Dear Doctor

Our final GP e-News for the year brings you information about important core and advanced services offered at Macquarie University Hospital & Clinics.

In establishing MQ Health’s new multidisciplinary Breast Health Clinic, Dr Karen Shaw has been extremely important. This service is a unique ‘rapid-access’ model providing patients with fast and easy access to breast specialists, as well as same day referral to imaging and pathology services, all at the same location. Patients review any initial results with their clinician before they leave site.

MQ Health Lymphoedema service is one of the most comprehensive in the country, and stresses the importance of early detection in reducing incidence and slowing progression of the condition. This service is part of the Australian Lymphoedema Education, Research and Treatment program that provides education, research, clinical care and surgical treatment for those at risk of or living with this condition.

We are also pleased to highlight our improved lung service with GenesisCare at Macquarie University Hospital now offering stereotactic ablative body radiotherapy (SABR), an extremely precise form of radiation therapy that safely uses high doses of treatment to precisely target tumours. This adds to our existing suite of radiotherapy services, including the advanced stereotactic Gamma Knife technology.

Advanced surgery is available across all our clinical disciplines and our story on highly specialised facial reanimation surgery highlights this expertise. In many cases, surgeons are able to consider and collaborate to perform procedures that are often not available elsewhere.

Congratulations to Associate Professor Munjed Al Muderis for winning NSW Australian of the Year. May I take this opportunity to thank you for your support and to wish you and your loved ones a safe and wonderful holiday season.

Walter Kmet,
Chief Executive Macquarie University Hospital and Clinical Services

If you would like to receive further information about our GP education activities for 2020, please email events@muh.org.au
Just over a decade ago, Jo Vardanega had required life-saving surgery to remove a skin cancer that had spread into his parotid gland. The surgery involved removing a large amount of tissue – from the left side of his face and neck – as well as the facial nerve. This was followed by radiation treatment, which cured Jo and allowed him to get on with his life.

The removal of Jo’s facial nerve – responsible for creating the fine movements of the facial muscles, which protect the eye and convey emotions – meant he was left with one side of his face paralysed and hollow. Most importantly, Jo had lost the ability to smile.

“I’d look in the mirror and it just wasn’t me,” said Jo. “In photographs, which leave a lasting memory, my face would be all distorted. When my daughter got married a few years ago, I couldn’t face the photos. To see no smile – just a sagging face – was really hard. Over the years, I became withdrawn and it had a big social impact on me. I’d given up, in a way.”

Knowing there would be more weddings and photographs to come, Jo was determined to see if anything could be done to restore movement to his face and improve the asymmetry. Jo was referred to Associate Professor Gazi Hussain, a specialist plastic surgeon with an expertise in facial reconstructive surgery at Macquarie University Hospital.

Because the facial nerve and facial muscles on the left side of Jo’s face were no longer functioning, Associate Professor Hussain decided to transplant a muscle from Jo’s upper thigh into the left side of his face. The blood vessels were joined using microsurgery and the nerve of the muscle was connected to the nerve controlling one of the biting muscles in Jo’s jaw.

There was no guarantee that the operation would be successful as the nerves had to grow through the area of scarring into the transplanted muscle. After nine months, one day while driving, Jo suddenly began to feel the side of his face move. When he clenched his teeth, he could see the beginnings of a smile when he looked in the mirror. With physiotherapy and training, his smile has grown bigger.

Jo has gone on to have further surgeries consisting of grafting fat from his abdomen into his face to increase the volume and improve the symmetry lost due to the cancer surgery and radiation treatment. He had his final surgery in November – also at Macquarie University Hospital. Jo is feeling much better about his face and is now looking forward to attending his son’s wedding and smiling for the photographs.

“I think it’s important for patients with facial paralysis – from cancer surgery or other diseases – to look into the options for restoring facial movement,” said Associate Professor Hussain. “Many will have been told by surgeons that there is nothing more that can be done for them. However, this might not be the case.

“We underplay the importance of smiling. But something as seemingly simple as this plays a huge role in our connection with others, emotional wellbeing and quality of life.”

