end of 2015, she'd been offered a role as a physiotherapist.

Today, Dean is living her dream. She's involved in clinical trials, treating patients in the Physiotherapy Clinic, teaching in the Doctor of Physiotherapy degree, working for Hockey NSW as a physio for their under-18 teams and playing internationally for the Australian Oztag team.



Bridget Dean working with an osseointegration patient

# Holistic pathway for healthy weight

Endocrinologist Dr Veronica Preda started the Healthy Weight Clinic at MQ Health in March 2017. The first service of its kind in Sydney in a private hospital, the clinic complements the bariatric surgery already performed at Macquarie University Hospital by Professor Reginald Lord.

“Until then, we weren’t treating patients holistically,” says Preda. “We needed to help patients on their whole journey with obesity, caring for them properly with input from an endocrinologist, dietician, exercise physiologist, clinical psychologist, radiologist and everything else they needed.”

Since then, Preda and her team have provided comprehensive care for more than 300 patients. Some of their patients also have diabetes and some are cancer survivors who struggle with their metabolic health.

At the same time, the clinic has a constant flow of students — every second-year medical student at MQ Health has the opportunity to experience the patient’s transition from surgery and their medical and allied health treatment in the clinic. PACE students (undergraduate students from Macquarie University) also have the chance of an internship.

“Some of my patients have even volunteered to come to Master Classes and speak to students about their obesity journey because they are so happy with the care they’ve received. In many other hospitals their care would be much more fragmented,” Preda says. “Weight loss is a difficult topic with a whole emotional overlay with it.” The clinic holds patient seminars including a Diabetes Day.

Preda is also supervising Zoe Rock, a Master of Public Health student who completed her thesis on obesity and healthy weight outcomes in integrated multidisciplinary clinics and the implications for population health. In February 2020, Rock presented a paper on their work at the UK’s Obesity Update 2020 conference.

*“From a professional point of view it’s very satisfying to be in such a dynamic environment, where everything is connected; research, teaching and clinical is all on one site. A real wheel-and-spoke approach,” says Dr Veronica Preda.*









## MQ Health Clinics

including satellite clinics in  
Marsfield, Blacktown and  
Hunters Hill

Acute Spine
Breast Health
Breast Implant Check
Capacity and Capability
Cardiology
Endocrinology
Exercise Physiology
General Practice
Haematology
Healthy Weight
Kidney and Hypertension
Limb Reconstruction
Lymphoedema
Medical Imaging
Neurology
Neuropsychology
Nutrition and Dietetics
Ophthalmology
Physiotherapy
Plastic and Reconstructive Surgery
Psychology
Respiratory and Sleep
Shoulder and Elbow
Skin Cancer
Speech and Hearing
Urology



## Beds at Macquarie University Hospital

### Clinical Programs

<b>BONE AND JOINT</b> <ul style="list-style-type: none"> <li>• Hand surgery and therapy</li> <li>• Orthopaedics and sports medicine</li> <li>• Rheumatology</li> </ul>	<b>NEUROSCIENCES</b> <ul style="list-style-type: none"> <li>• Audiology &amp; ENT and head &amp; neck surgery</li> <li>• Neurology</li> <li>• Neuropsychology</li> <li>• Neurosurgery and interventional neuroradiology</li> </ul>
<b>CANCER</b> <ul style="list-style-type: none"> <li>• Medical oncology</li> <li>• Radiation oncology</li> <li>• Haematology</li> <li>• Lymphoedema</li> <li>• Surgical oncology (Multi-disciplinary governance)</li> </ul>	<b>PRIMARY AND GENERALIST CARE, WELLBEING AND DIAGNOSTICS</b> <ul style="list-style-type: none"> <li>• Allied health</li> <li>• Primary care</li> <li>• Medical imaging</li> <li>• Endocrinology</li> <li>• General medicine</li> </ul>
<b>CARDIOVASCULAR AND RESPIRATORY</b> <ul style="list-style-type: none"> <li>• Cardiology</li> <li>• Cardiothoracic surgery</li> <li>• Respiratory medicine</li> <li>• Vascular medicine and surgery</li> </ul>	<b>SURGERY AND GASTROINTESTINAL</b> <ul style="list-style-type: none"> <li>• Colorectal surgery</li> <li>• Gastroenterology</li> <li>• General and upper GIT surgery</li> <li>• Plastic, reconstructive and maxillofacial surgery</li> <li>• Urology and gynaecology</li> </ul>
<b>CRITICAL CARE AND ANAESTHETICS</b> <ul style="list-style-type: none"> <li>• Anaesthetics and perioperative</li> <li>• Intensive care</li> <li>• Pain management</li> </ul>	



### MQ Health Flagship services:

Chiari malformation/syringomyelia	Motor neuron disease
Interventional pulmonology	Parkinson's disease
Lymphoedema	Vascular neurosurgery
MindSpot	Limb reconstruction



# World firsts in lung disease therapies

The Respiratory Unit of the Cardiovascular and Respiratory Program at MQ Health is using novel techniques to help people overcome chronic respiratory diseases.

MQ Health's interventional pulmonology work is breaking new ground in research and clinical practice, using advanced interventions to treat asthma, chronic obstructive pulmonary disease (COPD) and lung cancer.

"We have pioneered advanced respiratory procedures, including two world firsts in human therapies for COPD — including developing a novel treatment for chronic bronchitis," says respiratory physician Professor Alvin Ing who leads the unit, staffed with 10 respiratory physicians, as part of the MQ Health Respiratory and Sleep Clinic.

One of these interventions involves using a bronchoscope to introduce an electrical current along the bronchial lining, which eliminates the cells that produce mucus and sputum. "We performed this on the first human subject in February 2017 and have published the subsequent results, which show excellent clinical response, excellent safety and the desired changes in the pathology of the airways," Ing says.

He was also the first physician in Australia to insert endobronchial valves in COPD and emphysema patients.

"We insert these one-way valves to close off the most destroyed parts of the lung, which improves the function of the rest of the lungs." Ing first performed this operation at Macquarie University Hospital in 2010, and since then, MQ Health has become the leading centre in New South Wales for this procedure.

Together with his colleagues Associate Professor Jonathan Williamson, Dr Tajalli Saghaie and Professor Martin Phillips, Ing's team is now taking this a step further, and in another world first, in previously inoperable patients, is using biopolymer to seal the holes in the bad parts of the lungs so the valves can work. This research was published at the beginning of 2020.

In a NSW first, Ing also performed the first bronchial thermoplasty procedure in the state for the treatment of refractory asthma. This opens airways by gently heating and shrinking the lung's smooth muscles — the ones that tighten during asthma attacks and make it hard to breathe.

To train the next generation of surgeons in these specialised techniques, MQ Health has the first recognised interventional pulmonology fellowship program in Australia.



Respiratory Physicians Associate Professor Jonathan Williamson (left) and Professor Alvin Ing

# New hope for lymphoedema patients

MQ Health offers life-changing liposuction surgery for people suffering from severe advanced lymphoedema – the only centre accredited in the Southern Hemisphere to do this procedure.



Louise Koelmeyer (middle) and Associate Professor Hiroo Suami (right) viewing the lymphatic system of a patient

“Lymphoedema is like having four to eight litres of fluid attached to your arm or your leg permanently,” says Louise Koelmeyer, an expert in breast cancer rehabilitation and lymphoedema management at MQ Health. Lymphoedema sometimes develops after lymph nodes are removed or irradiated during cancer treatment.

“It affects people physically, functionally and psychologically,” says Koelmeyer, the director of the ALERT (Australian Lymphoedema Education, Research and Treatment) Program at MQ Health.

Koelmeyer explains how ALERT combines MQ Health’s heal, learn and discover missions. “We are training doctors and health professionals such as occupational therapists, physiotherapists and registered nurses, to be able to assess and manage lymphoedema to current best practice,” she says.

In 2019, ALERT trained 70 health professionals to become qualified lymphoedema therapists. They’ve also facilitated early intervention workshops all over Australia and the US, reaching more than 300 people. “We are becoming recognised as a centre of excellence, not only for the treatment

of lymphoedema but in research and in teaching evidence-based education.”

Koelmeyer is also involved in international studies including one as the Australian principal investigator with Vanderbilt University in Nashville, Tennessee. ALERT has recruited 450 of the 1,200 women taking part in the study, which is using Australian technology to identify women who are at high risk of developing lymphoedema after breast cancer and then offering them early interventions.

# Pituitary Clinic Snapshot

The experience of one patient's journey illustrates MQ Health's multidisciplinary approach.

Located at the base of the skull, the pituitary gland controls most other endocrine glands by the production of hormones. The Pituitary Clinic at MQ Health sees a combination of patients with pituitary tumors and other pituitary issues.

Today, Andrew Russell is in the clinic. He's a TAFE teacher from the Central Coast who was admitted to Macquarie University Hospital with an acute visual loss and endocrine failure in July 2019 and had urgent neurosurgery.

Months later, Russell is still going through follow-up tests and complex investigations so that he can receive a prescription of growth hormone replacement linked to underactivity of his pituitary gland.

