Various time cut off points were used to assess 188 African American patients [average age 72 (range 61-90, SD 6), average education 11 years (range 4-20 years, SD 2.7)] who were randomly recruited from Grady Health Systems Medical clinics. Subjects were given the Folstein Mini Mental State Exam, Draw a Clock task, four item Memory Impairment Screen and Time and Change Task. **Results:** 186 patients were able to complete the MMSE, with an average completion time of 6.6 minutes (range 2.7-19.3 SD 2.5). The higher the z score, indicating better performance, the less time it took to complete the MMSE ($r=-.50$, $p<.001$). Impaired patients took significantly longer (mean=480.2 seconds, SE=19.8) than intact patients (mean=345.2 seconds, SE=10.5). Using norms from Crum et al., 63 patients (33.9%) scored in the impaired range. Thirty-six patients took longer than eight minutes to complete the MMSE. Of these, 24 (67%) scored impaired, and 12 (33%) scored non-impaired. Of the 12 non-impaired patients, four additional patients were impaired on the Clock Drawing Test, indicating that 78% of patients who took longer than eight minutes were impaired on one of the two screens. **Conclusion:** Results suggest that an eight minute time limit on the MMSE may be effective in identifying African Americans with mild cognitive impairment or other forms of dementia who are in need of more detailed evaluation and treatment.

P-004 INCORPORATING ETHNICITY INTO GENETIC RISK ASSESSMENT FOR ALZHEIMER'S DISEASE: THE REVEAL STUDY EXPERIENCE

Kurt D. Christensen[1], J. Scott Roberts[1], Charmaine D. M. Royal[2], Grace-Ann Fasaye[2], Thomas Obisesan[3], L. Adrienne Cupples[4], Peter J. Whitehouse[5], Melissa B. Butson[5], Erin Linnenbringer[1], Norman R. Relkin[6], Lindsay Farrer[4,7], Robert C. Green[8,7], *[1]Department of Health Behavior and Health Education, University of Michigan School of Public Health, Ann Arbor, MI, USA; [2]National Human Genome Center, Howard University, Washington, DC, USA; [3]Department of Medicine, Howard University, Washington, DC, USA; [4]Departments of Biostatistics & Epidemiology, Boston University School of Public Health, Boston, MA, USA; [5]Memory & Aging Center, Case Western Reserve University/University Hospitals of Cleveland, Cleveland, OH, USA; [6]Department of Neurology, Weill Medical College of Cornell University, New York, NY, USA; [7]Departments of Neurology and Medicine (Genetics Program), Boston University School of Medicine, Boston, MA, USA; [8]Department of Epidemiology, Boston University School of Public Health, Boston, MA, USA. Contact e-mail: kdchrist@umich.edu*

Background: Genetic risk assessment for Alzheimer's disease may prove useful as treatments for the disease continue to be developed. Such risk assessment programs will have to address challenges involved in incorporating ethnic group differences in lifetime risk of AD. **Objective:** To describe how researchers in the Risk Evaluation and Education for Alzheimer's disease (REVEAL) clinical trial addressed scientific, social, and ethical issues involved in creating and disclosing risk estimates for African American participants. **Methods:** We conducted the following: 1) evaluation of existing research on genetics, ethnicity, and AD; 2) focus groups with African American research participants; and 3) an appraisal of the benefits, risks, and limitations of incorporating ethnicity into risk calculations. Once the decision was made to stratify by ethnic group; customized risk curves were created for African Americans and whites based on genetic epidemiologic data from a large, ethnically diverse sample of first-degree relatives of AD patients. These risk estimates were employed in a randomized clinical trial (RCT) examining the impact of different genetic risk disclosure protocols. **Results:** Our literature review suggested notable differences in lifetime risk of AD between African Americans and whites but that such differences were not necessarily attributable to APOE genotype. Although reasons for these differences are not fully understood, focus group participants asserted that data limitations should not preclude African American study enrollment; rather, participants should be informed about the limitations of risk estimates. Risk calculations were framed as a function of age, APOE genotype, gender, family history, and ethnicity; they ranged from 33%-77% for African Americans, and 13%-57% for whites. Genetic counselors explained that AD is a complex condition and that risk estimates may not account for all relevant risk factors. 52 African Americans (19% of RCT participants) received risk disclosure, with the vast majority of counseling sessions featuring ethnic concordance between participant and clinician. **Conclusions:** Our efforts suggest that risk assessment protocols for AD can be developed which are sensitive to the scientific, ethical and social implications of genetic testing in diverse ethnic groups. Future research will need to assess the impact and effectiveness of such protocols across diverse populations.

