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## **ASX Release**

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### **Computerized Cognition Test Provides Better Assessment than Observation**

*MELBOURNE, AUSTRALIA:* Research published in the *Journal of Alzheimer's Disease* this week suggests healthy older adults are less capable of observing their own cognitive decline over an 18 month period than Cogstate's computerized brief battery (CBB). The study, conducted by neuropsychologists, also indicated that close family members were unable to perceive decline in the cognitive behavior of their partner and trial participant in social settings.

The findings suggest that early identification of Alzheimer's Disease (AD) may be more accurate when based on objective assessment of cognitive function rather than that reported by individuals or their spouses.

It is widely accepted that earlier detection of cognitive abnormalities in patients is crucial to the timely commencement of professional care and enrolment in clinical trials. Family members can observe major changes in cognitive function, but cannot accurately detect the smaller changes of early AD.

"This is important because it shows that in the very early stages of Alzheimer's disease, individuals or their spouses have no insight at all into the progressively worsening cognitive function," said Dr. Paul Maruff, Chief Science Officer at Cogstate Ltd (CGS.AX). "By the time individuals meet clinical criteria for mild cognitive impairment, they have progressed beyond AD in its earliest stages. Therefore, we should be assessing cognitive function prospectively and objectively, as opposed to merely asking these people about their memory."

Dr. Maruff led a team of researchers in the Australian Imaging, Biomarkers and Lifestyle (AIBL) study, which observed the ability of trial participants to judge their own cognitive health. The 289 healthy older adult participants had no current diagnosis of dementia.

Subjects were divided into two groups based on whether they exhibited low or high amyloid-beta (A $\beta$ ) protein fragment levels. The formation of amyloid in the brain is known to signal the beginning of AD processes. Just as we may not notice the early effects of cholesterol build-up in our arteries, we may not notice small changes in our brain's performance from A $\beta$  growth. To measure A $\beta$  levels, all subjects underwent a positron

emission tomography (PET) neuroimaging scan, a known accurate means of detecting A $\beta$ .

Volunteers began by taking the Memory Complaint Questionnaire, which asked them to assess their perceived memory decline in common everyday scenarios. A close family member also completed a questionnaire asking their opinion of the subject's cognitive performance. Both surveys were repeated after 18 months, providing a subjective perspective on changes in cognitive function.

In addition, at baseline and 18 months, the subjects completed the Cogstate Brief Battery (CBB), a collection of computerized tasks that test multiple cognitive skills. Since the CBB has been validated in many previous studies as a sensitive measurement tool of cognitive impairment, the test results in the current study provided a reliable, objective snapshot of changes over time.

The subjective tests showed no changes over 18 months. However, over the same period, the objective CBB revealed a moderate decline in cognitive function for the high A $\beta$  group. The research team concluded that it is very difficult for people to measure their own cognitive health and detect subtle differences in their memory and that subtle declines in cognitive function are best detected using a computerized assessment, such as the CBB.

The researchers have called for scheduled, objective, computerized cognitive tests as part of standard care. They note that in Canada, primary care physicians are already using a version of the CBB, Cognigram, to objectively assess the cognitive function of patients.

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## About the AIBL Study

Australian Imaging, Biomarkers and Lifestyle (AIBL) is a study of over 1,100 people assessed over a long period of time (> 4.5 years) to determine which biomarkers, cognitive characteristics, and health and lifestyle factors determine subsequent development of symptomatic Alzheimer's Disease (AD).

The baseline inception cohort consisted of:

- 211 individuals with AD as defined by NINCDS-ADRDA (McKhann et al, 1984);
- 133 individuals with Mild Cognitive Impairment (MCI) – a clinical syndrome characterized by reduced cognitive performance (often involving memory), which represents a high risk state for the development of frank AD (Petersen et al., 1999; Winblad et al., 2004);
- 768 healthy individuals without cognitive impairment. This group included volunteers with at least one copy of the ApoE  $\epsilon$ 4 allele, volunteers without a copy of the ApoE  $\epsilon$ 4 allele and 396 volunteers who expressed subjective concern about their memory function. Memory complaints were elicited by the response to the question, “do you have difficulties with your memory?”.

## About Cogstate

Cogstate Ltd (ASX: CGS) is a multi-faceted cognitive assessment and training company, focused on the development and commercialisation of rapid, computerised tests of cognition (brain function). It has three distinct business units:

**Clinical Trials:** In the clinical drug trial market, Cogstate technology and associated services are used by pharmaceutical and biotechnology companies to quantify the effect of drugs or other interventions on human subjects participating in clinical trials.

**Concussion:** In the area of sports related concussion, Cogstate's technology has been used by a number of highly regarded institutions and sporting organisations around the world for almost 10 years.

**Healthcare:** In the primary care or general practice setting, COGNIGRAM™ assesses cognition in patients and the reports generated on the basis of this assessment can allow physicians to identify subtle changes that could be indicative of the early stage of a neurodegenerative disease, such as Alzheimer's disease.