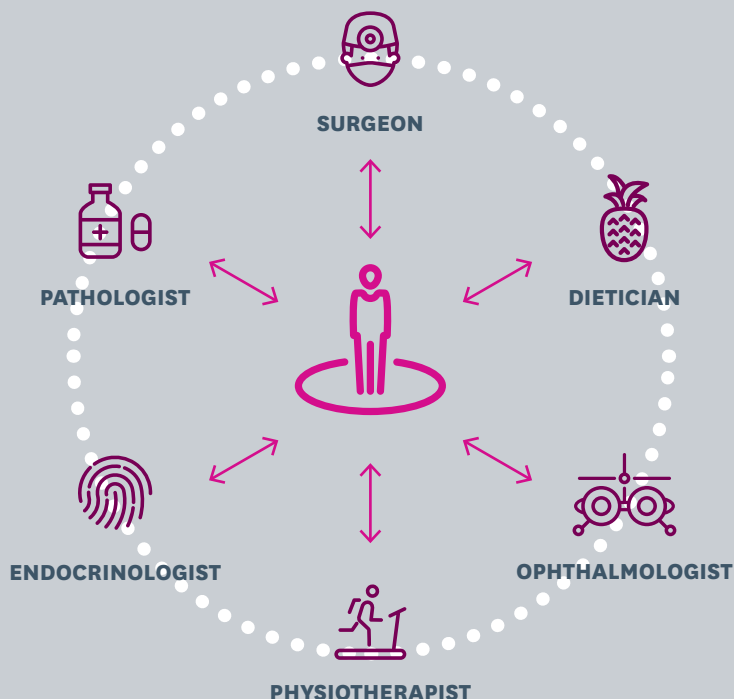
## 'YOU CAN'T GET THIS EXPERIENCE ANYWHERE ELSE'

Russell appreciates the ease of getting everything done in one place. "It's been really good coming here, getting blood taken and the other tests. Everything is centrally based and it's no hassle for me going to multiple appointments."

At the same time, Dr Divya Namboodiri, who is in her first year of advanced endocrinology training, says it's been an "amazing experience" to get such direct multidisciplinary experience from cases such as Russell's to build her knowledge and skills.

Gabriella Sachs, a second-year medical student, has had a rotation at the clinic and sat in on consultations. "As a student, I get to see the clinic from different perspectives, by shadowing the neurosurgeon or endocrinologist. You can't get this experience anywhere else."

## MQ HEALTH SERVICES AVAILABLE TO RUSSELL



*"We're really one of the only one-stop shops in Australia capable of providing these services," says Associate Professor Bernard Champion, who leads the clinic. "With a multidisciplinary team of more than a dozen consultants, and all facilities here on site, we're giving all our patients the best available treatment based on the most up-to-date international research."*



*"I used to just do surgery in isolation. Now I'm part of the discussion about the medication and weight loss program. It's very professionally fulfilling," says Associate Professor Andrew Davidson, the surgeon who treated Russell.*





*“I am very thankful for the financial help available to me from the Grateful Patient Program,” says Britt (see story at right). “There’s a shortcoming in our medical system where you can’t have vital tests like this unless you’re paying thousands of dollars. It was amazing to have the test donated, to get peace of mind about what I was suffering from.”*





# Grateful patients help others in need

The Grateful Patient Program helps people in need to access the world-class expertise and facilities of MQ Health. Funds come from grateful patients and their families who want to give back to the community, the hospital and the professionals who gave them expert care.

**BRITT IS A 52-YEAR-OLD OFFICE MANAGER IN SYDNEY WHO HAS BEEN RECENTLY DIAGNOSED WITH MAY THURNER SYNDROME, THANKS TO THE GRATEFUL PATIENT PROGRAM.**

After an overseas trip in 2017, Britt's leg swelled up and she spent thousands of dollars on tests without finding out what was wrong with her. In two years, she went from being a healthy person to someone with a disease that could not be diagnosed.

"I have to elevate my leg everywhere I go," she says. "My condition really affects my job – I've had to negotiate with my boss to come in to work a bit later to get a seat on the train to accommodate my leg. I have to sit/lie at my desk."

The Grateful Patient Program enabled Britt to come to the MQ Health Lymphoedema Clinic and have the tests she needed so she can now receive appropriate treatment.

Dr Daniel Nguyen ultimately diagnosed Britt as having May Thurner Syndrome, also known as iliac vein compression syndrome. It affects the two blood vessels that lead into your legs and makes you more likely to have deep vein thrombosis. Pressure from air travel had triggered Britt's symptoms and caused a clot.

"I am very thankful for the financial help available to me from the Grateful Patient Program," Britt says. "There's a shortcoming in our medical system where you can't have vital tests like this unless you're paying thousands of dollars. It was amazing to have the test donated, to get peace of mind about what I was suffering from."

She is now waiting to have a stent operation that will help treat the problem.

**JACK IS A 75-YEAR-OLD RETIRED CONSTRUCTION WORKER LIVING ON THE SUNSHINE COAST WHO HAD A DETACHED RETINA – NOW REPAIRED, THANKS TO THE GRATEFUL PATIENT PROGRAM.**

When he was 26, Jack got a serious football injury that detached the retina in his right eye. For the past decade, the old injury led to significantly impaired vision. "If you don't get the surgery done, you can end up with a serious infection in your eye that can lead to total loss of sight if not treated," Jack says.

Within weeks of lodging his form, Dr Adrian Fung performed surgery on Jack at Macquarie University Hospital to repair his retina.

"I don't think I'd have been able to get the procedure done if I didn't have access to the Grateful Patient Program as I get by with just the aged pension," Jack says. "I can't sing the hospital's praises enough."

It takes months to really see the benefits of the surgery, but at least Jack now has peace of mind that he doesn't run the risk of infection and loss of sight altogether.

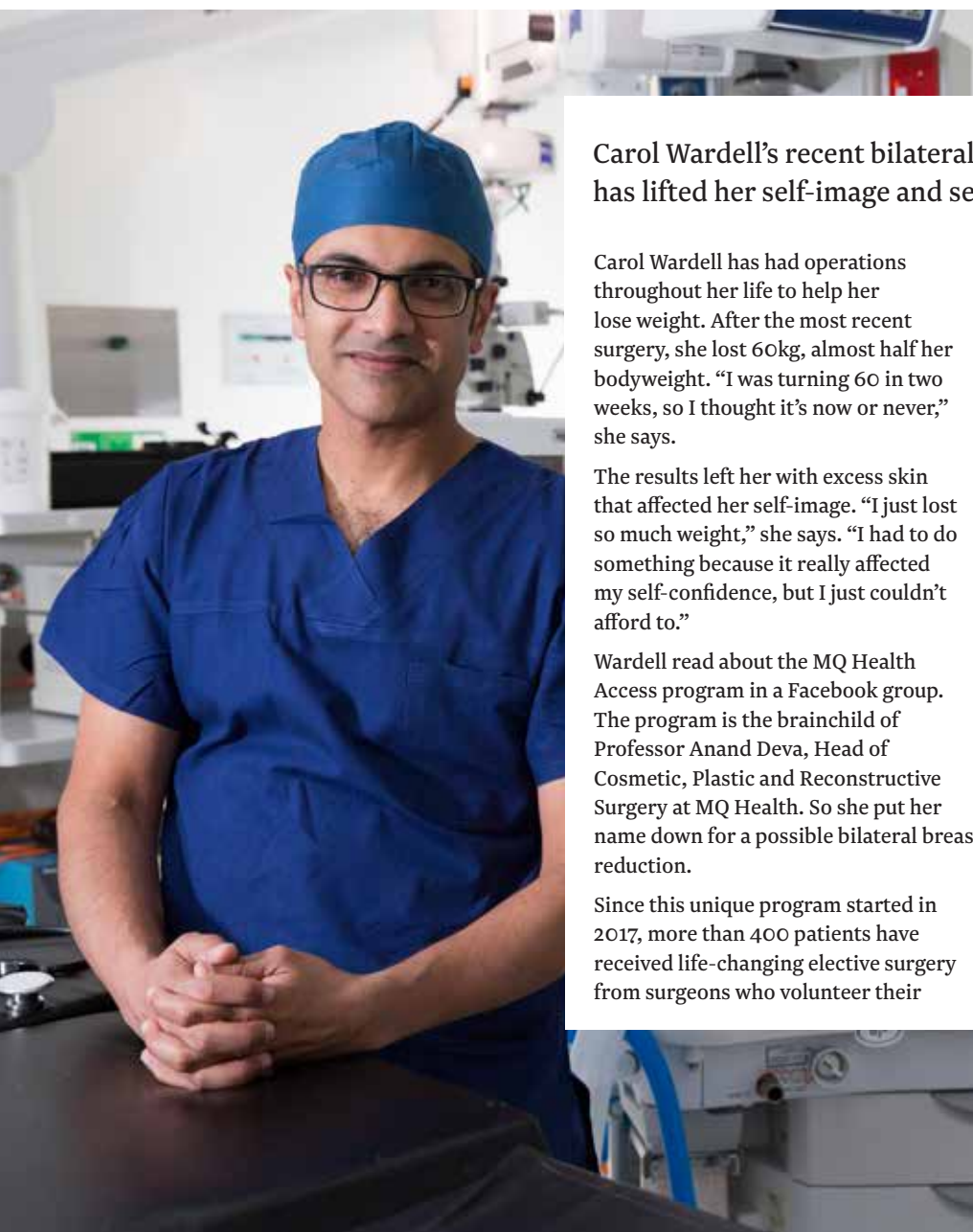
**TO DONATE TO THE GRATEFUL PATIENTS PROGRAM, GO TO**

**[mqhealth.org.au/donate](https://mqhealth.org.au/donate)**





# Subsidised surgery for under-insured patients



Carol Wardell's recent bilateral breast reduction has lifted her self-image and self-esteem.

