

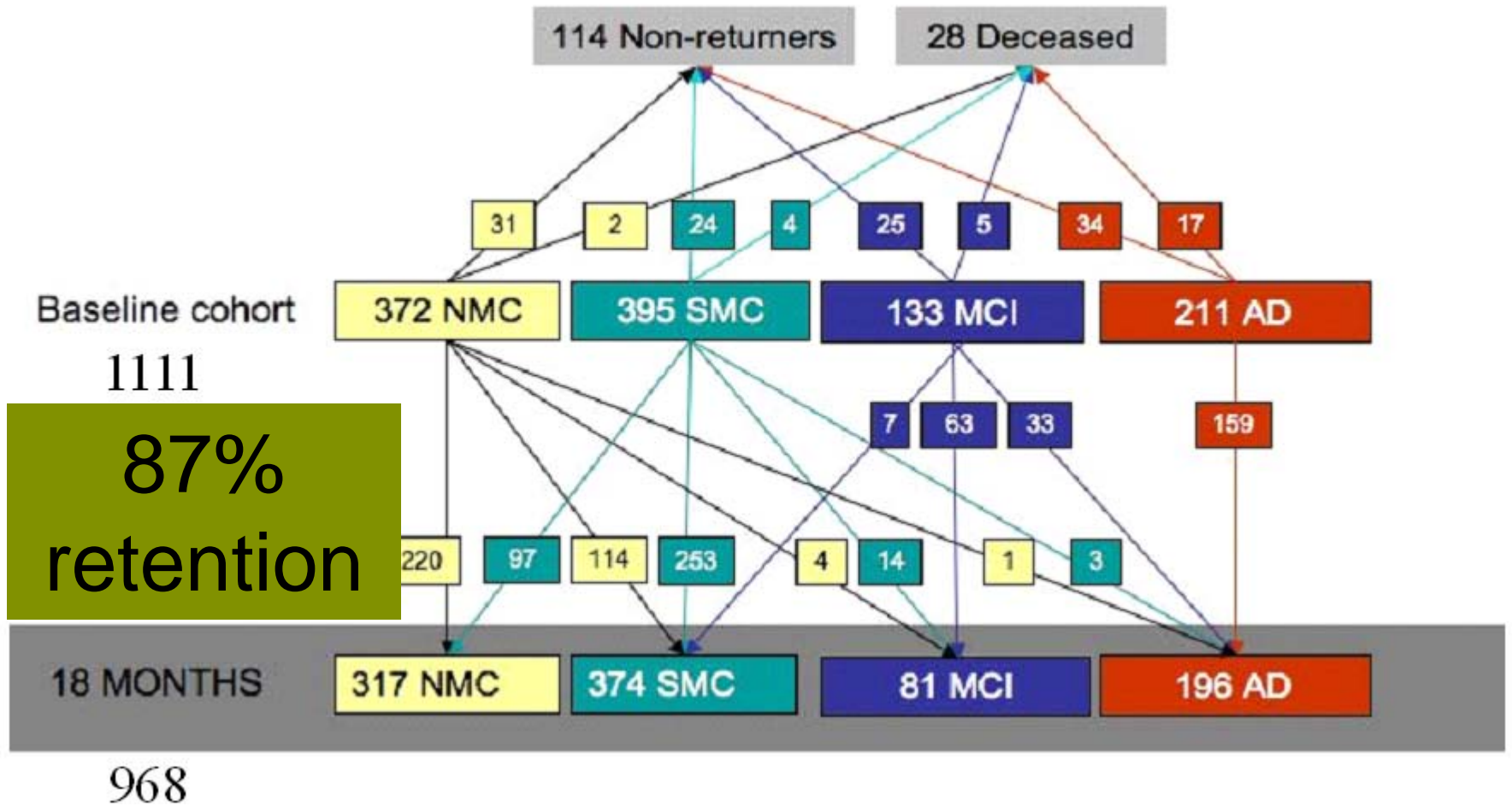


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Australian Commonwealth Science and Industry Research Organisation
National Ageing Research Institute



3 year follow-up almost complete – currently in data entry phase



25% of MCI progressed to AD
 Large shifts between NMC and SMC
 25% AD, 23% MCI, 8% HC Lost

Organizational Structure of AIBL



ELSEVIER

Alzheimer's & Dementia 6 (2010) 291–296

Alzheimer's
&
Dementia

Addressing population aging and Alzheimer's disease through the Australian Imaging Biomarkers and Lifestyle study: Collaboration with the Alzheimer's Disease Neuroimaging Initiative

