

The Sydney Centenarian Study

Healthy Brains. Positive Ageing



Newsletter

January 2018

Happy New Year from the Sydney Centenarian Study (SCS) team. We hope this letter finds you in good health.

In this newsletter we would like to provide some updates about the study, highlight some of our recent research findings and share some news from CHeBA.

2017 marked an important year for the SCS as we began actively recruiting new participants for the first time in several years. The study was originally launched in 2008 with 345 participants aged 95 and above interviewed between June 2008 and April 2015. In the past year we have added another 50 participants, bringing our total cohort to 395. This has been augmented by 57 out-of-area participants, swelling our total cohort to over 450. Many of our participants have passed the century mark and several more are well on the way to this incredible milestone.

As the first study of its kind in Australia, the data we are collecting is yielding valuable insight into the cognition, physical health, mental health, and health care needs of centenarians and near-centenarians. Our cohort has an average baseline age of 97.37 years (range 95-106) and 72.5% of our participants are female. Rates of heart disease and diabetes were lower than in octogenarians, rates of psychological distress have been low, satisfaction with life high, dementia not inevitable, and independent living was common.

We know that genetics plays an important role in determining how long we live, with the importance of genetic factors becoming stronger at the upper limits of the lifespan. Our team is examining the DNA and RNA profile of our cohort as well as younger age groups to determine the major genetic factors that influence longevity. We are also utilising modern brain imaging techniques to explore the structural and functional characteristics of the brains of exceptionally old people.

The study will continue to expand recruitment in the coming year. We look forward to meeting many new participants while also conducting 6 monthly follow-up interviews with our current participants.

Thank you to all our participants and informants for their ongoing support. We greatly appreciate the time you have given to our research and we look forward to visiting you again in 2018. From all the staff at the Sydney Centenarian Study we hope you had a wonderful and relaxed holiday period and wish you a very happy year ahead.

Professor Perminder Sachdev
Chief Investigator, Sydney Centenarian Study
Co-Director, Centre for Healthy Brain Ageing

