the NeuRA magazine

News and breakthroughs from Neuroscience Research Australia • neura.edu.au

Issue 48 | Summer 2025

CHARTING THE FUTURE OF DEMENTIA:

national and regional roadmaps to tackle a growing crisis

NEWS IN BRIEF:

- *Alcohol and the brain*
- *Improving hip fracture outcomes*
- *Hypnosis for pain*

NeuRA SUPPORTER SURVEY RESULTS

World's largest trial offers hope for phantom limb pain

FIVE MINUTES *with* **Dr Laurie Cowled AM**

NeuRA Discover — Conquer — Cure

At NeuRA, our mission to be a world-leading medical research institute is built on the foundation of collaboration and partnership. We believe that the most impactful research is not conducted in isolation but in close cooperation with communities, policymakers and experts from diverse fields. This commitment to working together drives our efforts to translate discoveries into meaningful real-world solutions.

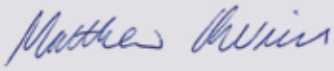
One of the most pressing challenges we face is the growing burden of dementia. By 2050, cases are projected to nearly triple – highlighting that it's not a crisis that can be solved alone. In response, we were proud to join forces with The Lancet Regional Health – Western Pacific journal to launch a regional roadmap for addressing dementia. The roadmap outlines strategies to improve diagnosis, care and prevention across the Western Pacific region, with an emphasis on a coordinated approach.

The launch event, held at NeuRA, was opened by the Hon Mark Butler, MP, Minister for Health and Aged Care, and brought together colleagues from research, industry, peak bodies and individuals with lived experience. This event exemplified the spirit of collaboration needed to drive progress in addressing the dementia crisis.

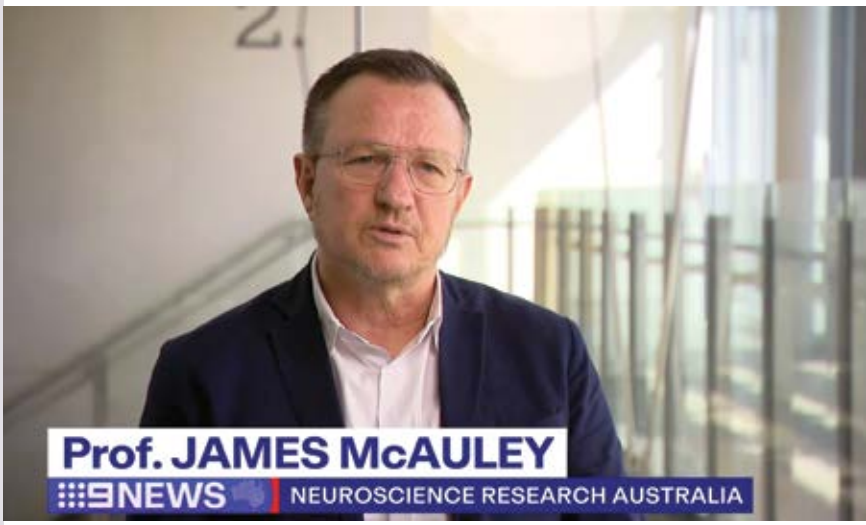
In this spirit of partnership, we are pleased to spotlight long-term NeuRA supporter and philanthropist Dr Laurie Cowled AM, who was recently recognised with a Member of the Order of Australia for her passion for supporting young women in science and other fields.

Your support continues to play a critical role in NeuRA's progress, and I look forward to keeping you updated on the advancements we are making in our research.

Warm regards,



Matthew Kiernan AM
CEO, Neuroscience Research Australia



Above: *NeuRA's Professor James McAuley discusses the TITAN trial on Channel 9 News.*

Welcome to the Summer edition of NeuRA Mag!

We are thrilled to share the latest advancements and updates from NeuRA with you. In this issue, we explore the fascinating ways in which hypnosis can help alleviate chronic pain, delve into the effects of alcohol on brain function, and share our latest findings on how to improve patient outcomes following hip fracture.