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**CAN YOU FIX A BROKEN SMILE?**

PLASTIC SURGEONS AT MACQUARIE UNIVERSITY HOSPITAL HAVE USED HIGHLY SPECIALISED MICROSURGICAL TECHNIQUES TO REANIMATE THE PARALYSED FACE OF A PATIENT.
The diagnosis of brain tumours and other diseases is heavily dependent on neuroimaging – in particular MRI. However, the large amount of radiological data generated by MR sequences can be overwhelming to interpret and made more difficult by the possibility of conditions such as ‘mimic’ tumours, inflammatory disease that can resemble a tumour.

The implementation of multidisciplinary teams (MDTs) has helped significantly to increase accuracy of diagnosis, estimates of prognosis and enhanced decision-making around whether to proceed to surgery.

Now, MQ Health is looking to add the use of artificial intelligence (AI) tools to brain disease diagnosis through its world-first Computational Neurosurgery (CNS) Laboratory. Led by Associate Professor Antonio Di Ieva, the team is investigating the use of computerised analysis tools to aid surgeon-MDT-based evaluations of radiological images – also the subject of Associate Professor Di Ieva’s letter in the November 2019 issue of The Lancet.

“Our method is to develop novel diagnostic, prognostic and therapeutic markers of disease, which can then be applied in the development of AI algorithms,” said Associate Professor Di Ieva, who received the 2019 John Mitchell Crouch Fellowship from the Royal Australasian College of Surgeons, to complete the first year of research required. “The long-term goal is to enhance treatment and outcomes for patients.”

The first stage of work began earlier this year, with researchers characterising the ‘fingerprint’ of the brain – the highly detailed architecture of the brain in its entire physio-pathological spectrum, from the normal to the diseased.

“The work involves extracting features from pathology slides and MR images of brain disease in order to objectively compare the pattern expressed in different physio-pathological states,” explained Associate Professor Di Ieva. “We are doing this using fractal and machine-learning methods, thanks to the expertise of computer scientists, including Dr Carlo Russo, Research Associate at the CNS Laboratory, and other collaborators, including Dr Sidong Liu, research fellow from the Australian Institute of Health Innovation at Macquarie University.

“We are also capturing data on the cognitive processes of surgeons as they review imaging data and identify relevant features of an image to diagnose and develop a treatment plan for a patient.”

Data will then be transferred to a computer in order to ‘teach’ the machine to extract features and characterise patterns of brain disease through complex algorithms, in the same way a surgeon would.

“The aim is to support, not to replace, clinicians (and other experts) in diagnosis and decision-making by parameters confirming or refuting their diagnostic hypothesis,” said Associate Professor Di Ieva, who has also recently been awarded an Australian Research Council future fellowship grant to expand his team and extend his research to broader machine vision-related applications.

The CNS Laboratory at MQ Health builds on Associate Professor Di Ieva’s pioneering application of computational fractal-based analysis to the quantification of features in gliomas completed as his PhD research in Austria, in 2011, as well as his use of fractal geometry to study brain cancer and other diseases of neurosurgical interest, as summarised in his book The Fractal Geometry of the Brain.

This earlier work led to the successful use of computational fractal-based modelling to objectively quantify the patterns of brain and pituitary tumours as well as arteriovenous malformations, and to predict the response to treatment of patients affected by AVMs undergoing Gamma Knife radiosurgery treatment.

MQ HEALTH HAS ESTABLISHED THE FIRST COMPUTATIONAL NEUROSURGERY LABORATORY IN THE WORLD TO FOCUS ON DEVELOPING COMPUTERISED ANALYSIS TOOLS IN NEUROIMAGING AND NEUROPATHOLOGY THAT WILL IMPROVE THE DIAGNOSTIC ACCURACY OF BRAIN DISEASE.
One of Macquarie University Hospital’s orthopaedic surgeons, Associate Professor Munjed Al Muderis, has been named 2020 NSW Australian of the Year.

Associate Professor Al Muderis is highly regarded, both nationally and internationally, for his ground-breaking surgical work in limb amputation and complex limb reconstruction.

He has helped hundreds who have lost their limbs to disease, in war or in accidents to regain mobility through innovative approaches to prosthetic limb surgery.

Whilst one of only a few surgeons worldwide with special expertise in transfemoral and trans-humeral amputations, Associate Professor Al Muderis is best known for bringing osseointegration techniques to Australia.

