information linked to routine hospital and mortality data, and to be contacted again by the researchers. A second wave of data collection is ongoing (2014-2017) with additional questions on memory, carers and diet. The cohort is also being replenished and coverage widened to include the entire Yorkshire and Humber region (pop 5.25mn). The new recruitment target for the cohort is 50,000. In the first wave of recruitment 28,000 adults (1,700 aged 75 or over) returned completed Health Questionnaires. The response rate was 17%. As expected, respondents were more likely to be female, over 55 years, and living in areas of low deprivation. However, the population is broadly representative of the reference population. To date 12 health studies have identified and recruited over 1100 participants to their studies (including randomised controlled trials, qualitative interviews, matched case control studies) and local authorities are using the data to inform their Joint Strategic Needs Assessments. With over 3000 participants likely to receive a diagnosis of dementia in the next five years, the Yorkshire Health Study provides an opportunity to test a range of individual and public health level interventions to treat, manage and/or prevent dementia and to understand more about the health related behaviours that affect the onset and trajectory of dementia.

O3-02-06   **WHAT IS THE LONG-TERM EMOTIONAL AND BEHAVIORAL IMPACT OF GENETIC RISK ASSESSMENT FOR ALZHEIMER'S DISEASE? FINDINGS FROM THE REVEAL STUDY**

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Project Description: Research has shown that disclosing genetic risk information about Alzheimer's disease (AD) to volunteer populations does not create distress in the year following disclosure, and can motivate changes to advance planning and health behaviors. However, little is known about the long-term impact of disclosure. The potential exists for distress to increase over time and motivation for behavior change to decrease. The REVEAL Study is a series of multisite randomized controlled trials examining the psychological and behavioral impact of using APOE genotyping to determine AD risk. A subset of individuals who participated in the first three trials were asked to complete validated scales assessing general anxiety, general depression, and test-related distress 1.5-10 years after genotype disclosure. Additional yes/no questions asked about behavioral responses. Of 472 individuals invited, 291 (62%) responded (mean age 62.5; 63% female; 13% African American; 90% with AD-affected parent or sibling). Mean scores were 3.9 (95%CI: 3.3-4.5) on the Beck Anxiety Inventory and 7.5 (95%CI: 6.6-8.4) on the Center for Epidemiological Studies Depression Scale, well below cutoffs for clinical concern and with no differences by genetic risk status (p=0.08 and 0.64, respectively). Mean test-related distress, as measured by the Impact of Event Scale, was also well below cutoffs for clinical concern, but was greater among ε4-positive respondents than ε4-negative respondents (4.7 vs 2.8, p=0.022). ε4-positive respondents were also more likely to report adding long-term care insurance (12% vs 4%, p=0.022), modifying living wills (5% vs 1%, p=0.035), and improving health behaviors (64% vs 41%, p<0.0001). Current age was unassociated with any psychological or behavioral outcomes except health behavior changes, where those who were older than 65 were less likely to report modifications than those who were younger than 65, regardless of APOE genotype (OR=0.57, p=0.026). This is the first study to evaluate the long-term impact of disclosing APOE genotyping results. Findings suggest that differences described previously between ε4-positive and ε4-negative individuals on psychological outcomes and health-related behaviors persist for

years. Findings also show no evidence of increased psychological risks, even as subjects approach ages of potential AD onset.

TUESDAY, JULY 15, 2014
ORAL SESSIONS
O3-03
NEUROIMAGING: NEUROIMAGING FOR TRACKING DISEASE PROGRESSION AND FOR PROGNOSIS

O3-03-01   **DETECTION OF PRODROMAL ALZHEIMER'S DISEASE WITH 18F-FLORBETABEN AB IMAGING: A PROSPECTIVE OUTCOME STUDY**

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Background: Beta-amyloid (Aβ) imaging has been approved for clinical use. We sought to better understand its clinical utility in mild cognitive impairment (MCI). We aimed to evaluate the prognostic accuracy of Aβ imaging with 18 F-florbetaben (FBB) for progression from MCI to AD, compare semi-quantitative assessment with visually assessed scans, explore relationships between Aβ, hippocampal volume and memory over time, and examine whether progressive Aβ accumulation is detectable. **Methods:** Forty-five elderly MCI referred from memory clinics underwent FBB PET, MRI and neuropsychological assessment at baseline and 2 years. Participants and informants were contacted to 4 years. Positive FBB (FBB+), was defined by a cortical-to-cerebellar cortex uptake ratio (SUVR) $\geq$ 1.45, was compared with increased cortical uptake if visible to at least 3 of 5 readers. Hippocampal volume (HV) was measured by Neuro-Quant®.Amnestic MCI (aMCI) was defined by a composite episodic memory (EM) Z-score of < -1.5. **Results:** At baseline, 24 (53%) MCI were FBB+. Majority reads strongly agreed with SUVR classification (kappa 0.96). In 2 years, 18 (75%) FBB+ progressed to AD compared to 2 (9.5%) FBB-, giving a predictive accuracy of 82% [95%CI:67-90%] and hazard ratio of 11.1. Four FBB- developed non-AD dementia. Predictive accuracies of HV (58% [95%CI:42-73%]) and aMCI status (73% [95% CI:58-81%]) were lower. Combinations did not improve accuracy. By 4 years, 21 (87.5%) FBB+ had AD whereas 5 (24%) FBB- had non-AD dementia. The two FBB- AD were MCI and FTLD at 4 years. FBB PET predictive accuracy for AD was 93.3% (p<0.0001). A strong baseline linear association between SUVR and EM (r=-0.41, p<0.05) declined over 2 years (r=-0.27) while an association of EM with HV developed (r=0.36, p<0.05 at 2 years). SUVR increased 2.2%/year in FBB+ with no change in FBB-. **Conclusions:** Aβ imaging with 18 F-florbetaben facilitates accurate detection of prodromal AD. As AD neurodegeneration progresses, hippocampal atrophy may overtake Aβ in driving memory impairment. Progressive accumulation of Aβ can be detected with serial FBB PET.

O3-03-02   **TWO-YEAR LONGITUDINAL CHANGE IN AMYLOID DEPOSITION, GLUCOSE METABOLISM, AND HIPPOCAMPAL ATROPHY IN ADNI-2 PARTICIPANTS: RELATION TO GENETIC RISK**

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