

March
2023

Welcome to our March Newsletter

As an organisation almost entirely reliant on the generosity of donors, your commitment and support to research into Alzheimer's disease is very much appreciated and crucial if we are to have a future without this disease.

It is heartening to see so many people coming together to support a cause that affects so many people. We would like to extend our sincere thanks to all our donors for their kindness and generosity.

You are supporting researchers who are making discoveries that will have a significant and positive impact on future generations.

We are at an incredibly important crossroads in Alzheimer's research and the next five years brings enormous hope for a better future. Recent approvals for new drugs to treat the disease have been made in the United States and are expected in Australia in the next 12-24 months. Additionally, a blood test to diagnose Alzheimer's many years before the onset of symptoms will enable treatments and prevention strategies to be more successful.

Dementia, which is primarily caused by Alzheimer's disease, is the second leading cause of death in Australia, following heart disease. However, the difference between heart disease and dementia continues to narrow and dementia is expected to overtake heart disease as the leading cause of death for all Australians in the next few years.

In 2017 the mortality rate of heart disease was approximately 38% higher than deaths due to dementia. In 2021 the rate was approximately 9% higher.

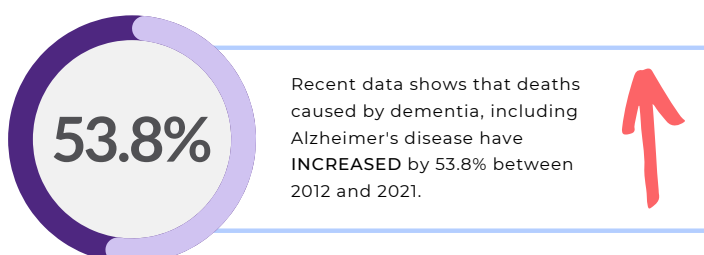
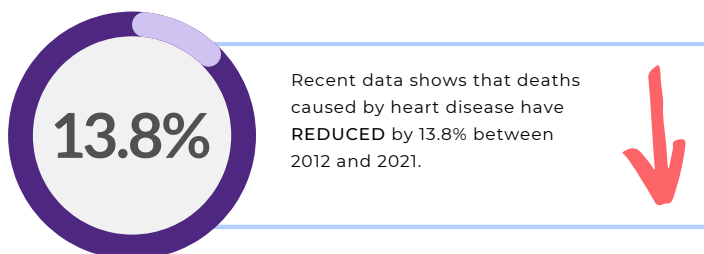
For women, dementia is already the leading cause of death in Australia and close to two-thirds of people who die from dementia are female. Heart disease is the second leading cause of death in women and breast cancer is the sixth leading cause of death.

Excluding dementia, the other top five causes of death, including heart disease and stroke, are showing significant improvements in mortality rates due to improved prevention and treatment methods, and better management of risk factors.

The sharp increase in dementia-related deaths over the past 10 years serves as a stark reminder of the urgent need to fund critical medical research to find effective ways to prevent, treat, and manage this devastating disease.

The incredible work that our committed researchers are accomplishing, and the positivity and hope that the achievements of the Foundation bring to people who are affected by Alzheimer's disease, is a testament to the importance of all our efforts.

Thank You



DEMENTIA HAS EMERGED AS A PROMINENT CAUSE OF DEATH IN AUSTRALIA, WITH A SIGNIFICANT INCREASE OF 53.8% BETWEEN 2012 AND 2021.

THIS UNDERSCORES THE URGENT NEED FOR GREATER RESEARCH ATTENTION IN THIS CRUCIAL AREA.

How does the gut-brain connection influence Alzheimer's disease?

This is one of the questions Dr Binoshia Fernando and her team of PhD students are investigating.

A better understanding of the gut-brain connection and the potential to influence the development of Alzheimer's disease could improve our understanding of ways to prevent this disease or reduce the risk of it developing.

Dr Binoshia Fernando is a Research Fellow at Edith Cowan University, and the Australian Alzheimer's Research Foundation is pleased to be supporting her and her team as part of our focus on ways to prevent and diagnose Alzheimer's disease.

Dr Fernando completed her PhD at Massey University in New Zealand (2011), where she studied the link between short-chain fatty acids and microbiology. Driven by her passion to understand the gut-brain axis, Dr Fernando joined Professor Ralph Martins' group at Edith Cowan University in 2012. She brings a wealth of expertise in microbiology and a deep understanding of the complex relationship between the gut microbiome and brain function.

Dr Fernando's work focuses on exploring the role of the gut microbiome in neurodegenerative diseases, such as Alzheimer's disease, and investigating the potential benefits of modifying the gut microbiome for brain health.