More recently, he has collaborated with engineers to usher in the next generation of neuro-prosthetics by integrating an innovative neuro-machine interface into existing bionic limb replacement to give patients mind-controlled limbs with more natural limb mobility.

The innovative procedure takes existing targeted muscle reinnervation and bone-anchoring osseointegration techniques and adds implantable electrodes that capture complex brain signals and connect into the muscles and nerves.

Earlier this year, with long-term collaborating surgeon Dr Kevin Tetsworth, Associate Professor Al Muderis also performed an Australian first limb lengthening surgery, using the minimally invasive Precice® Bone Transport System.

Chief Executive Macquarie University Hospital and Clinical Services Walter Kmet said that the Hospital was proud of the ground-breaking orthopaedic work done by Associate Professor Al Muderis.

“Macquarie University Hospital strongly supports Associate Professor Al Muderis in bringing surgical innovations to Australia,” said Mr Kmet.

“As a private, academic and not-for-profit Hospital, we are delighted to be able to make these life-changing procedures available to patients”.

Associate Professor Al Muderis came to Australia from Iraq after fleeing the tyranny of Saddam Hussein’s regime. He overcame extraordinary obstacles to become an orthopaedic surgeon, specialising in hip, knee and reconstructive surgery, and now advocates for the human rights of others.

A compassionate ambassador for multiple organisations, including the Red Cross, Associate Professor Al Muderis is a powerful advocate for humanitarian work supporting people seeking asylum and refugees.

He is also a supporter of the Invictus Games and has hosted a visit by Prince Harry to the MQ Health-based Osseointegration Clinic – now the Limb Reconstruction Centre.

In 2017, Associate Professor Al Muderis received an Asia Game Changer Award and, in 2019, he was the first recipient of the GQ Men Of The Year Social Force Award in Abu Dhabi.

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GenesisCare Macquarie University Hospital is a comprehensive cancer treatment centre offering the latest in oncology services including radiation therapy, allied health care and support services. With a strong focus on patient experience, the centre team provides personalised treatment programs and a rapid access service to ensure that patients receive the best possible care.

The centre has the ability to deliver SABR treatment to suitable patients with lung cancer, and also those with spine or bone cancer.

Dr Chelsie O'Connor, Radiation Oncologist at GenesisCare Macquarie University Hospital said: “SABR is a highly precise form of cancer treatment. It enables us to deliver a greater radiation dose directly to the tumour, minimising the impact on surrounding tissue, which means fewer side effects for our patients.”

A recent study of patients with stage 1, non-small-cell lung cancer (NSCLC) found that those who were treated with SABR survived an average of three years longer than those receiving traditional radiation therapy.

“This treatment option can be life-changing for suitable patients, particularly those with lung cancer,” Dr O’Connor said. “Lung cancer can be a highly debilitating and fatal disease, with some forms of lung cancer inoperable.”

“The SABR treatment is non-invasive and typically patients only need between one to six treatments, compared to up to 33 sessions, which means less visits to the hospital and more time with loved ones.”

The launch of the new SABR treatment at GenesisCare Macquarie University Hospital coincides with Lung Cancer Awareness Month. Lung cancer is the leading cause of cancer deaths and the fifth most common cancer diagnosed in Australia. According to Cancer Institute NSW, one in 16 people in New South Wales will be diagnosed with lung cancer by the age of 85. By the year 2021, they predict that lung cancer will account for 9.5% of all projected cancer diagnoses in New South Wales. 1

Samantha Redfearn, GenesisCare Centre Leader at Macquarie University Hospital, said: “We are always looking for innovative ways to increase access to new and effective treatments for cancer patients in Sydney’s North West. This particular technology involves strong collaboration with a multidisciplinary team, who are all focused on the one common goal - delivering high quality, safe and ultimately better patient care.”

References
MQ HEALTH LYMPHOEDEMA
CONSERVATIVE TREATMENT CLINIC – EARLY DETECTION AND INTERVENTION

Our multidisciplinary team of experts includes Ms Louise Koelmeyer (ALERT Acting Director and Occupational & Lymphoedema Therapist), Dr Helen Mackie (Medical Lead), Associate Professor Hiroo Saji (Research Lead & ICG imaging), Associate Professor Thomas Lam and Dr Quan Ngo (Lymphoedema Surgery) and Associate Professor Kevin Ho-Shon (Imaging). The team also includes lymphoedema therapists Ms Adha Heydon White, Ms Kim Teyor, Ms Fiona Tisdall Blake, Ms Courtney Clapham and Ms Robbie Blackwell.