Our main story focuses on a critical challenge: dementia cases across our region are set to nearly triple by 2050. To address this, an innovative roadmap has been launched, involving NeuRA researchers partnering with *The Lancet Regional Health – Western Pacific*. This roadmap aims to improve diagnosis, care and prevention strategies, providing hope for individuals and families affected by dementia. We also examine other research in the dementia space, including the finding that 45% of dementia cases can be prevented through addressing 14 modifiable risk factors.

We are excited to announce the launch of the world's largest clinical trial for two potential treatments for phantom limb pain. This trial marks a significant step toward improving the quality of life for those living with this debilitating condition. We also feature a special Q&A with long-term NeuRA supporter and philanthropist Dr Laurie Cowled AM.

We hope this issue offers valuable insights into our research, and as always, we look forward to your feedback. •

Cover image: iStock.

Understanding alcohol's impact on the brain

It's well known that alcohol has a sedative effect on the body – but what about the brain? Researchers from NeuRA and UNSW Science used MRI scans to measure brain activity in social drinkers and found that alcohol significantly reduces the brain's ability to send signals, offering fresh insight into how it impacts brain function.

NeuRA Senior Principal Scientist and Director of Research at NeuRA Imaging, Professor Caroline Rae, said a new MRI technique was used to understand the impact of drinking on the brain, with findings published in the *Journal of Magnetic Resonance Imaging*.

"We found alcohol decreased brain tissue electrical conductivity, particularly in areas of the brain concerned with executive function and motor activity," Prof Rae said.

"The decreases are equivalent to the drop we see in conductivity in someone aged in their 90s versus someone in their 20s."

The study also showed potential application for the MRI technique in measuring the impact of other drugs on brain activity and also improving understanding of abnormal brain activity in neurodegenerative conditions, such as dementia. •

Improving outcomes after hip fracture

Each year, around 19,000 Australians suffer a hip fracture, with alarming consequences: 25% die within one year, and 50% never regain their previous level of function. However, NeuRA researchers have found that adhering to clinical care standards can significantly reduce the risk of death and improve patient outcomes, offering hope to those at risk or affected by hip fractures.

According to research published in the *Medical Journal of Australia* and led by NeuRA Senior Research Fellow, Dr Lara Harvey, the Hip Fracture Care Clinical Standard, which provides guidance to clinicians and health services on delivering care for

people with a hip fracture, is improving outcomes for patients.

"What this research found was that if hip fracture patients received high quality clinical care, there is a significant decrease in short- and longer-term mortality," Dr Harvey said.

"Mortality risk dropped significantly with orthogeriatric care, having surgery within 48 hours of presentation, being offered the ability to mobilise on the day-of or day-after surgery, and receiving bone protection medication prior to discharge." •

Hypnosis effective in reducing pain

With pain impacting over 3.6 million Australians daily, it's no surprise that many are exploring alternative therapies, such as hypnosis, to find relief and improve well-being. The good news? Researchers from NeuRA and UNSW discovered that hypnosis, when paired with treatments like medication, can improve pain relief.

Postdoctoral Research Fellow at NeuRA and UNSW Medicine & Health, Dr Rodrigo Rizzo, said that this research, published in the journal *PAIN Reports,* explored the use of hypnosis for people with different chronic pain conditions.

"People are very curious about hypnosis, but there is a lack of information about its effectiveness," Prof Rizzo said.