Team work



Dr Binoshia Fernando and her team of PhD students will be working in collaboration with the Queensland Brain Institute and the Aberdeen University in Scotland with the aim of gaining a greater understanding of the role of diet and micro-organisms in the development of Alzheimer's disease.

They are considering various factors which may assist in reducing the risk of developing Alzheimer's disease in the future such as probiotics intervention, dietary patterns including the Mediterranean diet, and investigating potential benefits in sorghum, the fifth most valuable grain crop in the world. This knowledge may also assist in identifying people at risk of developing Alzheimer's disease.

(Back row from left) Dr Binoshia Fernando, Lahiru Hewage, Rasheed Abdulraheem, Uththara Senarath and Hilal Al Shamsi. (Front from left) Sithara Dissanayaka and Samantha Bandara.

Research Topics



Assessing synergistic effects of short-chain fatty acids and medium-chain fatty acids in Alzheimer's disease.

Analysis of the role of Sorghum polyphenols in Alzheimer's disease.

The contribution of diet to the relationship between depression and Alzheimer's phenotypes.

Analysing microbial imbalance in the gut to study the effect on tau and amyloid quantity and its relationship with diet as a risk factor for Alzheimer's disease.

Development of an assay to accurately detect very low levels of GFAP proteins for the early identification of Alzheimer's disease.



Treatments for Alzheimer's disease

There has been lots of press in the last 18 months regarding potential new treatments for Alzheimer's disease. Here's an update.

Currently, there are no cures for Alzheimer's disease but there are some treatments to help reduce symptoms. Unfortunately, not everyone is able to tolerate the drugs that are currently available. For those who are able to take them, the medications provide a limited benefit.

Alzheimer's disease is a multifactorial disease with risk factors including age-related changes in the brain, environmental and lifestyle factors, and genetics.

Alzheimer's disease involves an increase in abnormal amyloid plaques in the brain and is linked to neurodegeneration.

Pharmaceutical companies are in the race to find a cure or alternative treatment options. One area of research is investigating the use of drugs that are designed to remove the build-up of amyloid plaques in the brain typically found in people with Alzheimer's disease.

The Clinical Trials Division at the Australian Alzheimer's Research Foundation collaborates with pharmaceutical companies to conduct clinical trials to test new medications in the hope that they will alleviate memory symptoms and slow or delay the onset or progression of Alzheimer's disease.

Although the current focus in Alzheimer's disease research is targeting the removal of amyloid from the brain, other approaches are also being investigated. The Clinical Trials Division are also recruiting for studies with drugs including an anti-inflammatory drug, a diabetic drug for Alzheimer's disease and an anti-tau drug.

We currently have 14 clinical trials, of which the majority use anti-amyloid, or amyloid reducing drugs.

If you would like to discuss any of our drug trials please contact the Clinical Trials Division at (08) 9389 6433 or email aarfctd@alzheimers.com.au.



A/Prof. Roger Clarnette, Medical Director

Lecanemab (Pharmaceutical Sponsor: Eisai / Biogen)

Lecanemab received approval from the US Food and Drug Administration (FDA) in January 2023, and has been shown to reduce brain amyloid and slow cognitive decline for people in the early stages of Alzheimer's disease. It is not available in Australia yet.

The Clinical Trials Division is coordinating the **AHEAD3-45 Study**, which is investigating the use of Lecanemab in pre-clinical Alzheimer's disease: that is, people who have high-risk factors for Alzheimer's disease (including family history and a certain amount of abnormal amyloid in the brain) but may not be showing symptoms. Recruitment for this study is open for people aged 55-80 years who have high-risk factors for Alzheimer's disease but are not diagnosed with Alzheimer's disease.

Aducanumab (Pharmaceutical Sponsor: Biogen)

The Clinical Trials Division has been involved in various Aducanumab trials since 2015, together with many clinical trial facilities around the world. The research has found Aducanumab reduced the amyloid in the brain and in 2021 it was granted approval by the FDA. It is not yet available in Australia.

The Clinical Trials Division has recently started recruitment for the **Biogen ENVISION Study** which is a monthly infusion of Aducanumab for people with mild cognitive impairment or mild Alzheimer's disease.

Gantenerumab (Pharmaceutical Sponsors: Roche / Washington University, USA)

The Clinical Trials Division had been involved in multiple trials utilizing Gantenerumab, including the Roche-**GrADuate Study**, Roche-**SKYLINE Study** and the Washington University **DIAN-TU Study**.

In late 2022, the results of the GrADuate Study were released stating that despite showing a reduction in amyloid, the drug failed to slow cognitive decline in early Alzheimer's disease. The GrADuate and Skyline Studies have now been closed. The DIAN-TU study is continuing which involves a different population group and the use of a higher dose of the drug.