Kathryn A. Ellis^{a,b,c,*}, Christopher C. Rowe^d, Victor L. Villemagne^{b,d}, Ralph N. Martins^e, Colin L. Masters^b, Olivier Salvado^{f,g}, Cassandra Szoeké^g, David Ames^{a,c}; and



Management committee

D.Ames (Chair, study leader), L.Bevege, K.Ellis (study manager)
R.Martins, C.Masters, A.Milner, C.Rowe, P.Stasinios, C.Szoeké

Neuroimaging stream

C.Rowe (Chair), V.Villemagne,
O.Salvado, N.Lenzo

Clinical and cognitive stream

K. Ellis (Chair), P.Maruff,
G.Savage

Biomarkers stream

C.Masters, R.Martins (Joint Chairs),
A. Bush, B.Wilson

Lifestyle stream

R.Martins (Chair), C.Szoeké

Study Databases

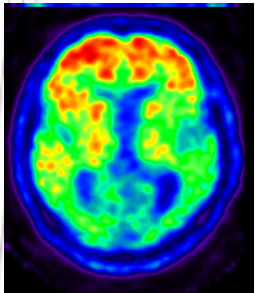
**Clinical
Cognitive**

Biomarkers

Genomic

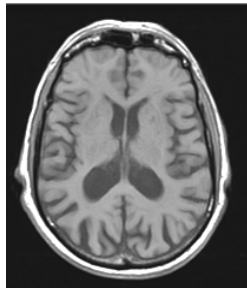
**Lifestyle
Intervention**

Imaging



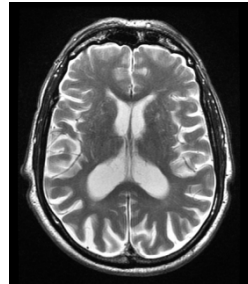
PET-PiB

Amyloid beta load



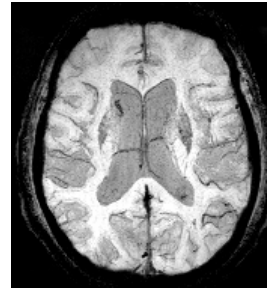
T1W

Anatomy



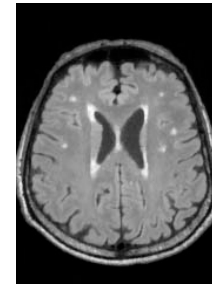
T2W

CSF and structures



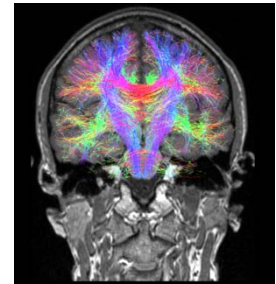
SWI

Venous tree



FLAIR

White matter lesions



DWI

White matter connection

CI – David Ames



Organisational Structure continued

Science and
Industry
Endowment
Fund

DATA



Science
Management
Committee

Expression
Of
Interest



DATA



Business
Development
Advisory
Committee



www.aibl.csiro.com.au

A



Early Detection

Early Detection

Early Detection

Clinical – EARLY DETECTION

– need for new norms?

• Strict Criteria for HEALTHY CONTROLS

• HC plus

1. 11C-PiB Standard Update Value Ratio (SUVR) <1.3
2. No focal 11C-PiB on visual inspection
3. Baseline MMSE >28
4. Clinical Dementia Rating (CDR) & CDR sum of boxes = 0
5. Normal MRI (no hippocampal nor global GM atrophy)
6. Geriatric Depression score <4
7. Cardiovascular risk factor score (CVRF) <4
8. Lab work with no anaemia, no liver or kidney disease, no hypothyroidism, no B12 or folate deficiency
9. Change on MMSE at 18 month <2
10. No conversion from HC status at 18 month follow-up

See POSTER Ellis, Rowe et al ,
Sunday 17th July, 1230-1500

- A significantly greater proportion of the HC and MCI AIBL groups fell 1.5 SD below the mean when compared to the sHC than when compared to the published norms

- **AT RISK HEALTHY GROUP**

- Of the 704 “healthy controls (HC)
- 59% performed significantly better on 4 tests than the other 41%
- Those in the other 41% had a risk for conversion from HC to MCI or dementia

OR **9.72** (CI: 3.05-30.98)

Developing topics presentation

Szoeke et al , Wednesday 20th
July 1600

Clinical – EARLY DETECTION

HC - Truly HC?