MQ Health Lymphoedema offers a comprehensive five-day per week lymphoedema service providing client-centred assessment and management of lymphoedema or lipedema that is backed by evidence-based research and supported by state-of-the-art imaging modalities.

Our clinics include:
- Diagnostic clinic (Thursday and Friday): offering medical diagnosis and assessment including ICG lymphography to visualise the lymphatics in real time.
- Conservative treatment clinic (Monday to Friday): offering all components of complex lymphoedema therapy (CLT) for those at risk of, or living with, lymphoedema, including education, monitoring, manual lymphatic drainage massage, compression therapy, exercises and skin care.
- Surgical assessment clinic (Friday): offering a range of surgical options for the management of lymphoedema and lipedema, including liposuction, lymph node transfer and lymphovenous anastomosis.

CONSERVATIVE CLINIC – EARLY DETECTION AND INTERVENTION:

THE ALERT vision: All individuals at risk of lymphoedema following cancer treatment will have access to education, regular monitoring and early intervention to reduce the incidence and severity of clinical lymphoedema.

MQ Health lymphoedema clinic has the knowledge and expertise as well as the L-Dex 900 technology to offer a prospective surveillance and early intervention model of care to reduce the risk of developing lymphoedema and assist individuals to feel empowered to exercise and rehabilitate in a supportive and caring environment.

As well as comprehensively assessing and managing patients already living with lymphoedema, our therapist-led conservative treatment clinic plays a vital role in caring for and educating patients about the early detection and intervention of lymphoedema, which is often an unintended outcome after treatment for cancer.

The importance of lymphoedema early detection and intervention is the focus of one of the studies conducted by the ALERT research team. The PREVENT study was designed to identify women at risk of developing lymphoedema and to develop a surveillance protocol that would allow early detection of the condition and the development of strategies for early intervention to halt the disease.

In the study, women were identified as being at risk of lymphoedema if they had previous lymphedema or a history of breast surgery or radiotherapy, or if they had a history of cancer or lymphoedema. The women were then monitored at regular intervals to detect early changes in fluid, known as subclinical lymphoedema. If early changes were detected, early intervention using a compression sleeve and hand-piece was prescribed for 12 hours a day for 4 weeks to see if this would halt the progression towards developing clinical lymphoedema.

The study was still ongoing at the time of this article, and interim analysis of the first 500 women who had completed 12 months of follow-up monitoring has demonstrated that early detection and intervention is important for reducing incidence and slowing the progression of this condition. This study supports other published literature and has been endorsed by key organisations.

We endeavour to see patients at time of diagnosis if they are having chemotherapy, or before surgery at Macquarie University Hospital or in the clinic to take a baseline L-Dex measurement and provide education on what to expect following surgery and during the rehabilitation phase.

In managing women diagnosed with breast cancer at MQ Health, we work in partnership with individuals and family members to assist in the rehabilitation of symptoms such as pain or tightness in the arm and chest, altered sensations, hardening of the skin or lymph nodes, as well as providing support and education to manage early symptoms such as arm swelling and heaviness or aching.

MQ HEALTH LYMPHOEDEMA IS THE TREATMENT ARM OF THE AUSTRALIAN LYMPHOEDEMA EDUCATION, RESEARCH AND TREATMENT (ALERT) PROGRAM AT MACQUARIE UNIVERSITY. ALERT PROVIDES EDUCATION PROGRAMS FOR LYMPHOEDEMA PATIENTS, THEIR FAMILIES AND HEALTH PROFESSIONALS, RESEARCH INTO INNOVATIVE ASPECTS OF ASSESSMENT AND MANAGEMENT OF LYMPHOEDEMA AND CONSERVATIVE AND SURGICAL TREATMENT TO EFFECTIVELY MANAGE THOSE AT RISK OF OR LIVING WITH THIS CONDITION.