Remternetug (Pharmaceutical Sponsor: Eli Lilly)

The Clinical Trials Division will be recruiting participants for two studies involving Remternetug, called **TrailRunner-ALZ 2** and **TrailRunner-ALZ 3**, in mid-2023 for people with mild cognitive impairment and mild Alzheimer's disease.

Want to see if you're eligible for one of our Clinical Trials? Scan the QR Code!



World-first study paves the way for a low-cost blood test to help diagnose Alzheimer's disease a decade before symptoms appear

New research has shown the potential to diagnose the risk of developing Alzheimer's disease ten years before symptoms appear, providing a window of opportunity to potentially change the trajectory of the disease.

The Australian Alzheimer's Research Foundation (AARF) is delighted to be supporting this research into a blood biomarker for Alzheimer's disease.

The results of the latest findings were published in late December 2022 and involved nearly 40 scientists in Australia, the US and Europe.

Current practice for diagnosing Alzheimer's disease is a battery of cognitive tests that can only be relied on once symptoms have started to appear, together with costly brain imaging. This new study has determined that Alzheimer's-related proteins are elevated in patients a decade before the symptoms of Alzheimer's emerge and before degeneration of the brain.

Professor Ralph Martins AO, Director of Research at the Australian Alzheimer's Research Foundation and a senior author of the new publication said, "This new research shows a very high degree of accuracy in identifying people who are at risk of developing Alzheimer's, but as yet have no symptoms. This provides a window of opportunity for drug or lifestyle interventions where it may be possible to change the disease trajectory before the brain is damaged."

The study utilised data from several groups of patients, including those at the Australian Alzheimer's Research Foundation's facility.

"It is hoped that this study will allow for more robust clinical trials and the identification of earlier interventions," said Professor Martins. "The other benefit is the cost implications of diagnosis – a simple and low-cost blood test is much more affordable for patients and for the health system than brain imaging.

"With earlier detection, comes earlier clinical trials. We think the reason so many clinical trials have failed, is that people's brains have been severely compromised by the time treatments were attempted," says Professor Martins. "Hopefully, with a much earlier diagnosis, drugs and lifestyle interventions such as the AU-ARROW study supported by the Foundation will be far more effective."

KEEP YOUR EYE ON YOUR MAILBOX!



Professor Ralph Martins will be writing to you in the coming weeks with more details about this incredibly exciting research.

Dr Prashant Bharadwaj is one of the researchers focused on developing a blood test for Alzheimer's disease.

Dr Bharadwaj is a researcher at Edith Cowan University, and his research has been recognised by being awarded a grant of \$250,000 over the next two years by The National Foundation for Medical Research and Innovation to develop a new blood test to diagnose and monitor dementia, with a focus on Alzheimer's disease.

The team, which includes collaborators from Macquarie University, Australian Genomic Research Facility, and Proteomics International, will focus on identifying specific proteins in the blood, particularly the neurofilament light (NFL) protein, which has been shown to be a good indicator of brain degeneration. They will characterize the NFL variants in different types of dementias and determine if specific variants are associated with Alzheimer's disease pathology.

The Australian Alzheimer's Research Foundation is supporting the salaries of the researchers working on a blood test to diagnose Alzheimer's disease and is providing world-class facilities, so they can focus on the important research work.

If you would like to support this research, please contact the Foundation on (08) 6457 0253 or visit our website www.alzheimers.com.au.



Dr Prashant Bharadwaj, Research Fellow

Congratulations to Our PhD Scholarship Recipient: Welcome Carolina Castro!

We are delighted to welcome Carolina Castro to the Australian Alzheimer's Research Foundation in collaboration with Murdoch University to research the effects of diet and nutrition on cognitive decline in older adults.

Her expertise in the field has led her to pursue a PhD at Murdoch University, where she is furthering her knowledge of nutrition and its role in promoting health and well-being in older adults. Carolina has been awarded a PhD scholarship from the Australian Alzheimer's Research Foundation.

Carolina has recently moved to Western Australia from Brazil where she obtained her qualifications in nutrition and dietetics and gained extensive knowledge and skills in clinical nutrition. She continued her passion for nutrition by completing post-graduate qualifications in Clinical Functional Nutrition focusing on the relationship between nutrition and autoimmune diseases. In addition, she recently completed post-graduate studies in Neurological Disorders with a focus on multiple sclerosis and dementia.

Carolina's expertise in clinical nutrition and her ongoing studies in neurological diseases and their relationship with nutrition makes her a well-rounded and knowledgeable practitioner and an invaluable contributor to the research team. Carolina will be working on the AU-ARROW study which is researching a multi-domain approach to reduce dementia risk by protecting brain health with lifestyle interventions.