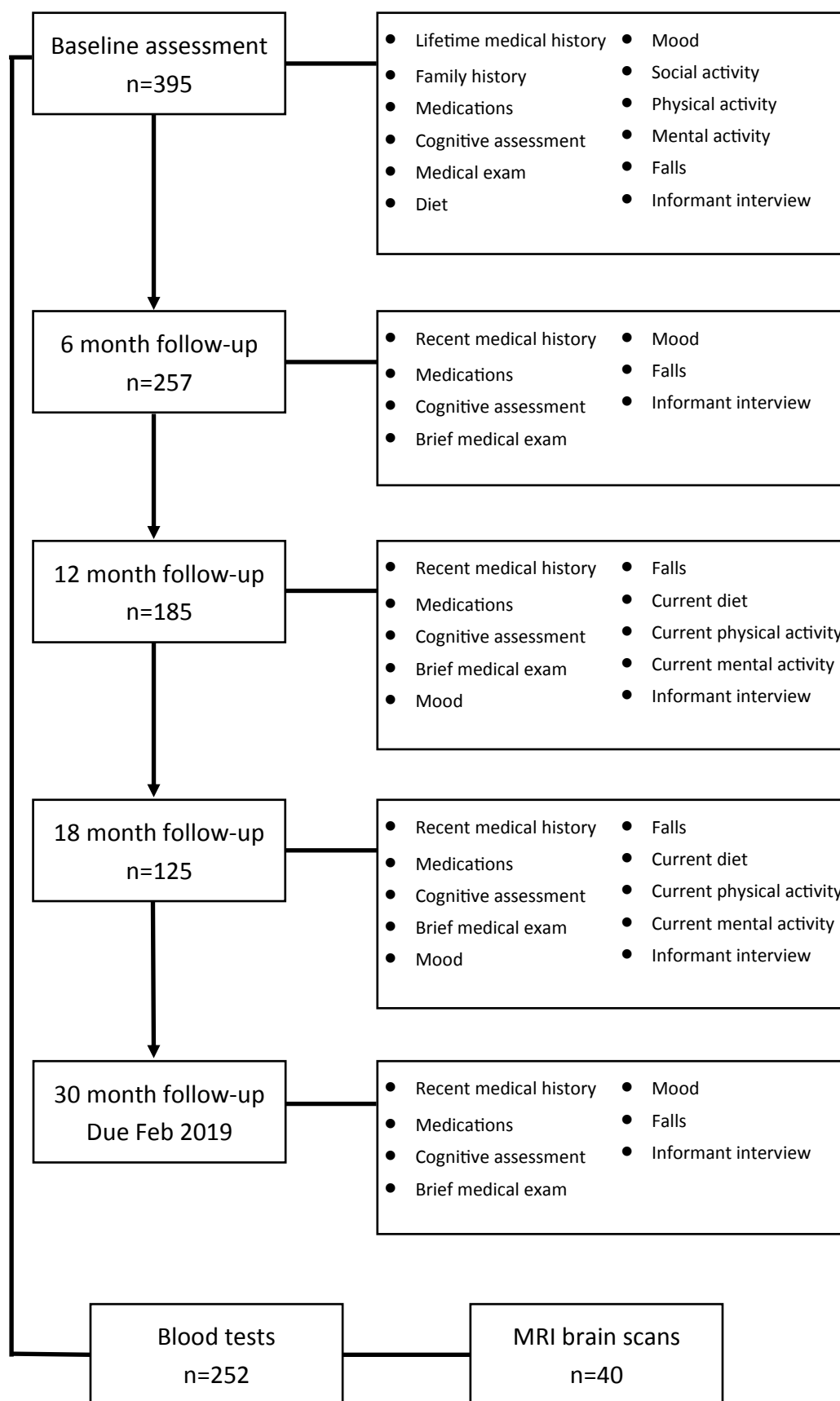


Professor Perminder Sachdev

**CHeBA**
Healthy Brains Positive Ageing



**We have
also inter-
viewed 57
'out-of-
area'
participants
bringing
our total
number of
participants
to 452**



Epigenetics and Centenarians: Uncovering the secrets to longevity

A study led by the Centre for Healthy Brain Ageing (CHeBA), UNSW Sydney, has examined epigenetic factors across individuals aged 34-103 years to better understand the secrets to healthy ageing.

Epigenetics is the study of heritable changes in gene function that do not involve changes in the DNA sequence.

Dr Karen Mather is Head of the CHeBA Genetics and Epigenomics Group and a Co-Investigator on the Sydney Centenarian Study. Her work examines the epigenetics of exceptional longevity. Our participants are seen as exemplars of successful ageing as many have escaped disease or delayed illness until very late in their lives. Therefore, studying SCS participants may reveal epigenetic factors that promote healthy ageing.

While our DNA blueprint does not change with age, ageing and other factors can leave its mark on our DNA in the form of a chemical change called methylation that can alter the activity of our genes. DNA methylation is one example of an epigenetic marker. The biological age of an individual, known as the 'Epigenetic clock,' can be calculated from these epigenetic markers.

There are a number of different epigenetic clocks described in the literature, depending upon which markers are used. This study examined the relationships between two of the best known epigenetic clocks and exceptional ageing.

SCS Chief Investigator and co-author on the paper, Professor Perminder Sachdev, said the epigenetic clocks under-estimated the ages of individuals participating in the Sydney Centenarian Study. "This finding supports the view that these individuals are biologically younger than their chronological ages would suggest," said Professor Sachdev. "Understanding the reasons for this may well reveal the secrets to their longevity."



Dr Karen Mather



Dr Mather said that future work in CHeBA cohorts will be undertaken to better understand the molecular underpinnings of exceptionally long-lived individuals, which may be useful to design strategies to promote healthy ageing in the general population.

CHeBA study identifies core risk factors for mild cognitive impairment, dementia and mortality in late life

A core group of late-life risk factors has been identified for mild cognitive impairment (MCI), dementia and mortality by researchers at the Centre for Healthy Brain Ageing (CHeBA), UNSW Sydney. The findings were published in the *Journal of the American Medical Directors Association*.