Carol Wardell has had operations throughout her life to help her lose weight. After the most recent surgery, she lost 60kg, almost half her bodyweight. "I was turning 60 in two weeks, so I thought it's now or never," she says.

The results left her with excess skin that affected her self-image. "I just lost so much weight," she says. "I had to do something because it really affected my self-confidence, but I just couldn't afford to."

Wardell read about the MQ Health Access program in a Facebook group. The program is the brainchild of Professor Anand Deva, Head of Cosmetic, Plastic and Reconstructive Surgery at MQ Health. So she put her name down for a possible bilateral breast reduction.

Since this unique program started in 2017, more than 400 patients have received life-changing elective surgery from surgeons who volunteer their

time across Sydney, Victoria, Western Australia and South Australia.

Eventually, Wardell received a call from MQ Health. In September 2019, she met with her surgeon, Dr Anthony Barker. The surgery proceeded on 1st October, and she has several more scheduled in coming months to tighten the skin on her stomach and face.

"I couldn't believe I was selected," says Wardell. "Dr Barker is the nicest man I have ever met. He really cares about his patients. He said to me: 'At your age why wouldn't you want to look good!'"

Wardell says it was the best hospital experience she's had and the clinic and hospital staff were so kind. Nothing was too much trouble. "Honestly, I can't thank Dr Barker enough. It had affected my love life a lot. I was very self-conscious and didn't want anyone to see what I looked like underneath my clothes. The surgery has made me so much happier."

Professor Anand Deva who conceived the Access Program



# Volunteers put patients at ease, act out for students

After her mother received exceptional care at Macquarie University Hospital, Alice Leung decided to give back.

Alice Leung volunteers as a meet-and-greet attendant at the MQ Health Clinics and also participates in patient simulation programs with students.

Leung particularly loves to chat with patients. She speaks English, Cantonese and conversational Mandarin. “Some of them love sharing their life experience, which can be a very lovely connection. Sometimes you are there at the right time when they just need someone to talk to. Hospitals can be very stressful environments.”

Last year, she also got involved in the MQ Health Health and Wellbeing Collaboration Program, offering real-

life experience to students. Leung and other volunteers meet with two students – a medical student and a physiotherapy student – four times each semester. The students get Leung to do simple exercises and then measure her blood pressure.

“We just share with them our feelings about the healthcare system, both positive and negative. We help them practise their communication and observational skills,” she says.

Leung’s favourite volunteer role is participating in the Simulated Patient Program for medical students’ clinical assessments. “You’re told a scenario or background information of a particular

patient, then you memorise your script and act it out repeatedly for each student every 15 minutes over several hours. You get really good at it,” she says, laughing. “Later, we’ll become award-winning actors!”

Leung loves being part of a like-minded volunteer community. “Giving back, particularly in the hospital environment, we can make a difference in the lives of our patients and their families and contribute to the future of medical education. We all have been a patient before and we know the difference that a little care and compassion can make.”

*“We try to put a smile on a patient’s face. We do very simple tasks like assist patients and visitors to find their way around, into and out of taxis and accompany people with claustrophobia in the lift. It’s a small gesture but it makes them feel welcome,” says Alice Leung, one of more than 300 volunteers.*



Two of MQ Health’s volunteers at the Patient Resource Centre



# Learn

We integrate health education and training with the latest medical research and clinical excellence to provide transformative learning experiences for tomorrow's healthcare leaders and medical professionals.







# Clinical Science a pathway to medical degree

Jordan Griffiths is in the inaugural cohort of Macquarie's medical degree after transitioning from a Bachelor of Clinical Science.

From an early age, Jordan Griffiths aspired to work in healthcare, but she wasn't completely sure medicine was the right career. So she first completed a Bachelor of Clinical Science at Macquarie, a pathway to a variety of postgraduate health and medicine studies, before enrolling in the Macquarie Doctor of Medicine (MD).

During her undergraduate degree, Griffiths had the opportunity to go into hospitals and find out what the career was like. "Especially speaking to women and hearing how they had their families and also felt fulfilled in their careers, made me set on becoming a doctor," Griffiths says.

She was delighted when she was accepted into the inaugural MD cohort. In her second year, she was already going into the operating theatres, on hospital ward rounds and speaking to patients – spending a minimum of eight

hours a week in Macquarie University Hospital.

In her third year, Griffiths was excited to have the opportunity to visit Hyderabad in India for six months, to experience work in the country's first corporate hospital, Apollo. This placement was disrupted by COVID-19, but Griffiths has been undertaking a reimagined clinical placement experience across Royal North Shore Hospital, GP Clinics and MQ Health – including a new innovative teaching clinic.

Her dream is to become a pediatrician. "I got to do a placement in ENT (Ear Nose and Throat) and we saw kids under the age of eight getting grommets in their ears or getting their tonsils out," Griffiths says. "And when they were put to sleep it was very emotional. I just loved the whole experience of working with them and that confirmed to me that's what I want to do."

*"My parents didn't seem to get a lot of joy out of their jobs, so I wanted to find something that I could really dedicate my life to and get a lot of fulfilment from," Griffiths says. "Working in healthcare is a privilege – to genuinely make a difference to someone's life is my main motivator."*



# Benefits of learning at MQ Health

## **STUDENTS LEARN INSIDE AUSTRALIA'S ONLY UNIVERSITY-OWNED HEALTHCARE SETTING.**

From day one at MQ Health, students are immersed in a clinical and research setting. Macquarie's aim is to empower students to become outstanding health and research professionals, to advance as individuals and serve their communities.

Being embedded in an active health service stimulates their learning. MQ Health offers students opportunities to experience integrated research and clinical services in action. Students may watch a breast reconstruction or speak to patients involved in the clinical trial of a novel drug.

They get to evaluate the health service they are working in, assess quality and patient safety and come up with solutions. Even more broadly, they begin to understand what healing means globally in different cultures.

## **REAL-LIFE CASE STUDIES**

MQ Health's teaching is supported by

evidence-based practice and up-to-date pedagogy, particularly recognising the power of storytelling and learning through case studies.

Our education programs are underpinned by capability frameworks, which include a focus on professionalism, communication and cultural responsiveness. Some novel assessment approaches are based on entrustment and support skill development, enabling gradual progression towards graduation and entry to the profession. Skill development takes practice with feedback, but also deep reflection.

Clinical experiences begin early. "Initially in a simulated environment or in a community placement, but then with increasing exposure to the clinical world, students build their confidence and skills so they are not just thrown into the deep end," says Professor Catherine Dean, Associate Dean, Learning & Teaching.

Students' continuous interaction with clinicians and researchers is a point

of difference. Teaching is part of these professionals' role – not an add-on. From the moment they arrive on campus, students are among professionals all the time in their workplace, including clinics and the hospital.

Clinicians will sometimes bring a patient into the classroom so students can chat with them about their condition. Patients and community volunteers also provide feedback back to the students about their communication skills.

"MQ Health is really an ecosystem for our students," says Dean. "From learning in their degree through to placements and then practice in later years, right through to opportunities for employment. This is unique and helps build students' professional identity early on, which is really important."

By interacting with junior doctors just beginning their career up to leading specialists giving high-level care, medical students can see their pathway and have role models to learn from.



*"Throughout my time on placement, I felt like my development as a clinician was a priority to every member of the MQ Health team. I was constantly challenged, but I never felt out of my depth or like I could not confide in anyone for help when I needed it. This, in combination with MQ Health making me feel part of the team, was something so special to experience as a student. By the end of my placement I knew I had become a better clinician and for that I am so grateful to MQ Health."*

*Karina Giggins, final-year  
Doctor of Physiotherapy student*

Physiotherapy students learn in specialised teaching rooms equipped with the latest information technology and designed to mimic workplace settings. One room is set up like a private physiotherapy clinic with treatment benches and access to equipment used in clinics such as therapeutic machines and educational resources. Another is set up as a rehabilitation gym with a treadmill and harness system, rails and stairs so students can practise how patients develop strength. Most of the teaching rooms also have an embedded walking track to assess and measure walking performance.



One simulation room is set up as a patient consulting room with an examination bed. The labs have workstations with HD video monitors and theatre lights, fully equipped with general surgical instruments, power equipment such as saws and drills, a mobile C-arm to take X-rays during surgery, as well as an instrument wash and sterilisation facility. There are also arthroscopy and laparoscopy suites for minimally invasive keyhole surgery.

## FACILITIES

**Facilities for students prepare them for what they'll face in the real world – replicating authentic clinical environments. High-quality simulation facilities, anatomy labs and small-group tutorial spaces support our engaging and interactive learning and teaching approach across the range of courses.**

A new purpose-built Clinical Education Building for the Faculty of Medicine, Health and Human Sciences was completed in 2020. The building is conveniently located adjacent to Macquarie University Hospital and MQ Health Clinics – providing a seamless transition between clinical experiences, lectures, interactive tutorials and study spaces.

