Dementia Australia Research Foundation

ROYCE SIMMONS FOUNDATION

Treat

Mapping treatments for vascular cognitive impairment and dementia

RESEARCH PROJECT BY
Dr Matthew Lennon

What is the focus of the research?

Exploring the current evidence for effective treatment strategies for vascular dementia, while using genetic techniques to identify possible future drug targets.

Why is this important?

Vascular dementia is the second most common form of dementia world-wide, accounting for between 20 and 40 per cent of all dementia diagnoses. Research has found that up to 40 per cent of dementia diagnoses could be prevented by addressing potentially modifiable risk factors - many of which are for vascular dementia. However, this figure likely overestimates how modifiable these risk factors actually are, with many being highly heritable and treatment resistant. Despite our limited ability to prevent vascular cognitive impairment and dementia through risk factors, there are no drugs available to treat the condition.

Australia's population is ageing and the number of people living with dementia is expected to triple by 2050. While treatments for Alzheimer's disease are likely to improve and continue to receive substantial investment, comparatively, vascular cognitive impairment and dementia treatment remains understudied. As diagnoses continue to grow, the need for effective treatments is increasingly urgent.

Study methods, explained

Systematic review is a method of research that carefully collects, evaluates and combines all the best available studies on a topic to give a clear overall answer.

Network meta-analysis is a statistical technique used to compare the effectiveness of multiple different solutions across evidence from multiple separate research studies.

Genome-wide association study involves searching the entire DNA code of as many people as possible with and without a specific disease to identify genes that are associated with that disease.

Who's undertaking the research?

DR MATTHEW LENNON

University of New South Wales

Dr Lennon is a medical doctor and researcher at the Centre for Healthy Brain Ageing at the University of New South Wales. He completed his Masters in Neuroscience at Oxford University in 2021, completing research in the long-term cognitive effects of head injuries. In 2024, he was awarded his PhD, where he examined the relationship between blood pressure, cognitive decline and dementia.

The title of Dr Lennon's project is *Genetic and clinical mapping of future treatments for vascular cognitive impairment and dementia.*

Dr Lennon and Dementia Australia Research Foundation would like to acknowledge the support of the Royce Simmons Foundation in making this research possible.

How will it happen?

STAGE 1

Conduct a systematic review and network meta-analysis of published and ongoing clinical trials, assessing both treatments where vascular cognitive impairment and dementia is the primary outcome; and trials targeting vascular risk factors (e.g. high blood pressure, diabetes, cholesterol, obesity, smoking, stroke) where cognitive function is a secondary outcome.

STAGE 2

Conduct a new form of genetic study, called a druggable genome-wide association study, that can help identify new protein targets to treat people with vascular cognitive impairment and dementia.

STAGE 3

Develop an atlas that maps out current and future drugs and drug targets for vascular dementia. This will subsequently be made publicly available.

What could this mean for people living with vascular cognitive impairment and dementia?

+ Potential for better treatment options.
+ Changes to clinical practice guidelines will over time help inform vascular dementia management worldwide.
+ A basis for new drug development or repurposing existing drugs used to treat different conditions.