The longitudinal study examined changes in cognitive status, particularly the development of MCI or dementia, as well as death, over a six year period for 873 community-dwelling individuals aged 70-90 years in CHeBA's Sydney Memory and Ageing Study. Baseline



Dr Darren Lipnicki

factors associated with having MCI and dementia after 6 years were: older age, MCI at baseline, poorer smelling ability, slower walking speed and being an ApoE $\epsilon 4$ carrier, a known genetic risk for Alzheimer's disease. All factors except ApoE $\epsilon 4$ carrier-status were also associated with mortality.

Lead author, CHeBA researcher Dr Darren Lipnicki, said the findings provided exciting new insights into risk factors to inform early diagnosis and promote healthy ageing.

"Risk factors indicative of physical and mental frailty were significantly associated with dementia, MCI and mortality. This means that relatively straightforward tests like walking speed and smelling ability may help screen for cognitive decline," explained Dr Lipnicki.

Co-author and CHeBA Co-Director, Professor Per-minder Sachdev, said that large, longitudinal studies like the Memory and Ageing Study are vital for determining risk factors over time.

"Studies like this highlight the complexity of dementia aetiology, but also that identifying risk factors is possible. At CHeBA, our goal is drawing on both local longitudinal studies and large-scale international cohorts to improve our understanding and, ultimately, inform diagnostic and intervention strategies where possible."





ICC-Dementia: Bringing centenarian studies together from around the globe to explore dementia and successful ageing amongst the oldest old

The Sydney Centenarian Study is a member of the International Centenarian Consortium of Dementia (ICC-Dementia). Established in 2012, the consortium brings together centenarian and near-centenarian studies across the globe to explore cognitive and functional profiles of the oldest old across regional and ethnic boundaries.

Estimates of dementia prevalence from centenarian studies varies considerably. Methodological and epidemiological challenges arise when individual studies are confined to specific geographic areas. These challenges include small sample sizes, lack of representative samples, and difficulties in applying assessment tools. There is also debates about how best to define dementia when a range of diagnostic criteria have been employed by researchers from different centenarian studies.

ICC-Dementia aims to overcome these limitations by combining data from 17 centenarian studies in 11 countries across Europe, North America, and the Asia-Pacific region. With this large dataset, the consortium could offer more statistically robust and generalisable findings that may uncover risk factors of dementia in centenarians globally. For those who have lived to 100 and survived without dementia, these findings may yield important insight into protective factors for brain health.

Representatives from each study convene regularly to discuss the scientific agenda and provide governance. Last year the meeting was held in Portugal while in 2018 the Sydney Centenarian Study will play host to our international partners across two days in the beautiful Blue Mountains.

ICC-Dementia is just one of a number of consortia led by CHeBA. Prof Sachdev, Chief Investigator of the SCS, says that CHeBA is in an outstanding position to make a difference worldwide to the understanding of dementia for improved prevention, earlier diagnosis and more effective interventions.

ICC-Dementia is coordinated by Dr Yvonne Leung who joined our team in 2017.



Dr Yvonne Leung



Wipeout Dementia

Wipeout Dementia is a corporate surfing event run by the Centre for Healthy Brain Ageing to raise much-needed funds for dementia research.

Participants complete a gruelling 4 week 'strength for surfing' training program that culminates in a highly competitive 'Surf-off' tournament. Previous events have featured former NSW Premier Mike Baird, and former

Prime Minister Tony Abbott, with participants ranging in age from 26 – 76.

The past year saw two highly successful campaigns. Competitors braved chilly waters at Queenscliff back in May with beautiful Bondi hosting the event in November. The Bondi event was our most successful to date, raising over \$120,000 for our research. In total, the Wipeout Dementia campaign has raised over \$600,000 for CHeBA.

As well as generating research funds, the event promotes the importance of regular physical activity in maintaining cognitive health. The popular image of a bronzed, outdoors-loving and sports mad Aussie belies the fact that Australians are one of the most physically inactive people internationally. There is overwhelming evidence that lack of physical activity increases the risk of heart disease, high blood pressure, stroke, obesity, diabetes and depression—all of which are risk factors for dementia.