Students work in anatomy labs as well as on purpose-built mannequins that record the treatment and give them feedback.







**Nursing graduate Naomi Shanahan**

# Graduate nurses soar at Macquarie University Hospital

The first group of 15 newly qualified nurses began MQ Health's new-look graduate program in February 2020.

Naomi Shanahan, a 49-year-old mother of three, is one of the new cohort of 15 graduate nurses – four enrolled nurses and 11 registered nurses – taking part in MQ Health's Grad@MUH 2020 Program.

Shanahan chose to pursue nursing because she wants to give back to the community. "I loved the vibrancy of Macquarie University Hospital, which I felt right from my interview," she says. "I felt like my ability was valued and I was also excited that we have options to do innovative research."

Tracey Armstrong, Nurse Education Coordinator, explains what sets MQ Health apart from other graduate nursing programs. "Our point of difference is that nurse graduates have the opportunity to develop their professional skills in a world-class facility and are empowered to pursue a career pathway within a speciality area of their choice."

Graduate nurses can elect either the perioperative or clinical specialty stream

when they apply. Each of the streams offers bespoke support throughout the 12 months, rather than a one-size-fits-all approach.

"In the clinical specialty, for example, they are gradually introduced to the range of shifts and care for increasing numbers of patients as the weeks progress," Armstrong says. "Nursing Unit Managers, Clinical Nurse Educators and nursing preceptors support them throughout their 12-month program."

Shanahan was very grateful to be offered her first choice in the specialty area of anaesthetics. "Naturally, some patients can find going under anaesthetic quite scary. I am very happy that I can use my knowledge and skills as a registered nurse to care for them, and keep them calm and safe when they are conscious and unconscious," she says. "I feel all the nurses are there for me and I am very nurtured and supported."

**MQ Health's Grad@MUH Program is for newly graduated Enrolled Nurses and Registered Nurses. It provides work-based learning activities to ensure nurses embed the values and skills of the profession in their on-the-job training. Through the program, these graduate nurses learn how to mitigate clinical risk and offer quality patient care.**

## NURSE-LED RESEARCH INVESTIGATES IRON

MQ Health is also embarking on a new nurse-led research project, coordinated by Jing He, Clinical Nurse Specialist – Research. The nursing research team is investigating how preoperative iron infusion can assist patients undergoing knee and hip replacement surgery, and how it may possibly reduce rehospitalisation after the surgery and the need for blood transfusions.

"Previous research tells us that more than half of patients having major orthopaedic operations are anaemic after surgery," says Jing. "Iron therapy is recommended by the National Blood Authority, but most of the time in practice it is a challenge to implement. That's why we would like to run a pilot study."

The project team includes eight nurses working across a range of specialties including day surgery, theatres and acute care wards within MUH.

# Our learning and teaching philosophy

## **STUDENTS LEARN BY EXPERIENCING HEALTHCARE FROM DIFFERENT PERSPECTIVES**

Our course design doesn't come from the top down, instead it combines input from students, patients, clinicians and doctors-in-training.

## **NURTURING STUDENTS**

Students play an integral role in the design of courses – most recently in the new Doctor of Medicine. “Just as patient-centred care is at the heart of our clinical care, our learning and teaching is student-centred,” says Professor Catherine Dean, Deputy Dean and Associate Dean, Learning and Teaching. “We create a positive learning environment, applying a coaching, mentoring, nurturing model.”

Many assessments are low-risk or formative, giving students additional opportunities to meet the required standard. Academics assess students' progress by looking at all their data over time, not just their performance on a one-off high-stakes assessment.

Cohorts are typically small and students are involved in the governance of the courses. A Faculty Student Experience Committee with student representatives from each course responds quickly to student feedback.

## **PATIENT AND CLINICIAN INVOLVEMENT**

MQ Health also holds patients' focus groups so they can inform the Consumer Advisory Committee and design health education from patients' perspectives.

Clinicians are also an integral part of the design and development of the courses, so that their experience and patient knowledge can feed back into the learning process.

“We get the best expert to teach the course who has the most up-to-date, evidence-based research and clinical innovations – not just the one who fits in the timetable,” says Dean. “The courses are constantly evolving.”

## **GLOBAL FOCUS**

In designing our courses, we acknowledge that healthcare is a universal need and clinicians will serve diverse, multicultural communities in Australia and overseas.

Our MD includes extended international clinical experiences for all students, including 22 weeks at Apollo Hospital in Hyderabad, India. This experience provides an opportunity for students to compare health systems and gain a breadth of experience and exposure to a diverse case mix to develop their skills.

“We're essentially future-proofing their careers by creating a global health workforce. They will become clinicians who understand the complexity of different health systems and can be agile and adaptable to different contexts addressing health issues wherever they exist,” Dean says.

## **INTEGRATED HANDS-ON APPROACH**

All the MQ Health courses take an integrated, inter-professional approach – instead of teaching anatomy separately from physiology, student learning is integrated around body systems.

Throughout their training, students develop a holistic understanding of patients and their needs, learn to observe healthcare in action and follow the journey of patients through the healthcare system, enabling them to grasp how their theoretical training translates into practical patient-centred care.

***“We asked patients: What do you want from future doctors and health professionals? What are their key capabilities? Patients have a genuine voice that helped shape what is now a capability framework for the medical program,” says Professor Dean.***







# Postgraduate internship leads to role at hospital

An internship provided a learning opportunity for a Master of Public Health student that led to a full-time role at Macquarie University Hospital (MUH).

Oluwatosin (Tosin) Akinya-Ojo came to Macquarie University to study for a Master of Public Health. Her long-term goal is to return to her home country of Nigeria and work to improve healthcare systems.

Initially, she found the course challenging, because it was much more fast-paced and technology-focused than she was used to. “Back in my university in Nigeria, we mostly have face-to-face classes,” she says. “You have two assignments and you submit them on paper and you have a couple of exams. You didn’t use the computer as much.”

At Macquarie, she struggled with keeping pace, but says her lecturers were very patient until she got up to speed. Most of her fellow students were international and in the same situation so they could also share their challenges.

The highlight of her two-year degree was a voluntary internship placement at MUH in the Patient Safety and Quality Department. “I really wanted to get

real-life experience before graduating,” she says.

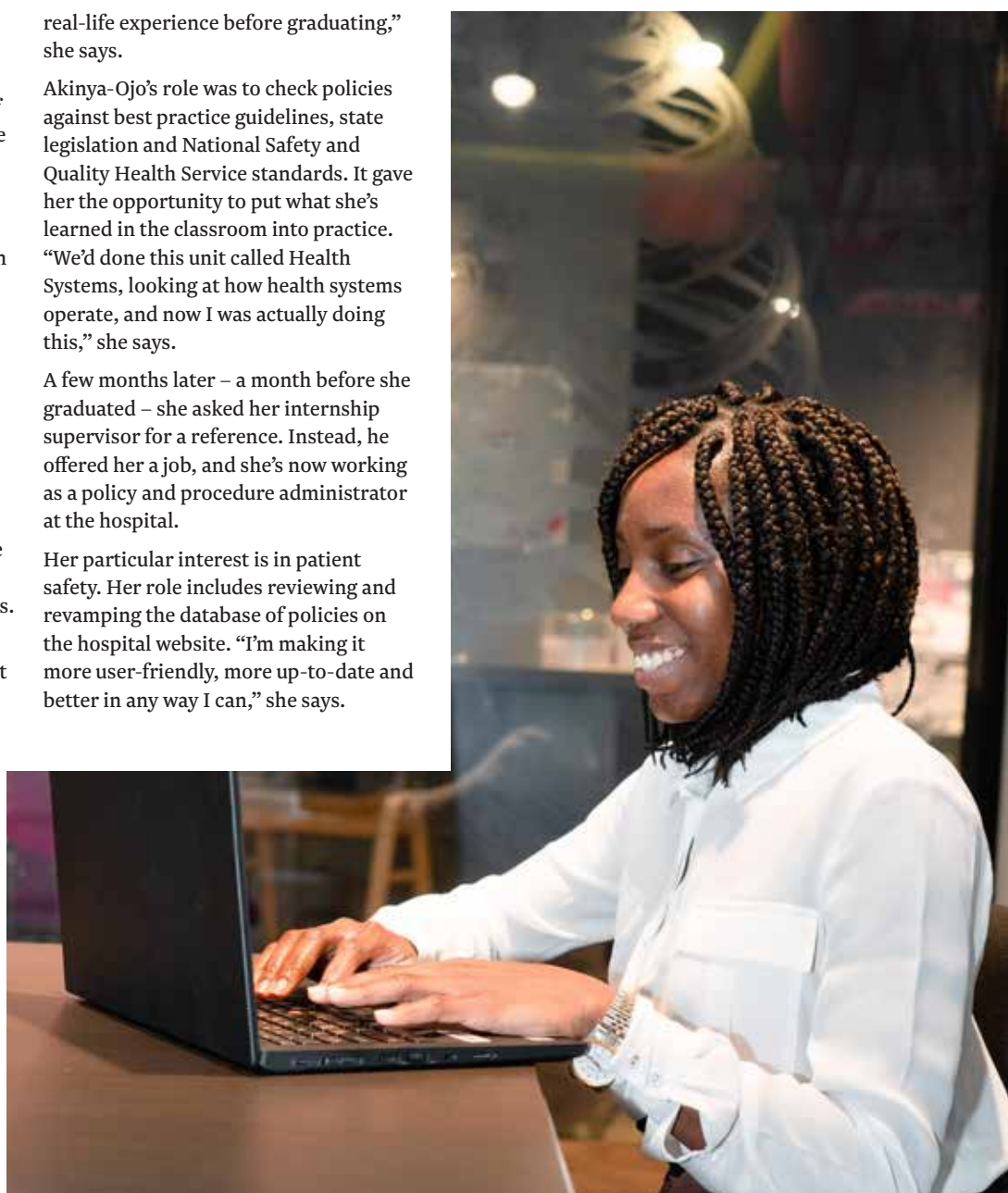
Akinya-Ojo’s role was to check policies against best practice guidelines, state legislation and National Safety and Quality Health Service standards. It gave her the opportunity to put what she’s learned in the classroom into practice.

