

**National Human Genome Research Institute (NHGRI)/
National Institutes of Health (NIH)
Risk Evaluation and Education for Alzheimer's Disease (REVEAL)
Study**

The Risk Evaluation and Education for Alzheimer's Disease (REVEAL) study is a clinical trial funded by the National Human Genome Research Institute (NHGRI) and the National Institute on Aging (NIA). The goal of REVEAL is to provide healthy adults with genetic susceptibility testing and information about their chances of developing Alzheimer's disease. Participants in REVEAL were pre-screened for psychological problems and early signs of Alzheimer's disease.

Lead Agency:

National Human Genome Research Institute (NHGRI)/
National Institutes of Health (NIH)

Agency Mission:

The National Human Genome Research Institute (NHGRI) led the National Institutes of Health's (NIH) contribution to the International Human Genome Project, which had as its primary goal the sequencing of the human genome. This project was successfully completed in April 2003. Now, the NHGRI's mission has expanded to encompass a broad range of studies aimed at understanding the structure and function of the human genome and its role in health and disease.

To that end NHGRI supports the development of resources and technology that will accelerate genome research and its application to human health. A critical part of the NHGRI mission continues to be the study of the ethical, legal and social implications (ELSI) of genome research. NHGRI also supports the training of investigators and the dissemination of genome information to the public and to health professionals

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Partner Agency:

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General Description:

Risk Evaluation and Education for Alzheimer's Disease (REVEAL) Study

Genes and other biological markers are rapidly being identified that can provide presymptomatic estimates of risk for the eventual development of late-onset diseases. There is widespread public interest in obtaining risk information, particularly as treatments are developed to slow or prevent the onset of degenerative diseases. Many of the recently discovered gene markers are not deterministic genes, but rather susceptibility genes that interact with other, as yet unidentified genes, and with factors such as age, gender, race, family history and environmental exposures. Therefore genotyping individuals for susceptibility genes will require different protocols for providing risk assessment and counseling than those that have been used with deterministic genes. With few restrictions on the marketing and utilization of such tests, their usage may soon increase. Yet, there are almost no data available to understand who (e.g. age, gender, race) would seek susceptibility risk information once it is available; and why they would do so (e.g. to alleviate anxiety, to prepare financially). Nor is there information on the benefits or negative consequences of providing susceptibility risk information that could guide rational clinical decisions or public policy.

In its first funding period, the REVEAL (Risk Evaluation and Education for Alzheimer's Disease) Study created original educational and counseling protocols, and enrolled over 150 adult children of patients with Alzheimer's disease (AD) into a randomized clinical trial to examine (1) the characteristics of those persons who sought risk assessment with genetic susceptibility testing, including APOE genotype disclosure, and (2) the impact of this disclosure. The next funding period of the Study (REVEAL II) will include siblings of patients with AD in the study, and will randomize adult children or siblings to the current Extended Protocol or to a new Condensed Protocol that will more closely monitor clinical interactions that could be implemented on a large scale. It will also explore how the impact of genetic susceptibility testing with APOE disclosure varies between younger and older relatives, and between relatives of African American and European American patients with AD. REVEAL II will take place at four clinical centers of care (Boston University, Cornell University, Case Western University and Howard University). Risk assessment using genetic susceptibility testing with APOE genotyping and disclosure, because of its inherent uncertainties, is an ideal model to develop new guidelines for whether and how best to use susceptibility gene markers in this and other diseases where such markers are, or will be, available in the near future.

Excellence: What makes this project exceptional?

REVEAL is the first multi-center trial designed to evaluate the impact of Alzheimer's genetic risk testing on healthy adults. Previously there was no data on this important issue.

Significance: How is this research relevant to older persons, populations and/or an aging society?

Alzheimer's, the most common form of dementia, is most common in those over 65 with an estimated 26 million people afflicted worldwide, and is expected to increase.

Effectiveness: What is the impact and/or application of this research to older persons?

It was crucial to gauge the public's reaction to genetic information on Alzheimer's. Understanding the reactions can help healthcare professionals better inform their senior patients and encourage healthy behaviors.

Innovativeness: Why is this research exciting or newsworthy?

REVEAL found that disclosing APOE status and its association with Alzheimer's risk to participants did not result in a significant increase in distress or depression. In fact, participants who discovered they had the high risk APOE e4 allele proved more likely to be proactive in changing their lifestyles and planning for long term care.