P-005 UTILITY OF BRIEF COGNITIVE SCREENING MEASURES FOR DETECTION OF COGNITIVE IMPAIRMENT IN THREE ETHNIC GROUPS

Ranjan Duara[1], Silvia Strauman[2], Warren W. Barker[2], Lidia Perrotta[2], David Loewenstein[2], *[1]Mount Sinai Medical Center, Wien Center, Miami Beach, FL, USA; [2]Mount Sinai Medical Center, Miami Beach, FL, USA. Contact e-mail: duara@msmc.com*

Background: The early detection of AD and other memory disorders by a screening program, should allow secondary prevention measures and early intervention, to delay the progression to dementia. **Objective:** To assess the utility of two brief cognitive screening measures for detecting cognitive impairment (CI) in a volunteer sample of white English-speakers (WNH), white Spanish-speakers (WH) and African American (AA) English-speakers. **Methods:** Community-dwelling elderly subjects (n= 2842) were recruited via advertisements into a well-established memory screening program. Tests were conducted, in each subject's primary language (English or Spanish). The following tests were used: the MMSE, the Category Fluency Test (CFT) (3 categories; one min per category) and the Multiple Delayed Recall (MDR) test, which requires recall of the three items in the MMSE, after completion of the MMSE (Recall 1), after the CFT (Recall 2) and after a depression questionnaire (Recall 3). Subjects were classified as CI or No Cognitive Impairment (NCI), based upon a Mungas-corrected MMSE cut-score of < 24 for CI, or > 26 for NCI. ApoE $\epsilon 4$ genotypes were assessed in a subset of cases. **Results:** Table 1 shows that both MDR ($p< .0001$) and CFT scores ($p< .0001$) were significantly different among NCI and CI subjects in all three ethnic groups. The optimal cut scores, based on a minimum specificity of 80%, on the ROC curve, were between 4/9 and 8/9 for the MDR and 27 to 31 (words in 3 min) for CFT, among AA, WNH and WH (Table 1). These cut-scores correctly identified about two thirds of AA and about half of the WNH and WH. ApoE $\epsilon 4$ allele frequencies were significantly higher in the CI group for all ethnic groups, adding validity to the cognitive classification of CI and NCI. **Conclusions:** MDR and CFT discriminated well between CI and NCI subjects, although the cut points for impairment were substantially different among the three ethnic groups. These data suggest that the CFT and MDR may be useful supplements to the MMSE as items in a composite cognitive screening battery, by adding to its accuracy without requiring much additional time to its administration.

Demographics and Cognition for 3 Ethnic Groups

	Black English-CI (n=92)	Speaking NCI (n=27)	White English-CI (n=368)	Speaking NCI (n=1433)	White CI (n=335)	Hispanic NCI (n=587)
Age (yrs)	72±12	73±9	74***±12	76±8	*68**±11*	*70±8*
Education (yrs)	10±5	11±4	14***±3	13±3	*12.4***±5*	*11.0±4*
MMSE	17***±7	27±3	21***±5	28±2	*21***±5*	*28±2*
DRT Score	2.6***±3.5	6.6±2.7	3.7***±3.6	7.0±2.5	*5.4***±3.5*	*7.9±1.8*
DRT: Cut-Score (sen/spec)	≥4 (63% / 92%)		≥6 (63% / 81%)		≥7 (46% / 86%)	
CFT Score	23***±16	35±10	27***±15	38±11	32***±13	39±10
CFT Cut-Score (sen/spec)	≥27 (68% / 81%)		≥29 (56% / 80%)		≥31 (48% / 80%)	
APOE ε4 (%)	*33***%*	*8%*	20**%	16%	20**%	11%

*$P<.05$; **$P<.01$;***$P<.001$ (superscripts indicate significant differences between CI and NCI, within ethnic groups