“We’d done this unit called Health Systems, looking at how health systems operate, and now I was actually doing this,” she says.

A few months later – a month before she graduated – she asked her internship supervisor for a reference. Instead, he offered her a job, and she’s now working as a policy and procedure administrator at the hospital.

Her particular interest is in patient safety. Her role includes reviewing and revamping the database of policies on the hospital website. “I’m making it more user-friendly, more up-to-date and better in any way I can,” she says.

*“Right now, I feel I need some experience on the ground in Australia with some practical hands-on health policy, advocacy and promotion work so I’ll gain the expertise to make a difference in health policy back home,” says Oluwatosin Akinya-Ojo.*



# Courses

MQ Health's range of undergraduate and postgraduate courses connect with each other.



## BACHELOR OF CLINICAL SCIENCES

The Bachelor of Clinical Sciences is a two-year fast-track course (condensing three years' study into two) that feeds into graduate-entry professional courses such as the Doctor of Medicine, Doctor of Physiotherapy or Master of Public Health, or is a pathway to research via the Master of Research.

Students learn in simulated clinics, are exposed to the latest technology and equipment, and work with human anatomical specimens. They do a capstone professional community engagement unit to explore where they might want to work in the future.



## MASTER OF PUBLIC HEALTH (RESEARCH)

The first year of the course focuses on the breadth and depth of public health, ensuring students receive training in core concepts as well as introductory training in applied research methods. In the second year, they undertake a research project in an area of study relevant to public health, guided by research supervisors.



## MASTER OF PUBLIC HEALTH

This postgraduate course develops students' skills in teamwork, leadership and innovation.

Students build a deep understanding of the significance of public health in Australia and globally and learn about the biological, environmental, socioeconomic, behavioural, cultural and other factors that impact human health. In this coursework master's, students have the opportunity to apply their theoretical skills during a 10-week placement.



### MASTER OF RESEARCH

The two-year Master of Research offers a pathway into higher degree research, which can culminate in a PhD or a research career. The first year involves advanced coursework units in students' areas of study. The second year focuses on research preparation and training as students write a 20,000-word research thesis.



### PHD



### PROFESSION / DOCTORS-IN-TRAINING

All these courses prepare graduates for the next steps in their career, either a doctors-in-training program or directly transitioning into a professional role in public health, physiotherapy or research.



### DOCTOR OF MEDICINE

The Doctor of Medicine (MD) is a four-year graduate-entry medical course. It is fully integrated and focuses on training students to deliver exceptional patient-centred clinical care and to take part in health and medical research. Students experience different health systems through clinical placements at Macquarie University Hospital, MQ Health Clinics and in clinical settings across Australia and the globe, including India and North America.

The MD is accredited by the Australian Medical Council and approved by the Medical Board of Australia.



### DOCTOR OF PHYSIOTHERAPY

The Doctor of Physiotherapy is a three-year graduate-entry course that teaches advanced skills not available in most Australian universities. As well as learning the required practical and clinical skills, students also learn about business marketing, management, policy advocacy, digital communication and leadership.

Taught by experienced, passionate clinical educators and experts in their fields, the course solidifies students' theoretical knowledge with more than 1000 hours of clinical experience.

The course is accredited with the Australian Physiotherapy Council and the Physiotherapy Board of Australia.

The course aligns with international qualifications.



# Training doctors

Doctors-in-training are an integral part of the MQ Health ecosystem, unlocking the private system for medical graduates.

MQ Health has an established Doctors-in-Training program for medical graduates and junior doctors seeking specialty training, Interns, Fellows and Registrars. It offers the unique opportunity to gain practical experience at Macquarie University Hospital, the MQ Health Clinics and partner public hospitals.

“We are unlocking the private system for medical graduates and offering more places for internships, offering international and domestic students the chance to continue their training,” says Dr David Massasso, Director of Clinical Training.

These junior doctors go on five 10-week rotations and learn how to administer expert patient care and experience the full spectrum of their health journey. They get to accompany the patient from the operating table to the ward and then in follow-up visits with the specialists in the clinic. The junior doctors get to shadow specialists who are experts in their field and have opportunities to be mentored by and learn from them.

They have the chance to be immersed in general practice in the MQ Health GP Clinic and also have a regional placement at Coffs Harbour Hospital Emergency Department, where they see a wide variety of clinical presentations.

Doctors-in-training participate in teaching medical students. They can also join research teams conducting clinical trials or exploring new treatments and diagnostic markers for conditions such as motor neuron disease or Alzheimer’s disease.

## MQ HEALTH IS ACCREDITED BY THE FOLLOWING INSTITUTIONS

The Health Education and Training Institute to provide prevocational medical education and training

The College of Intensive Care Medicine (CICM) to provide foundation training for prospective applicants to CICM\*

The Royal Australasian College of General Practice for GP training

The Royal Australasian College of Surgeons for one Neurosurgical SET trainee

\*MQ Health offers neurology and cardiology rotations as part of core CICM training





# Program for junior doctors explores specialisations

The Doctors-in-Training program provides junior doctors with many unique opportunities to explore specialities as Interns, Residents, Registrars or Fellows.

As an international student from Botswana, Dr Jisha Kunju found it difficult to secure an internship after finishing medical school at the University of Newcastle. Most public hospitals reserve places for domestic students. So she was delighted when MQ Health accepted her into the Doctors-in-Training program.

“What really attracted me was that it was very strongly based around teaching and research, which I didn’t find with any of the other private hospitals,” Kunju says. “So we’ve had lots of medical students coming in and shadowing us in the wards. That’s been a great chance for me to share what knowledge I’ve got.”

This year, Kunju completed her 12-month internship at MQ Health, which included five 10-week terms. Her first placement was in the MQ Health GP Clinic. “Fresh out of med school and being labelled ‘doctor’ for the first time was very daunting,” she says.

“But everyone was very supportive and answered my questions. That was my favourite term out of the whole year. I was very lucky because usually as

an intern you don’t get to experience General Practice because it’s all hospital-based.”

Macquarie University Hospital doesn’t have an emergency department, so Kunju spent a term at one of MQ Health’s training partners, the Coffs Harbour public hospital, located on the New South Wales mid-north coast. Her other terms included oncology, cardiology and orthopaedics at MQ Health.

“Macquarie University Hospital is particularly sub-specialised,” she says. “This gives junior doctors like me exposure to unique procedures that we wouldn’t usually get to see – which is very exciting.”

She was able to shadow renowned surgeon Professor Munjed Al Muderis and also assisted doctors involved in chemotherapy drug trials.

In 2020, MQ Health accepted Kunju as a Resident. She has a wide choice of terms including psychiatry, ophthalmology, endocrinology, anaesthetics and rehabilitation.



*“So far, it’s been a really rewarding experience – particularly because the patients are so grateful for the genuine care they receive,”  
Dr Jisha Kunju says.*



# Discover

Our cross-disciplinary research in cancer, cardiovascular, clinical sciences, health systems and services, hearing, mental health and neurosciences improves patient outcomes.







# From steel to stiffened arteries

A doctorate in biomedical engineering led Mark Butlin from Wollongong's steelworks to research on arteries and blood pressure.

Working with biomedical engineer Professor Alberto Avolio and cardiologist Associate Professor Edward Barin, Dr Mark Butlin leads a cross-disciplinary team of clinicians, physiotherapists and engineers. They're trying to better understand the progression of arteriosclerosis, the stiffening of arteries that happens irreversibly with age.

Butlin came to MQ Health 12 years ago, attracted by the model of having a hospital onsite. "Having clinicians embedded in our team makes collaborating so much easier," he says.

His team is also exploring autonomic function – how the brain controls respiration and blood pressure. MQ Health has Sydney's only clinic dealing with blood pressure and autonomic function. "Our research crosses right into the clinical sphere, which means our patients benefit from our latest published research," he says.

Ten years ago, Butlin's team developed a device that measures blood pressure near the heart, giving more information than measured at the arm, and built a self-contained blood pressure cuff with sensors.