9 Sheila R. Bicker, PhD, RN, Mary S. Dietrich, PhD, Michael S. Cowher, MD, Brett Tabor, MD, Sarah McLachlin, MD, Nicolas Ajayi, MD, John Boyages, MD, PhD, Louise Koelmeyer, BAppSc(OT), Sarah M. DeSnyder, MD, Jamie Wagner, DO, Vandana Abramson, MD, Andrew Moore, MD, and Chirag Shah, MD. A Randomized Trial Evaluating Bioimpedance Spectroscopy Versus Tape Measurement for the Prevention of Lymphoedema Following Treatment for Breast Cancer: Interim Analysis. Ann. Surg Oncol. Published online 3 May 2019. https://doi.org/10.1245/s10434-019-07344-5

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This article is provided by MQ Health Lymphoedema.
IT TAKES A VILLAGE

Saeid Yazdi, overweight for much of his adult life, knew he had to do something about his health when he started to feel dizzy and sleepy during the day.

“I needed to act, but I wanted a scientific approach,” explained Saeid. “I did a search and when I read about the Healthy Weight Clinic at MQ Health, I knew that this was where I wanted to go. I made an appointment and they were able to see me right away.”

After an initial assessment by Dr Veronica Preda’s endocrinology team for medical management and assessment of comorbidities – in particular diabetes for Saeid – the focus was then on actually implementing diet and lifestyle changes.

He started working with Accredited Practising Dietitian Dr Juliana Chen and Exercise Physiologist Joanna Jaques. Both have worked with the Healthy Weight Clinic since its inception in 2016 and are integral to the Clinic’s approach to helping clients to tackle obesity.

“My approach is to work with my patients to make small changes that are personalised and sustainable and, importantly, don’t feel deprived,” explained Dr Chen, whose doctoral research looked at how smartphone apps could be best used in dietetic practice to support patient care. “It’s a shift in focus to what we can eat rather than what we can’t eat.”

“In Saeid’s case, we focused on healthier snack options, replacing high GI foods with low GI foods where possible to control his blood sugar levels and reducing portion size. We also harness a range of technologies in our Healthy Weight Clinic, such as bioelectrical impedance to measure body composition and as a source of data on weight and waist circumference.”

Saeid also uses a diet app that enables him to log what he eats every day. Dr Chen can then see this data remotely and provide Saeid with feedback and keep him accountable.

Both can see what he has achieved and what he can continue to work on. Like Dr Chen, Ms Jaques worked with Saeid on an exercise plan to take a gradual and progressive approach towards increasing his activity volume and intensity.

“I take a whole-day approach towards physical activity, which includes looking at each person’s patterns of sedentary activity, incidental activity and structured activity,” said Ms Jaques. “Each person is different so what I prescribe varies from client to client, and includes strategies to implement in the workplace, daily step count targets, walking programs, resistance training and family-based activities.”

“We set objective goals and monitor these. In Saeid’s case, we used his FitBit monitor to track and increase his daily step count and we monitored and increased heart rate during his walks to optimise cardiorespiratory conditioning benefits. We also added strength-based exercise to achieve positive body composition changes – including gaining muscle mass in addition to reducing body fat levels, which are crucial for long-term health and weight loss maintenance.”

Within days of starting his diet and lifestyle program, Saeid’s dizziness and sleepiness had dropped dramatically, and he had more energy.

“I think the Clinic is successful because its programs are practical, scientific and not hard to follow,” he said. “I’ve made changes in my diet and lifestyle and, after 12 weeks, the changes are remarkable and I am finding it easy to stick to.”

“I can actually see the difference and am so happy with my appearance and how I feel. I’m now biking, walking and the gym, all things I couldn’t do before. I’m a happier person now.

“If people in my situation are afraid to start a diet and lifestyle program because they are scared of failing, I would say: it is possible because the Clinic makes it easy to follow and they are incredibly kind and welcoming and always there to support.”

The Healthy Weight Clinic at MQ Health sees a team of professionals following evidence-based practice and supporting clients for the long term.

ABOUT THE HEALTHY WEIGHT CLINIC

The HWC is a multidisciplinary weight management clinic that provides patients with access to the full spectrum of weight management approaches – from lifestyle, to medical therapy, to surgical intervention – with close support from and collaboration between surgeons, specialist doctors and allied health professionals.
INTRODUCING
DR KAREN SHAW
BSc(Med), MBBS(Hons), MS, FRACS, GRADCERT(BREAST SURGERY)
BREAST & GENERAL SURGEON

DR KAREN SHAW IS A BREAST AND GENERAL SURGEON WHO OBTAINED HER FRACS IN 2015. SHE HAS A SPECIAL INTEREST IN BREAST SURGERY FOR BOTH BENIGN AND MALIGNANT CONDITIONS.