Of the 20 converters 17 were in the lower performing group

Comparison Conversion Rates per 18 months

| | HC-MCI | HC-AD |
|-----------------------------|----------|-----------|
| AIBL "Better performers" | 0.5 % | 0.3 % |
| AIBL "other HC" | 5.6% | 1.2% |
| ADNI | 1.4-7.2% | |
| Population | 1.5-9% | 0.25-5.2% |
| Memory Clinic | 15% | |

HC-MCI; 1-6% per annum.
 HC-AD; age dependent; Fratiglioni et al found 1.7 to 35.3 per 1000 person years

Clinical – EARLY DETECTION

- NOT BEING IN THE HIGHER FUNCTIONING GROUP
- 10 times the risk of conversion to MCI or dementia

Developing topics presentation

Szoeke et al , Wednesday 20th July 1600

Biomarkers– EARLY DETECTION

- Change in Biomarker levels over 18 months to predict AD
 - Creatinine
 - Neutrophils
 - High Density Lipoprotein
 - Red Cell Folate
 - Total Protein
 - Transferrin
- Low change in HC
- Higher change in AD and those who transitioned towards AD
- Sensitivity and Specificity 88%
 - adjusting for age and APOE genotype.

See poster **Doecke, Faux** et al 2011, Sunday 17th July, 1230-1500

AIBL: The Next 3 Years

Clinical

- Complete 3 and then 4.5 year follow-up

Enrich

- Add 200 new subjective memory complainers and MCI

Enrich + midlife risk

- Add 200 women from a cohort previously assessed in 2002 and 2004

Imaging

- Amyloid and MRI imaging in all participants, including enriched and intervention cohorts

Lifestyle

Intervention

- “AIBL Active” – exercise intervention in 150 HC/MCI

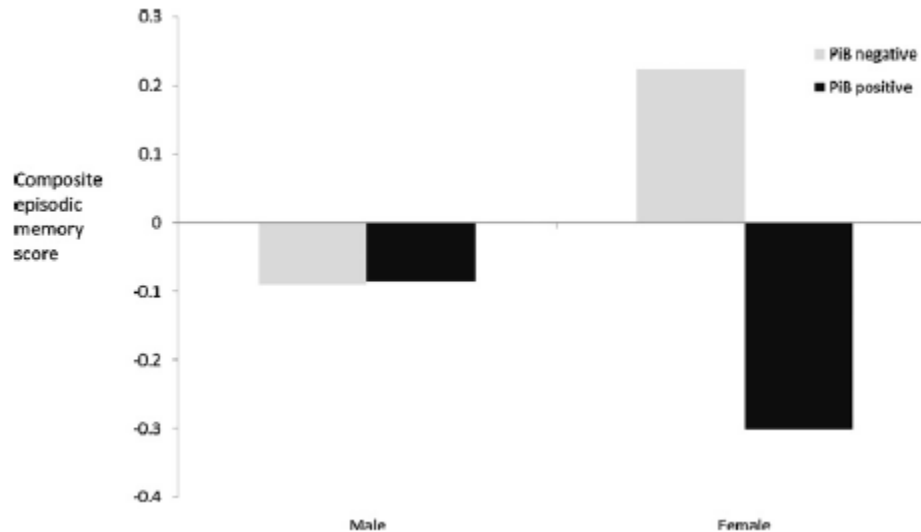
AIBL: ongoing



- Complete 3 year follow-up by September
- Commence 4.5 year follow-up by September
- Complete recruitment of 200 new subjective memory complainers and MCI
- Funding strategy for 6 and 7.5 year follow-up

AIBL: women and AD

- CSF Ab42 reduction correlating with memory in female healthy elderly but not in males
- Amyloid load on Pib scans relating to cognition in women but not men *Pike et al, 2011, Neuropsychologica*