They are now involved in a multi-centre, international trial using devices that monitor people who have high blood pressure outside the clinic but present as normal in the clinic. Patients go home wearing a device for 24 hours that reports the measurements back to the clinic, where clinicians can assess their blood pressure.

"Patients are taking part in monitoring their own health," he says. "We also want to involve them in understanding their results and treatment."

His team is also developing a cuffless blood pressure monitor and other novel methods that are still in their infancy, such as measuring blood pressure through video.

Butlin teaches in the Bachelor of Clinical Science, Masters of Research, and Doctor of Medicine programs. "I really like demonstrating that we don't know everything, that there's uncertainty in knowledge and that we should be continually re-evaluating what we're doing," he says. "This can be a bit challenging, particularly for undergraduate students – but it's a lot of fun, too."



Dr Mark Butlin

# Recent research highlights

Our research across MQ Health covers diverse disciplines and research questions, and makes up a substantial part of Macquarie University's research activity. Here are a few high points for 2019.

## MND TRIALS

Professor Dominic Rowe is participating in two clinical trials of potential therapies for motor neuron disease (MND). The Lighthouse trial is testing a repurposed HIV-antiviral therapy with promising early results. The other is testing Cu-ATSM to rebalance abnormal metal deposition in patients. With success in early-stage trials, both are moving to large-scale, later-phase trials to test the drugs' effectiveness on MND patients.

## MQ HEALTH DEMENTIA RESEARCH CENTRE

The Dementia Research Centre, led by Professor Lars Ittner, launched in mid-2019. The centre has 23 staff and 13 HDR students, comprising seven group leaders whose teams include postdoctoral researchers, research assistants and research students.

The centre's research has three major streams: understanding the mechanisms of Alzheimer's disease, frontotemporal dementia and other similar neurodegenerative diseases; developing accurate disease models for testing therapies; and developing novel therapies for these diseases, including new drugs and gene therapies.

## AUSTRALIAN ALLIANCE FOR ARTIFICIAL INTELLIGENCE IN HEALTHCARE

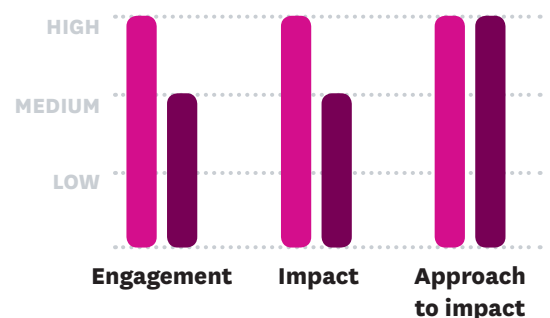
Our Australian Institute of Health Innovation's (AIHI) Centre for Health Informatics founded the Australian Alliance for Artificial Intelligence in Healthcare. This alliance brings together more than 60 national and international partners, including academics, government, consumer organisations, healthcare providers and industry, to translate artificial intelligence (AI) technologies into real-world health services. ([aihealthalliance.org](http://aihealthalliance.org))



## Engagement and Impact rankings released in 2019\*

● Biomedical and Clinical Sciences

● Public and Allied Health Sciences



\*From a triennial assessment of the level of Australian universities' engagement with research end users and of the impact (i.e. benefit) that universities' research has on end users.

## SELECTED RESEARCH GRANTS IN 2019

### AUSTRALIA'S MEDICAL RESEARCH FUTURE FUND (MRFF)

Professor Jeffrey Braithwaite, \$1,500,000, "Harnessing implementation science, complexity science and evidence-based care to Keep Australians out of Hospital: leveraging seven natural experiments in New South Wales".

### AUSTRALIAN RESEARCH COUNCIL (ARC) FUTURE FELLOWSHIP

Associate Professor Antonio Di Ieva, \$1,015,000, "In search of relevant things: A novel approach for image analysis".

### NHMRC INVESTIGATOR GRANTS SUCCESS

MQ Health received five NHMRC Investigator Grants worth \$9.7 million designed to support leading researchers at all career stages to undertake ambitious research. The recipients included:

- Professor Ian Blair, "Determining the molecular basis of amyotrophic lateral sclerosis".
- Professor Jeffrey Braithwaite,

"Designing and implementing a real-world learning healthcare system: operationalising knowledge, data and practice for clinical microsystems of the 21st century".

- Professor Gilles Guillemin, "The kynurenine pathway in neuroinflammatory disease: translation to prognostics and therapeutics".
- Dr Arne Ittner, "Loss-of-function of tau phosphorylation in Alzheimer's disease".
- Professor Johanna Westbrook, "Delivering safe and effective medication management technology now and for the future".

### NHMRC PARTNERSHIP PROJECTS GRANT

Professor Johanna Westbrook, Professor Andrew Georgiou, Professor Jeffrey Braithwaite and others, \$1,315,150.30 (from the NHMRC), \$500,000 (from Anglicare), "A dashboard of predictive analytics and decision support to drive care quality and person-centred outcomes in aged care".

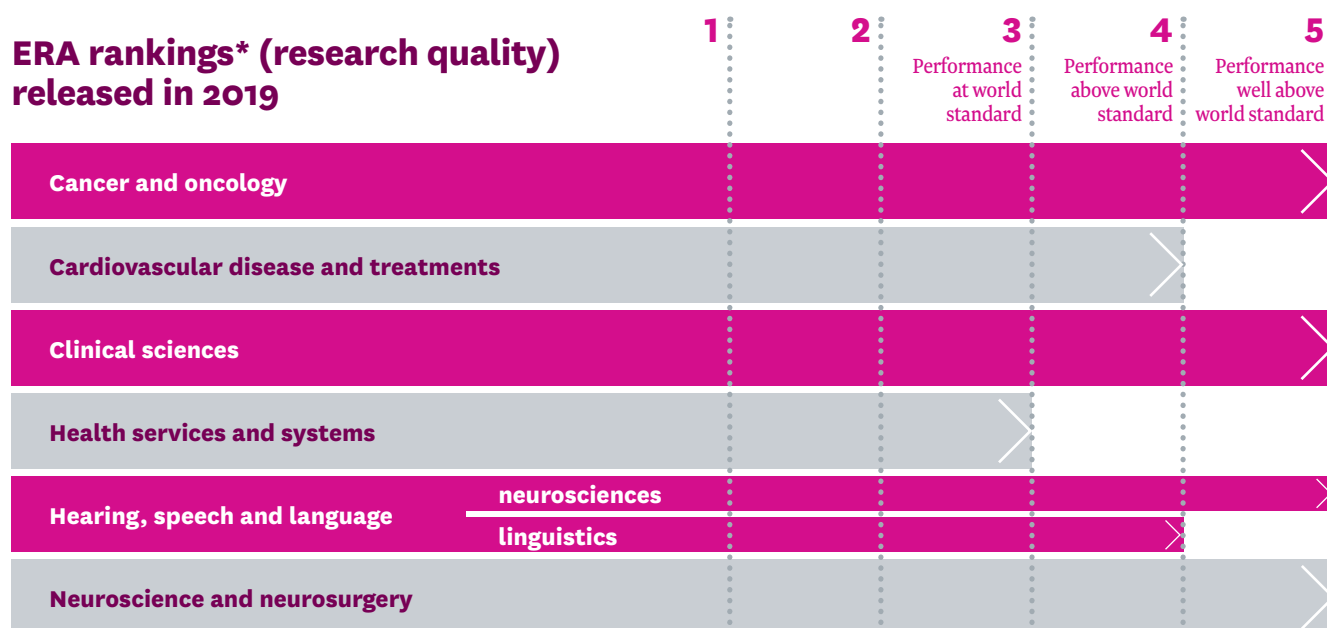
## KEY RESEARCH PARTNERSHIPS AND OUTCOMES IN 2019

**Anglicare** – building on an agreement signed in September 2017, highlights in 2019 included Anglicare's participation in an NHMRC Partnership Projects Grant for development of a dashboard based on data collected within the aged care facility.

**Fujitsu Australia Ltd** – building on an agreement signed in February 2018, highlights in 2019 included the award of a Cooperative Research Centres Project (CRC-P) grant for \$2.08 million to Fujitsu to develop an artificial intelligence application in aneurysm detection on CT scans with collaborators from GE Healthcare and MQ Health. The total value of the project is \$4.614 million. Fujitsu has launched the first Digital Transformation Centre on a university campus and the first in the Southern Hemisphere here at Macquarie University.

**B. Braun** – building on an agreement signed in December 2018, this partnership saw B. Braun provide a clinical Motion Sensor for the MQ Health Shoulder Laboratory in 2019.

## ERA rankings\* (research quality) released in 2019



\*Excellence in Research for Australia, ERA, is a triennial assessment of the quality of research done at Australian universities. The scoring system uses a five-point rating scale for both two-digit and four-digit field of research codes.





# Back to basics in spinal pain research

Professor Mark Hancock, a global expert in lower back pain, was attracted by MQ Health's vision of integrating clinical practice, teaching and research.

Back pain is the number-one cause of disability globally, but doesn't get the attention or funding it deserves, says Professor Mark Hancock. That gap is one of the main motivations for his research.

With about 30 other international back pain researchers, Hancock co-authored a series in *The Lancet* in 2018 on the complexities of the condition.