"This study suggests that hypnosis provides additional benefits for current treatments and it would be worth using clinical hypnosis to reduce pain. Compared to drug interventions, we believe that the use of clinical hypnosis is safe and low-cost and may be another option based on the patient's preferences." •

CHARTING THE FUTURE OF DEMENTIA: national and regional roadmaps to tackle a growing crisis

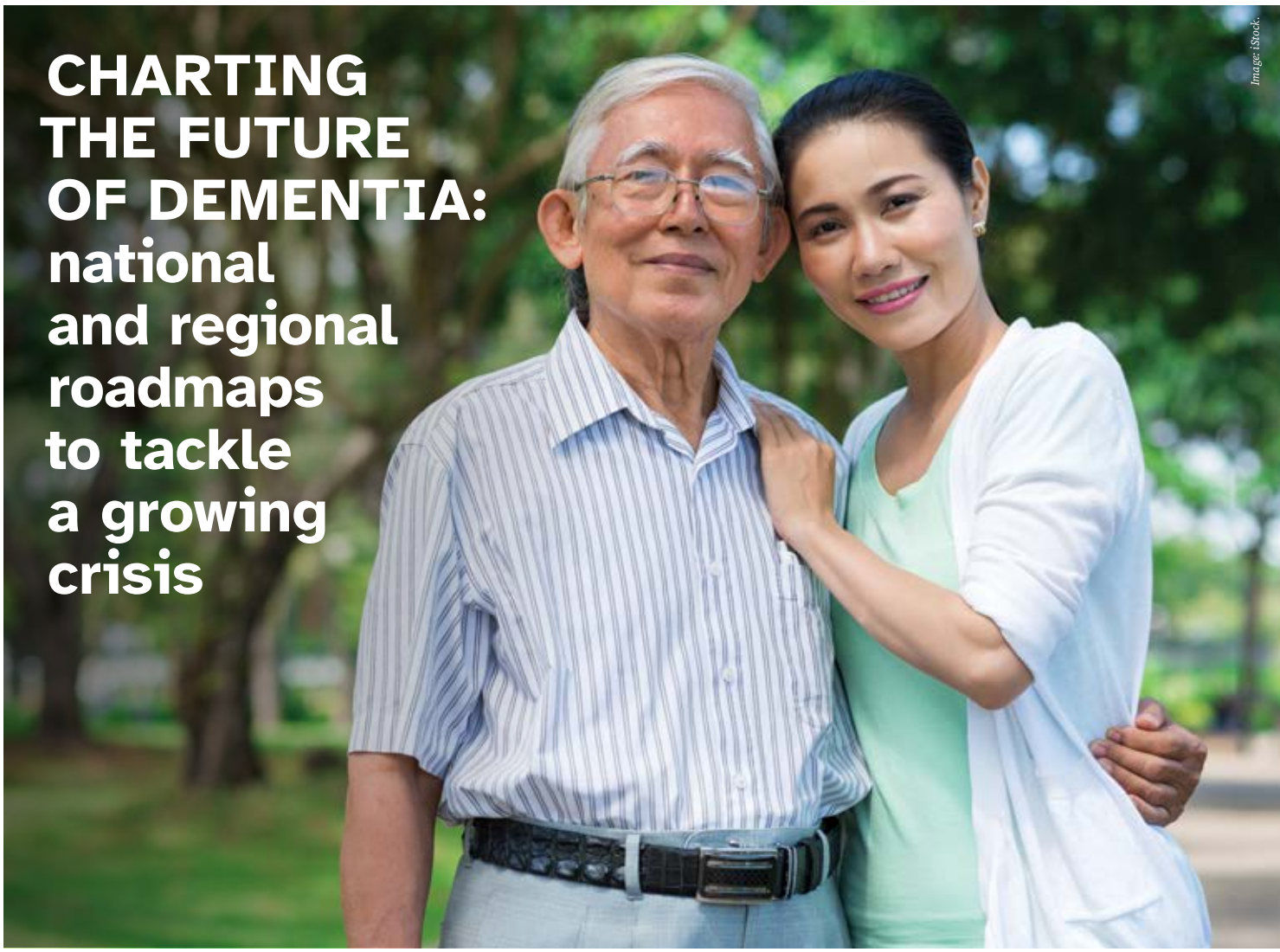


Image: iStock.

