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RACP Foundation Research Awards

FINAL REPORT

Project / Program Title		Is topographical memory impaired in atypical dementia syndromes?
Name		Dr James R Burrell
Award Received		2015 Miriam Greenfield Research Establishment Fellowship
Report Date		7 March 2016
Chief Investigator / Supervisor		Dr James R Burrell
Administering Institution		Neuroscience Research Australia
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	Finish Date:	31 January 2016

PROJECT SUMMARY

Diagnostic and prognostic uncertainties in dementia severely handicap the development of effective treatments. Despite well-established clinical diagnostic criteria for dementia syndromes, 33% of 879 dementia patients seen in our clinic since 2007 could not be classified accurately because of overlapping and evolving clinical features.

The burden of dementia on health and aged care systems is already considerable, with up to $4.9 billion spent in 2009-2010 on direct and indirect costs of caring for individuals with dementia. By 2050, dementia cases in Australia are estimated to rise from 270,000 to over 900,000 and, unless solutions are found, spending on dementia will consume ~11% of total health and residential aged care spending by the 2060's – more than any other health condition. Without accurate diagnostic markers for dementia, however, efforts to develop effective therapies will fail.

Alzheimer's disease (AD), Lewy body dementia, and frontotemporal dementia (FTD) are the most common dementia diagnoses, accounting for >80% of all clinical dementia cases. Each syndrome is diagnosed clinically, with supportive evidence from imaging or other investigations designed to establish a specific pathological cause. Amyloid deposits occur in AD (with tau) and in Lewy body dementia (with α-synuclein), but clinicopathological correlation is highly inconsistent, despite well-established clinical criteria.

We are refining tests of visual processing and topographical memory, which have shown promise as diagnostic markers, to produce reliable and cost effective clinical markers of dementia caused by amyloid pathology. These tools will help in the diagnosis of patients with dementia due to amyloid pathology and improve patient selection for trials of new drug therapies.

PROJECT AIMS / OBJECTIVES

To compare visuospatial function in typical Alzheimer's Disease and non-Alzheimer's dementias, focusing on:

1. Performance on traditional neuropsychological measures of visuospatial performance;

2. Tests of visual processing (e.g., contrast sensitivity and line orientation)

3. Topographical, compared to episodic, memory impairment.

SIGNIFICANCE AND OUTCOMES

The project is still in development. Nonetheless, it is hoped that the results will provide crucial information about visuospatial dysfunction and topographical memory in Alzheimer's disease and non-Alzheimer's dementia syndromes. The results will be used to develop accurate a diagnostic tool for future studies in atypical dementia syndromes.

PUBLICATIONS / PRESENTATIONS

Several publications are being drafted or planned including a review on visuospatial dysfunction in dementia (being drafted), and study comparing performance on neuropsychological measures of visuospatial function across dementia diagnoses (planning), and a study comparing basic visual processing across dementia syndromes (data collection underway).