"Many people receive invasive and expensive investigations and treatments that are not recommended or supported by evidence," he says.

Hancock came to Macquarie in 2012 to help establish the physiotherapy program from the ground up, attracted by how MQ Health interweaves teaching, research and clinical practice.

In collaboration with researchers at the University of Sydney, Monash, Curtin and UNSW, his team created a National Health and Medical Research Council (NHMRC) Centre of Research Excellence, aiming to reduce the evidence-to-practice gap in

the management of back pain, while also investigating new interventions and models of care for back pain.

Supported by two other NHMRC grants, his team is exploring how to decrease the use of imaging that's frequently inappropriate and how to prevent and treat back pain simply and inexpensively.

The RESTORE trial with Curtin is investigating a novel integrated behavioral approach for people with lower back pain that have failed other interventions. Now two-thirds of the way through the trial, Hancock says it seems clinicians need to individualise treatment.

Hancock started a multidisciplinary Spinal Pain Research Group at MQ Health, which he leads with Professor Simon French, from the Department of Chiropractic. He is also working with GPs, physiotherapists, spinal surgeons, psychologists and pain medicine doctors to develop a novel integrated spine pain clinic, the Acute Spine Clinic, at MQ Health.

*"A wide range of factors can contribute to an individual's pain, including the way they move, weakness or stiffness, and psychological or social factors. We now understand much more about the complexity of chronic pain and how important things like beliefs, past experiences, fear of pain, sleep, or issues in the workplace can be," says Professor Hancock.*





# Liquid biopsies aid cancer diagnosis

Researchers use liquid biopsies in melanoma diagnosis and treatment monitoring.

Dr Russell Diefenbach came to MQ Health in 2017, keen to be involved in cancer research with tangible clinical outcomes. He'd previously worked at the Westmead Institute for Medical Research for 20 years.

By analysing liquid biopsies – blood samples instead of conventional tissue biopsies – Diefenbach is now part of a team, led by Professor Helen Rizos, investigating patients' response to certain cancer treatments and also predicting survival outcomes.

"We're trying to characterise a tumour with a single blood test," he says. "We want to link the work we do in the lab with what we do in the clinic."

Liquid biopsy research is non-invasive and more easily allows researchers to monitor how patients respond to treatment, surgery and radiotherapy.

"Liquid biopsies have been around for a while now," says Dr Jenny Lee, a medical oncologist, PhD student and the clinical lead in Rizos' team,

"but this is the closest we've come to impacting patients' lives."

Working with patient samples from Melanoma Institute Australia, the team is currently making their tests more sensitive and targeted to identify mutated DNA. At the same time, they are building up a cancer biobank at MQ Health of blood samples accompanied by clinically annotated data. It's similar in scope to the Neurodegenerative Disease Biobank that exists at the Macquarie University Centre for MND Research.

The researchers' next step is to apply this liquid biopsy technology to cancers other than melanoma. They aim to design clinic trials and gain government accreditation, so clinicians can use it as part of routine clinical care. Rizos' team is collaborating with others in Australia and globally who are doing similar research.

"Currently, the technology is used to detect late-stage melanoma," Rizos says.



*"We hope that within five years, clinicians will use liquid biopsies to select the best treatment for each cancer patient and monitor their response to therapy in real time," says Professor Rizos.*



# Novel therapies trialled by clinical unit

The Clinical Trials Unit (CTU) at MQ Health formed in 2013 to develop and deliver the latest therapies for patients.



The CTU began its first sponsored trial, PLATO, studying novel anti-androgen therapy in prostate cancer, soon after it was formed in 2013.

The unit recruited 41 patients, the highest number of any centre internationally, and published results in the *Journal of Clinical Oncology* in 2018.

Since its inception, the CTU has run more than 60 clinical trials – mainly in oncology and cardiology – with more than 300 patients participating at any one time. Often, the CTU is the largest recruiter in Australia and they have exceeded or equalled planned recruitment in more than 80 per cent of trials.

These trials have significant positive impact on patients. The CTU's trial treatments have delayed the spread of cancer in some patients with prostate cancer. Other data shows early promising results of combining treatments or of discontinuing other treatments when a disease progresses.

Recent highlights include papers published in leading journals, including *The Lancet*, *Lancet Oncology* and *The New England Journal of Medicine*.

The CTU now employs over 25 staff with an annual revenue in excess of \$3 million. In 2019, a new Head of Operations Nicola Chapman was recruited to help with future growth.

The unit is committed to staff development and is investigating ways to encourage the progression of staff into management, teaching and research positions. Medical students are welcomed, as were three PACE students on rotation through the unit during 2019.

As well as cancer trials, the CTU now caters for all subspecialties of medicine, including sponsored and investigator-initiated studies for drugs, devices and other interventions.

The aim is to help all clinicians at MQ Health and Macquarie University undertake the highest-quality research for the ultimate benefit of our patients.



*“A hospital with a thriving clinical trials unit is cutting-edge and has the best international standard of care,” says Professor Howard Gurney, Director of the MQ Health CTU.*

# Aged care research focuses on quality of life

Professor Johanna Westbrook is leading a project that aims to improve the quality of life for thousands of older Australians living in the community.

Five years ago, Professor Westbrook came to Macquarie University as a Director with the Australian Institute of Health Innovation (AIHI).

Since then, she's led many projects that directly impact people's lives, serving as Director of the Centre for Health Systems and Safety Research in AIHI.

"Coming to Macquarie was a great fit for what we were trying to achieve," she says.

Today, AIHI has 170 multidisciplinary researchers.

Westbrook and her team have partnered with aged care provider Uniting to investigate how social isolation impacts older adults' quality of life and how that can be improved.

"In aged care, the focus often tends to

be on assessing an individual's physical needs," Westbrook says. "And yet we know that a priority for people is maintaining and improving their quality of life, and social participation is an incredibly important part of that."

After receiving an Australian Research Council (ARC) Linkage Project grant and funding from the Commonwealth Department of Health, Westbrook and her team are addressing this disconnect. More than 1,400 Uniting clients receiving aged care services at home completed two surveys with their case managers, responding to questions about aspects of their life and community participation.

"It's the first time such assessments have been integrated on a large scale as part of routine practice in Australia, and we

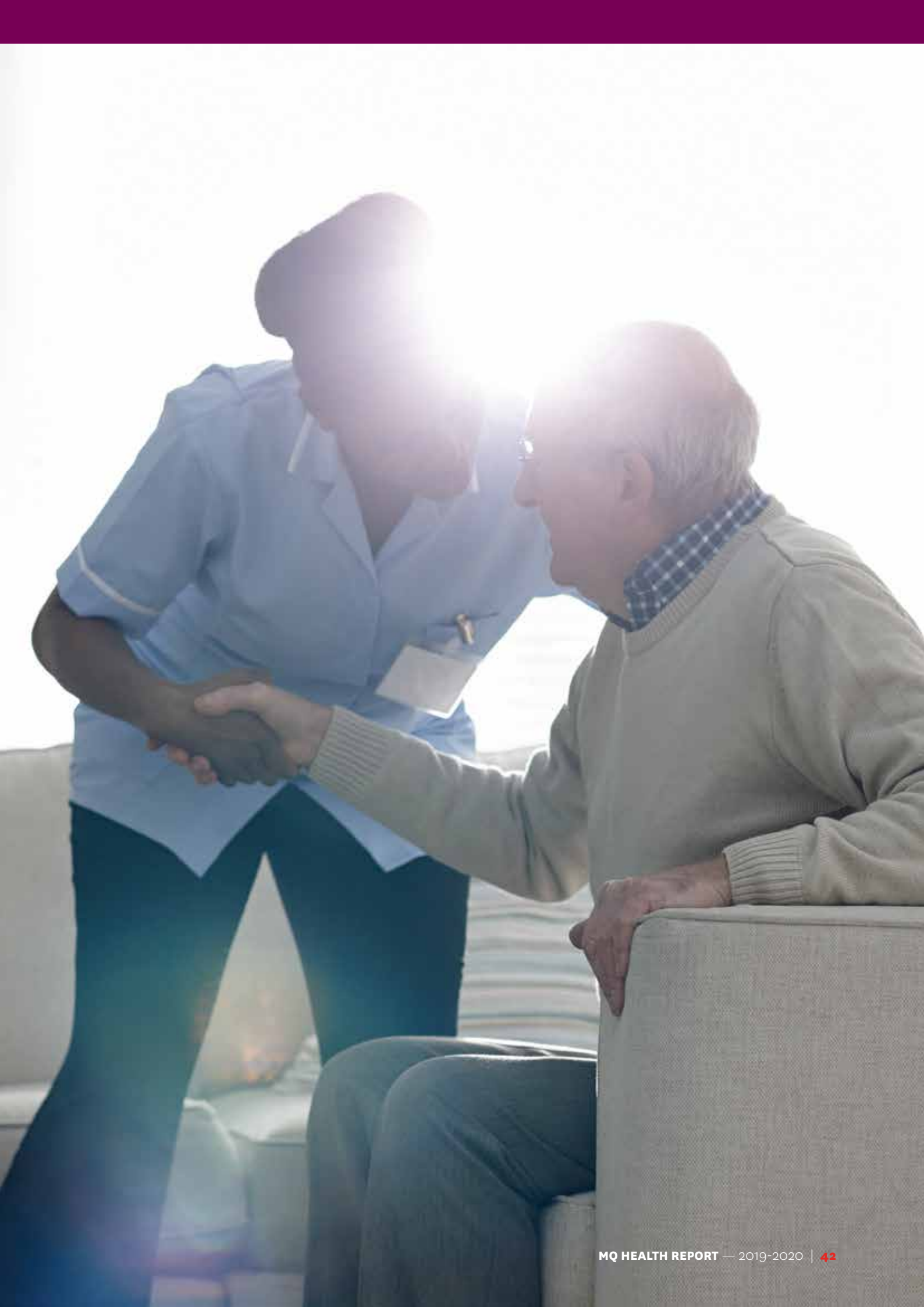
got a very strong positive response from clients," says Westbrook. "Just having the case manager ask those questions was really important to the clients; having the chance to talk about what was important to them, that sometimes they were lonely and found it very difficult to go out and participate in community activities."