Cases of dementia are projected to nearly triple by 2050, but two new roadmaps have been launched to tackle the challenge in Australia and in the Western Pacific Region.

Australian dementia cases are projected to more than double by 2058, with the Western Pacific Region, including Australia, accounting for over 50% of global cases by 2050.

Researchers from NeuRA contributed to a five-paper series in *The Lancet Regional Health Western Pacific journal* examining dementia in the region. The series was launched at an event hosted at NeuRA, and brought together industry colleagues, fellow academics, people with lived experience of dementia and other distinguished guests, including Federal Minister for Health and Aged Care, the Hon Mark Butler, MP.

NeuRA CEO and Institute Director, Professor Matthew Kiernan, AM, said the series was the first to shine a light on dementia in the region and to identify a way forward.

"This series examined the specific challenges in the Western Pacific Region, including its economic and cultural diversity and the way these impact on dementia research, prevention diagnosis and treatment," Prof Kiernan said.

"As one of only nine high-income countries in the region, Australia has a responsibility to play a leadership role in improving prevention, diagnosis and care."

A strategic, coordinated approach

The Lancet series included a dementia roadmap and outlined four key actions to combat the dementia crisis, tailored to the unique challenges of the Western Pacific Region.

The roadmap actions identified included national dementia plans, prevention education, accelerating diagnosis and prioritising regional research.

"The actions outlined in the roadmap were clear and accounted for the diversity in our region, noting that national dementia plans needed to be developed for each of the 37 countries that are culturally appropriate and engage with local communities," Prof Kiernan said.

"However, it also recognised the benefits of working collaboratively

Left: *NeuRA CEO and Institute Director, Professor Matthew Kiernan AM, with special guests at the launch of the The Lancet Regional Health – Western Pacific series on dementia.*

Above: *The Hon Mark Butler, MP speaking at the event.*

and the leadership required from countries like Australia through prioritising regional research and developing education programs that focus on modifiable risk factors."

Reducing our dementia risk

Researchers also discussed the identified 14 modifiable risk factors for dementia – areas we can address to lower our risk. These factors include depression, low educational attainment, obesity, hypertension, diabetes, hearing loss, social isolation and sleep disturbances.

"Research now suggests that 45 per cent of dementia cases are potentially preventable by addressing 14 modifiable risk factors at different stages of life," said Prof Kiernan.

"Identification of these modifiable risk factors is good news, as it gives us as individuals areas we can personally work to address in our own lives, but collectively, we need to look at prevention education and policy changes to assist with reducing dementia risk."

> "Research now suggests that 45 per cent of dementia cases are potentially preventable by addressing 14 modifiable risk factors at different stages of life,"
>
> said Prof Kiernan

Left: *Professor Matthew Kiernan AM, and Professor Kaarin Anstey.*

A national plan unveiled, but more work needed

A national approach to tackling the challenge of dementia was unveiled in December, with the launch of the Government's long-awaited National Dementia Action Plan. Prof Kiernan welcomed this roadmap and its eight actions, but reiterated further details and work was needed.

"The work being done by NeuRA researchers supports the National Dementia Action Plan and we look forward to participating in ongoing discussions about the importance of research and how NeuRA and Australia can contribute to global dementia efforts," Prof Kiernan said.

"NeuRA researchers have put people with dementia at the centre of their care, by developing tools for people to identify their own risk of dementia, and to help clinicians develop personalised risk reduction plans and interventions. We're working to improve our understanding, diagnosis, treatment and prevention of dementia.

"We will continue our work in this space, but also continue discussions about the critical role of research and collaboration to advance dementia research, treatment and care." •

World's largest trial offers hope for phantom limb pain

Professor James McAuley

Imagine feeling pain shooting up your leg. Unbearable pain. But imagine that pain is happening in a leg that is no longer there.

That's phantom limb pain – a mysterious, distressing and often disabling condition that has baffled scientists and clinicians, but affects up to 80% of people who have had a limb amputated or had a spinal cord injury.