This will include the important role of diet and nutrition and Carolina will utilise her extensive skills in this field investigating how to improve the nutritional intake of older adults, so they do not face significant macro and micronutrient deficiencies (such as proteins, good fats, minerals and vitamins) that are related to cognitive decline and dementia.

Carolina's expertise and dedication to her field have also made her a dynamic speaker who is passionate about educating others about healthy nutritional habits. She is committed to continuing her nutritional education and sharing her knowledge with clients and the community, which allows her to provide the most up-to-date information and best practices in clinical nutrition.



I am delighted to be here in Perth and involved in this research which will have such a beneficial impact on our knowledge regarding healthy ageing and how we can reduce the risk of dementia through simple dietary changes.



Dr. Carolina Castro

8th International Cerebral Amyloid Angiopathy (CAA) Conference

In November 2022, the 8th International Cerebral Amyloid Angiopathy (CAA) Conference was held in Perth. It is the first time the conference has been held outside the USA and Europe and the Foundation was very proud to be the primary sponsor.

The conference provided the opportunity for researchers and scientists to share their latest research findings and discuss cutting-edge research, translational ideas for clinical trials, and new knowledge on the prevention and treatment of CAA.

Why is CAA important? CAA, a vascular condition, is a cause of both stroke and dementia in older adults and can be seen in most older adults who have Alzheimer's disease.

- CAA results from the build-up of amyloid beta plaques in the **brain blood vessels**. This causes the blood vessels to rupture, leading to brain bleeding that can be fatal.
- In Alzheimer's disease, amyloid plaque build-up occurs **outside the brain's neurons** causing their connections to break down.

There is a growing understanding of the interplay between neurodegenerative and vascular diseases. How these two conditions intersect points to an opportunity to improve vascular function in the treatment and prevention of both diseases.

By collaborating with other physician-scientists in studying amyloid and dementia, we have opportunities to share research findings which may lead to a better understanding of both dementia and CAA. This will hopefully lead us to find new ways to diagnose, treat and prevent dementia-related conditions.

Thank you to all our supporters who made it possible for the Foundation to sponsor this conference. Your help means breakthroughs can happen sooner, and we are committed to supporting vital research initiatives like this that will make a real difference in the fight against dementia.

Sweating it out for Charity

Participating in various running events across the country is a great way for people to combine their passion for fitness with their desire to support research into Alzheimer's disease. By running for research, eight generous (and very fit!) individuals have raised a very impressive \$12,961 for the Australian Alzheimer's Research Foundation.

Studies have shown that regular exercise can help reduce the risk of developing dementia, as well as improve cognitive function in people who already have the condition. Exercise has also been shown to reduce inflammation in the brain, which is thought to be a key factor in the development of Alzheimer's disease.

These charitable runners are raising money for vital research into the causes and treatments of Alzheimer's disease, and are highlighting the importance of regular exercise as a means of reducing the risk of developing this devastating condition. Their efforts are to be commended, and their fundraising will go a long way towards supporting breakthroughs in Alzheimer's research.



KATE NICHOLSON
KNIGHT FRANK POINT TO PINNACLE, HOBART



CONNIE PORRECA
SYDNEY MORNING HERALD HALF MARATHON

SIMON & CAROLYN STANIFORTH
RUN MELBOURNE

MADDIE PEARCE
LUMARY CITY-BAY FUN RUN, ADELAIDE

STEVE FORD
BLACKMORE SYDNEY MARATHON

VINCE FRESNIDO
RUN MELBOURNE

JACQUI MUNRO
NIKE MELBOURNE MARATHON

Fun Cuts for a Cause

Mali and Samantha are two inspiring young girls who recently took part in the Big Hair Chop, a fundraising event for charity. Mali and Samantha are very happy with their new haircuts and proud to have made a difference for those in need.

Mali's grandfather has recently been diagnosed with early-onset Alzheimer's, and she raised \$875 for the Foundation. Samantha's mother had cancer six years ago, so Samantha donated the \$2000 she raised to the Cancer Council. The tresses were donated to Sustainable Salons, an organisation that makes wigs for kids with alopecia.

The girls' selflessness and compassion are an inspiration, and their efforts will no doubt help to make a difference in the lives of those affected by cancer and Alzheimer's disease.



Thank you for supporting the Australian Alzheimer's Research Foundation.

Whether it's \$2 or \$200,000, any funding the Australian Alzheimer's Research Foundation receives takes us a step closer to our vision – a world in which Alzheimer's disease no longer exists.

If you are able please make a donation you can do so by

Calling **(08) 6457 0253**

Or on our website **www.alzheimers.com.au**

Or by mailing the completed form in the envelope provided to: **PO Box 963, Nedlands WA 6909**

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