Case managers are using this information to better target services to their clients. The program continues to expand with surveys now translated into Mandarin, Korean and Turkish. The researchers are working with other providers to embed quality-of-life assessments into practice with the goal of supporting adoption in aged care services throughout Australia.



*"AIHI's research is focused on creating safe and sustainable health care systems," says Professor Westbrook (above).*







# Awards and prizes

---

**Professor Johanna Westbrook** received the 2019 National Health and Medical Research Council (NHMRC) **Elizabeth Blackburn Investigator Grant Award** for Leadership in Health Services Research

Clinical Associate **Professor Munjed Al Muderis**, (orthopaedic surgeon) who focuses on limb replacement by osseointegration, was awarded **2020 NSW Australian of the Year**

Associate **Professor Antonio Di Ieva** (neurosurgeon and researcher) received the **2019 John Mitchell Crouch Fellowship**, worth \$150,000, which is awarded to an individual making an outstanding contribution to the advancement of surgery or to fundamental scientific research in the field in which they are now actively working

The French Government recognised **Professor Gilles Guillemain** as a **Chevalier de l'Ordre Mérite (Knight of the National Order of Merit)** for his outstanding contribution to neuroscience, including the establishment of the Centre for Motor Neuron Disease Research at Macquarie University

*Nature* named **Professor Wendy Rogers** (who has a joint role between the Department of Clinical Medicine and Department of Philosophy) as one of *Nature's 10, Ten people who mattered in science in 2019*

**The Web of Science's list of Highly Cited Researchers 2019 included:**

- **Professor Mark Connor** in the pharmacology and toxicology category
- **Professor Richard Kefford** in the clinical medicine category

**The Australian's 2019 Research magazine listed:**

- **Professor Johanna Westbrook** as national leader in medical informatics
- **Professor Richard Harvey** as national leader in otolaryngology
- **Associate Professor Karen Vickery** as national leader in plastic and reconstructive surgery

The National Health and Medical Research Council (NHMRC) awarded **Professor Rogers** the **2018 Ethics Award** as part of its **Biennial Research Excellence Awards**

**Associate Professor Adam Dunn** was a finalist in the **Research Australia's Health & Medical Research Awards 2019**

**In Macquarie University's 2019 Academic Staff Awards:**

- **Professor Roger Chung** received the Jim Piper Award for Excellence in Research Leadership
- **Dr Bingyang Shi** received the Macquarie University Early Career Researcher of the Year (STEMM) Award
- **Stephanie Rayner** received the Excellence in Higher Degree Research (STEMM) Award
- **Alexandra Bhatti** received the Vice-Chancellor's Learning and Teaching Early Career Award and the Vice-Chancellor's Learning and Teaching Student Nominated Award
- **Professor Catherine Dean** received the Vice-Chancellor's Educational Leader Award

**In Macquarie's 2019 Vice-Chancellor's Excellence Awards for Professional Staff:**

- **Dr Brenton Hamdorf**, Director, Academic and Research Partnerships, was Highly Commended in the Collaboration and Connection category
- **Camille Morgan**, Billing Manager Outpatients and Clinicians, MQ Health, was short-listed in the Collaboration and Connection category
- **Ashleigh Stewart, Bernadette Pedersen, Carina Lauter, Mal Irvine and Suzanah Boyd**, members of the Cancer Research Team from the Department of Biomedical Sciences, were short-listed in the Outstanding Service category
- **Kerri Mackenzie**, was short-listed in the Outstanding Service category

# Contacts



## MQ Health

MACQUARIE UNIVERSITY  
HEALTH SCIENCES CENTRE



+61 (2) 9812 2990



[info@mqhealth.org.au](mailto:info@mqhealth.org.au)

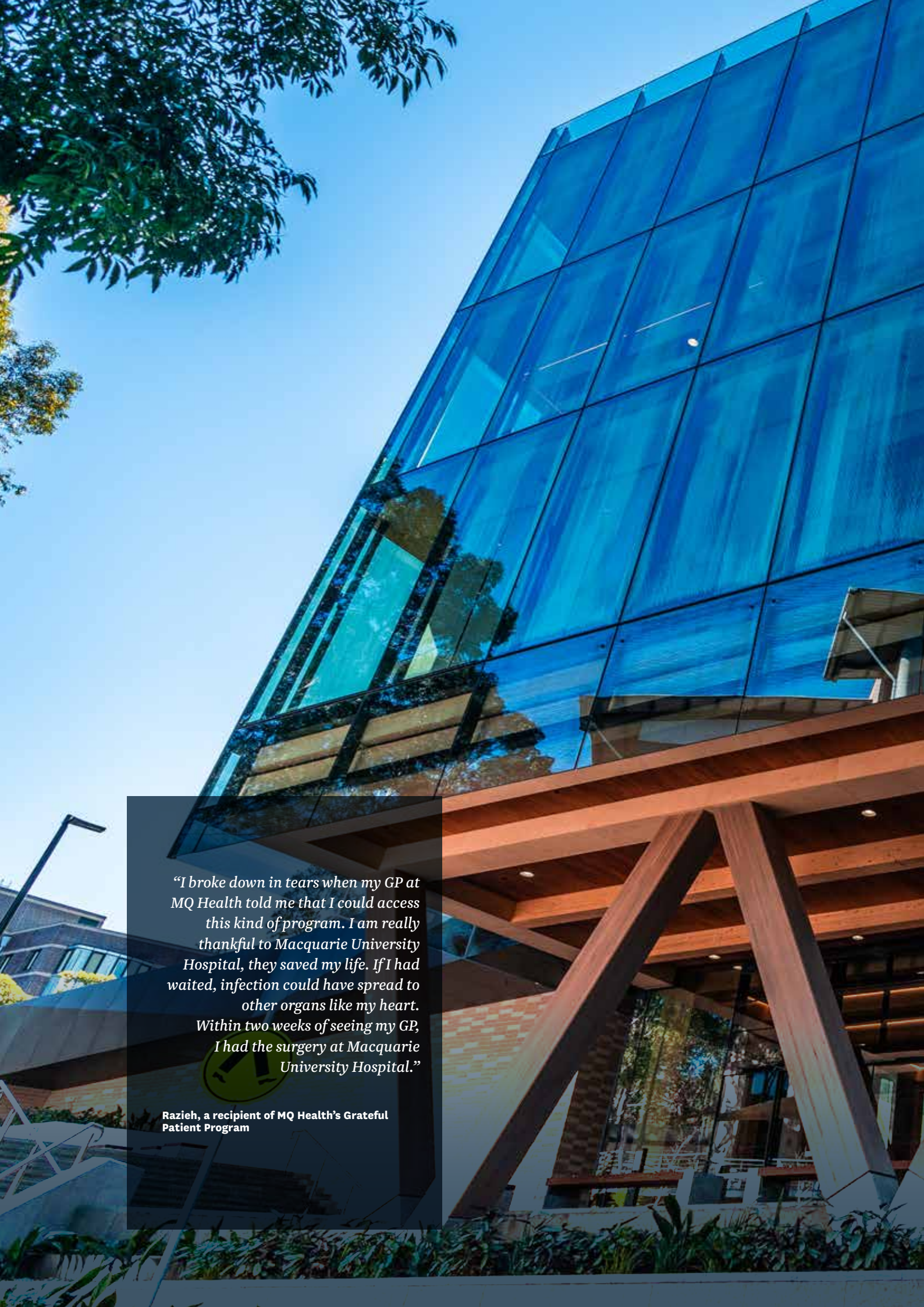


[mqhealth.org.au](http://mqhealth.org.au)

**CRICOS** Provider 00002J  
**ABN** 46 141 203 125  
MQH43001

**PHOTOS:** Macquarie  
University, Morris  
McLennan, Chris Stacey,  
Joanne Stephan, Chloe  
Szilas, Jesse Taylor and  
Paul Wright.





*"I broke down in tears when my GP at MQ Health told me that I could access this kind of program. I am really thankful to Macquarie University Hospital, they saved my life. If I had waited, infection could have spread to other organs like my heart. Within two weeks of seeing my GP, I had the surgery at Macquarie University Hospital."*

**Razieh, a recipient of MQ Health's Grateful Patient Program**