NeuRA Senior Research Scientist and Director of the Centre for Pain Impact, Professor James McAuley, and his team are carrying out the world's largest clinical trial for two potential treatments for the condition.

What is phantom limb pain?

"Phantom limb pain is really confusing for people and terribly debilitating," Prof McAuley said.

"Phantom limb pain most commonly occurs in people after a major limb amputation and often leads to social isolation and loss of independence.

"At its worst, the condition can cause symptoms like intense burning, shooting, stabbing, crushing and electric-shock type sensations."

How can there be pain in a limb that's not there?

The existence of pain in a limb that is no longer there has long puzzled people and Prof McAuley said more research was still required.

"It is clear that something doesn't need to be happening in that particular body part to cause pain, but rather the brain plays a critical role," Prof McAuley said.

"We don't fully understand the mechanisms yet, but we hope we can find treatments that help alleviate the pain and suffering while we continue to research this."

Investigating drug-free treatments

For people with phantom limb pain, finding relief can be challenging. Many rely on medications such as paracetamol, ibuprofen or opioids that often don't provide effective or sustained pain relief.

"There are currently no proven treatments that provide meaningful pain relief for people with phantom limb pain," Prof McAuley said.

"We're hoping to change that."

The clinical trial, TITAN, is investigating the effectiveness of two promising treatments, with participants being drawn from across the country.

"This is a randomised trial investigating two drug-free treatments, which aim to change how the brain processes brain signals coming from the body," Prof McAuley said.

> *"There are currently no proven treatments that provide meaningful pain relief for people with phantom limb pain,"* Prof McAuley said. *"We're hoping to change that."*

"The first is a progressive rehabilitation program using techniques such as mirror therapy, which use reflection of movement of the unaffected limb to 'trick' the brain into thinking movement in the phantom limb has occurred without pain, while the second uses low frequency non-invasive electrical stimulation."

TITAN will involve more than 200 people from across the country, through telehealth. •

"Constant and intense"

For Tasmanian Homa Cerny, her phantom limb pain has been round-the-clock for the past three years.

In April 2021, Homa's left arm was amputated after being left with "no options" after cancer. From the moment she awoke from the surgery, she has had constant, intense pain. "It's very stiff, painful, pins and needles," she explains.

While Homa explored many options for pain relief, nothing worked. She's now supporting NeuRA's trial in the hope new treatments may provide relief for others also suffering the debilitating pain.

Above: *Homa Cerny undertakes mirror therapy to assist with her phantom limb pain.*

5 MINUTES *with* Dr Laurie Cowled AM

From left: *Dr Laurie Cowled AM; and below, receiving the Order of Australia.*

Queensland-based Laurie Cowled is a passionate philanthropist and long-time supporter of NeuRA. At 95, Laurie continues to dedicate her time to supporting young researchers, and last year was awarded an Order of Australia for her services to philanthropy.

What inspired you to support NeuRA, particularly through the Cowled Scholarship for Brain Research?

I became involved with NeuRA through playing bridge many years ago. I started receiving *NeuRA Mag* and one particular issue highlighted a need for funding PhD candidates. On seeing this, I immediately contacted your CEO at the time to offer support.

I've always been someone who acts on things as they arise. Another motivator was my concern about Alzheimer's – on a personal level, I wanted to support research that might prevent or address this disease affecting me one day.

What aspects of NeuRA's research resonate with you most?

When I learned about George Paxinos's brain-mapping work, I was blown away! It's incredible that such meticulous, hand-drawn work still happens in this digital age. Broadly speaking, I admire everything NeuRA does.

> "Through my scholarship, I hope to equip young researchers with the skills and opportunities they need to excel, whether in continued research or in tackling critical challenges in their fields."

Through my scholarship, I hope to equip young researchers with the skills and opportunities they need to excel, whether in continued research or in tackling critical challenges in their fields.