Wipeout Dementia ambassador and former world surfing champion, Wayne 'Rabbit' Bartholomew participates in each event. Rabbit said "This is a fantastic initiative to drive much needed funds to dementia research. With cardiovascular health in mid-life a key factor in brain health in late life it's great to see this group taking on a challenging physical endeavour".

To find out more or to suggest a surfer for Wipeout Dementia please contact Heidi Douglass at h.douglass@unsw.edu.au



Competitors in the 2017 Wipeout Dementia event at Bondi Beach

Kids4Dementia team raises \$15K at the Sydney Running Festival

The Centre for Healthy Brain Ageing (CHeBA) at UNSW Sydney has partnered with Kensington Public School to support Kids4Dementia (K4D), an education program improving students' understanding of the condition to help create a more dementia-friendly society.

Dementia is the single largest cause of disability in older Australians (aged 65 years or older) and the third leading cause of disability burden overall. The number of Australians living with dementia is projected to almost triple from 413,000 now to 1.1 million by 2050.



The impact on children of having a family member with dementia is often overlooked and community knowledge of the disease remains poor with significant social stigma attached to the illness. Currently, a third of young people know someone living with dementia, a figure set to increase rapidly.

K4D is an innovative, classroom-based program designed to improve young peoples' social awareness by learning that a person with dementia is "still a person", and not someone to fear, laugh at or ignore.

The evidence-based program for 9-12 year-olds was developed with a grant from the UNSW Dementia Collaborative Research Centre by research psychologist Dr Jess Baker. Dr Baker hopes that one day all young Australians will understand what dementia is and how they can be supportive of people living with dementia before they leave primary school.

"They are our future citizens who will grow up to be the doctors, teachers and leaders of tomorrow," says Dr Baker. "Educating children about dementia is the foundation for a dementia-friendly society."



Kensington Public School's Year 6 students took part in the K4D program in early 2017. Students learnt about what causes dementia, how it feels to have dementia, how to keep the brain healthy and what happens in an aged care facility.

13 teams of kids, parents, grandparents and friends participated in the Sydney Running Festival on 17 September 2017. We raised an incredible \$15,000 which will go towards rolling the program out across 30 NSW schools.

Schools interested in implementing the K4D education program can contact Dr Jess Baker, at kids4dementia@unsw.edu.au



Brain Donation

Brain imaging technology has improved markedly over the past few decades. However, even the most sophisticated imaging techniques cannot answer all our questions. To understand cellular changes in both healthy and disease-affected individuals, researchers need to examine brain tissue.

The Centre for Healthy Brain Ageing collaborates with the Sydney Brain Bank and participants in the Sydney Centenarian Study are able to donate their brain to this program. By comparing brain tissue to the huge volume of information we have collected over the course of our study we hope to gain new insights into the neurobiological basis of ageing and dementia.

If you would like more information about brain donation or would like to register as a donor, please contact study staff on (02) 9385 0433.

Meet the Sydney Centenarian Study team

From left to right: Fleur Harrison (Research Assistant), Prof Per-minder Sachdev (Chief Investigator), Dr Karen Mather (Genetics), Adam Theobald (Study Coordinator), Dr Kristan Kang (Data Manager), Dr Nicole Kochan (Neuropsychology), Prof Henry Brodaty (Co-Investigator), Dr John Crawford (Statistics), Dr Yvonne Leung (ICC Coordinator)



A Final Note

Once again, thank you for your continued support of our research. It is an honour and a privilege to be invited into the homes of our participants and learn about their long and fascinating lives. We are impressed by and grateful for the humour, passion and generosity of both our participants and informants in giving up their valuable time.

We wish you and your family good fortune and good health for the coming year and very much look forward to visiting you in 2018.

*As I lay on the lawn at midnight
Out on the western plains
The stars above enveloped me
And stretched as far as the eye can see
And beyond again and again
What would you do
If you came to the edge
Looking over, what would you see
Is space a place?
An endless waste
Where no one else can be
Or is our vision denied
The universe wide
Which exists to Eternity?*

- SCS Participant, age 103