SUBSPECIALITY
• Breast surgery – benign and malignant
• Oncoplastic technique

CLINICAL INTERESTS
• Breast symptom assessment
• Breast cancer – risk assessment and surveillance
• Breast surgery – benign and malignant conditions
• Multidisciplinary care of breast patients

Karen completed her Bachelor Medicine and Surgery, Master of Surgery and Graduate Certificate in Breast Surgery at the University of Sydney. Her Clinical Fellowships include being a RANZ Fellows at Concord Hospital in 2017 and the Concord Clinical Surgical Superintendent in 2018, where she gained valuable experience in clinical care, governance, training and teaching. She has also completed a Graduate Certificate in Breast Surgery at Sydney University.

Karen is passionate about providing high-quality care to breast cancer patients together with multidisciplinary team members. She is committed to effective communication with a patient and their caring team – including their GP – to optimise health outcomes.

Karen's services are available to any of your patients that may have breast concerns and symptoms that may require a surgical opinion and/or intervention.

ABOUT OUR NEW RAPID ACCESS BREAST HEALTH CLINIC

Dr Shaw has also been integral to the setting up of MQ Health’s brand new multi-disciplinary Breast Health Clinic – a unique ‘rapid-access’ model providing patients with fast and easy access to breast specialists, as well as same day referral to imaging and pathology services, all at the same location.

Following the triple assessment model that includes clinical assessment followed by radiology and biopsy if required, our team is made up of breast physicians, breast surgeons, plastic and reconstructive surgeons, a McGrath breast care nurse, and dedicated breast radiologists and pathologists from our allied diagnostic service providers. All working in the same location, our physicians, radiologists and surgeons talk face-to-face to come up with the best approach for patients, with follow-up communication to GPs.

Key features of the Breast Health Clinic include:
• We are able to see patients within a week of them requesting an appointment.
• Our specialist breast physicians assess all aspects of breast health – including routine assessment, breast pain or lumps, nipple change or discharge or any other symptom in the breast area.
• We take a multidisciplinary team approach to decision-making with the patient.
• All services are part of MQ Health academic precinct in a single location, within either the MQ Health Clinic building or the Hospital itself.
• Same-day on-site access to radiography and biopsy services mean that patients review initial results with their clinician before they leave site.

PLEASE ASK YOUR PATIENT TO BRING THE FOLLOWING INFORMATION
• Referral letter
• Any recent results, including imaging results
• Pathology results
• Hospital discharge reports etc.

If you have urgent referrals or any particular clinical queries, please contact Dr Shaw at our clinic.

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FIRIES FUNDRAISE TO FIGHT MND

Motor Neurone Disease (MND) is a terminal, rapidly progressing neurological disease. MND is also known as ALS or Lou Gehrig’s disease. Every year in Australia around 800 people are diagnosed. Each day, two people lose their lives – as their families stand by, powerless to help.

MND attacks the nerve cells controlling the muscles that enable us to move, speak, breathe, swallow and, ultimately, live. This means that, in most cases, a person with MND will die within two to four years of diagnosis.

Worryingly, over the past 30 years, there has been a sharp escalation in the rate of MND in Australia, with the death toll increasing by 250 per cent. This is why at Macquarie University we are undertaking world-leading research to understand why MND is on the rise and to develop therapies that extend patients’ lives and ultimately cure them of the disease.

On Saturday 9 November, hundreds of firefighters took on the gruelling 98-storey climb to the top of Sydney’s tallest tower to fund to fight MND.

“It was an incredible day, joining 500 firefighters climbing up the Sydney Tower Eye in full structural gear – the highlight of a month-long fundraising campaign to support the next phase of a clinical trial at Macquarie University to stop Motor Neurone Disease taking lives. It’s not too late to support this great cause,” says Marco Morsch, Senior Research Fellow, Centre for MND Research. Over $791,000 was raised to date.

To make a donation please visit firiesclimbformnd.org.au