Looking ahead, what breakthroughs or progress do you hope NeuRA will achieve in medical research?

I'm always thrilled to read about new discoveries, particularly in Alzheimer's research. It's such a devastating disease, so every step forward is exciting.

I hope NeuRA continues to push boundaries and make strides in understanding and treating illnesses that affect the brain and mind.

What have you enjoyed most about your philanthropic work?

The fact that I've been able to provide scholarships to nearly 300 women, particularly from rural Australia, to help them pursue education and leadership opportunities. I didn't receive these opportunities personally, so I was motivated to give them to others. I feel so fortunate to have been able to see the impact of my support. It gives my life purpose and allows me to stay connected with so many wonderful young people.

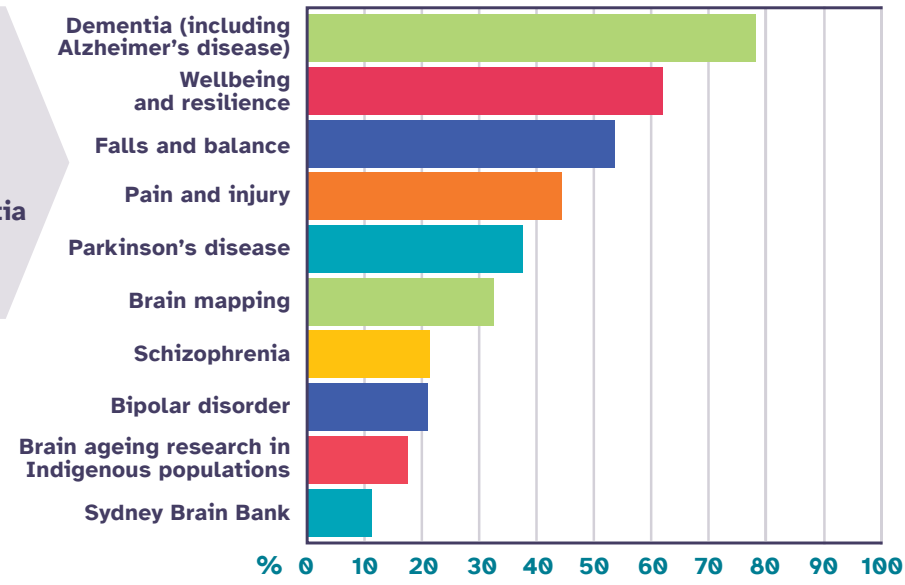
What has surprised you most about NeuRA's work?

The overall breadth of NeuRA's research is remarkable. I hope others recognise this and continue to support your incredible work. •

Supporter Survey Results

Last year, we asked for your feedback in a supporter survey, and we're excited to share the results.

We gave you the opportunity to select up to five areas of interest in relation to our research. It was wonderful to uncover that so many supporters are interested in multiple areas of research and that **75% are interested in dementia** (including Alzheimer's) and **21% are interested in schizophrenia.**



We are deeply grateful for your continued support and were intrigued to learn more about our supporters. Over half of respondents agreed with **"I believe in neuroscience and research"** or **"I believe in science"**.

56% of supporters would like to see mental health improve in Australia and **more than 10% of supporters** agreed with one or more of the following:

I want to change the future for people living with dementia (including Alzheimer's disease)

I have someone close to me who lives with a mental health challenge

I am close to someone who lives with dementia (including Alzheimer's disease)

I am at risk of having a serious fall

I am at risk of developing dementia (including Alzheimer's disease)

I live with chronic pain

I want to change the future

We are honoured and grateful that **36 respondents** told us that they have joined dozens of other very special supporters in including a gift for NeuRA in their Will. If you are thinking of doing the same, you can request an information pack by emailing bequests@neura.edu.au

It was encouraging to see that an impressive **88% of readers find NeuRA Magazine articles engaging** and useful and we thank everyone who provided additional feedback too.

If you ever have suggestions or questions, feel free to reach out at media@neura.edu.au

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