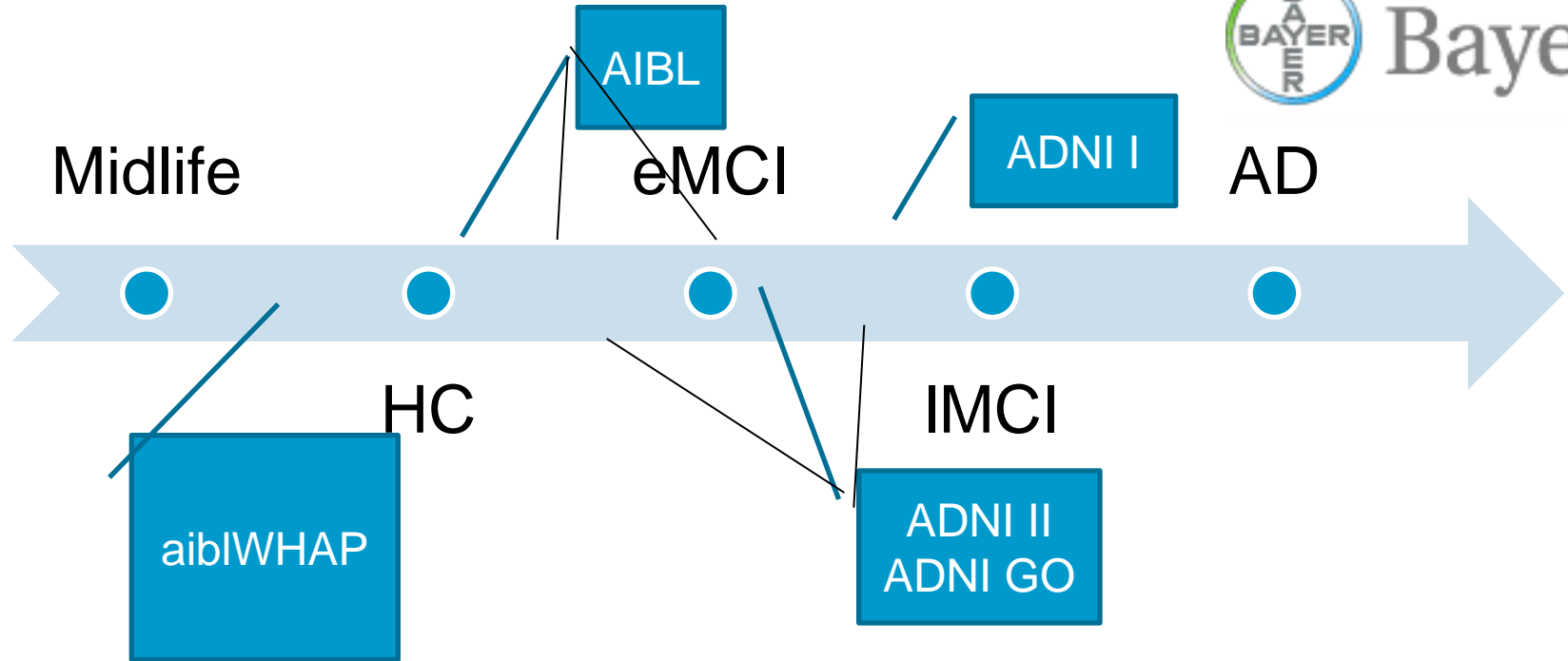


AIBL: women and AD



- Complete assessment of 200 women from the Women's Healthy Ageing Cohort
- Longitudinal, Prospective data from midlife 20 years prior to disease.
- Cohort cognition previously assessed in 2002 and 2004
- Reassessed in 2011/12 and 2013/14 (65-75yoa) with MRI and Amyloid imaging in all.

AIBL: women and AD



| Baseline <i>Midlife</i> | 1 st Cognitive Assessments <i>Post Menopausal</i> | aibIWHAP to commence <i>Ageing</i> |
|-------------------------------|---|--|
| Age 45-55 | Age 55-65 | Age 65-75 |
| Annual Follow-up over 8 years | 2 assessments 2 years apart | 2 assessments 18 months apart MRI & Amyloid Scans |



AIBL: ongoing



- “AIBL Active” – exercise intervention in 150 HC/MCI study
- Funded by NHMRC
- Commenced Intervention
- PET and MRI in all participants

AIBL Study Team

David Ames

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David Baxendale
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Noel Faux
Jonathan Foster
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Kerryn Pike
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Vanessa Ward
Bill Wilson
Michael Woodward
Olga Yastrubetskaya



GLOBAL AD CONFERENCE



Research and Standardisation in Alzheimer's Disease

RASAD

Melbourne, Australia, 27-29 March, 2012

Australian Imaging Biomarkers & Lifestyle
Flagship Study of Ageing



aibl

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Thank you

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