Determination of the apolipoprotein E (apo E) genotype as a cardiovascular risk factor is considered experimental or investigational.

Apolipoprotein E (apo E) is a component of very low density lipoproteins and chylomicrons and is thought to play an important role in lipid metabolism. The apo E gene is polymorphic, consisting of 3 alleles (e2, e3, and e4) that code for 3 different protein isoforms, known as E2, E3, and E4. These molecules, which differ from one another by 1 amino acid, have different physiologic properties that mediate the effects of apo E polymorphism on lipid metabolism. Given the 3 different alleles, there are 6 possible genotypes, i.e., e4/e4, e3/e3, e2/e2, e4/e3, e4/e2, and e3/e2. The most common allele is e3. There has been much research interest in investigating lipid metabolism and lipoprotein levels in patients with different apo E genotypes.

There has been a large body of research focused on the correlation between lipid metabolism and the underlying apo E genotype. For example, it is thought that the apo E polymorphism is responsible for 7% of the interindividual variation in total cholesterol (TC) and low density lipoprotein (LDL) levels with the presence of apo e2 allele associated with the highest levels. The Copenhagen City Heart Study was a large case control study of 940 adults with known ischemic heart disease and 9,241 adults in the general population. Both groups underwent apo E genotyping. In men with a genotype of e4/e4 compared to those with a genotype of e3/e3, the odds ratio of ischemic disease was 1.58. Among women, the odds ratio of those with a genotype of e3/2 compared to those with a genotype of 3/3 was 0.57. This study illustrated that the impact of apo E genotype may vary by gender. In addition, the attributable risk was relatively small for all genotypes. Other studies have suggested that carriers of apo e4 are more likely to develop atherosclerosis and coronary artery disease, independent of total and LDL cholesterol levels.

Despite the above observations, it is unclear how knowledge of the apo E genotype could affect the management of the patient. As a cardiac risk factor, it is unclear how knowledge of apo I genotyping could contribute to risk assessment independently of the other conventional cardiac risk factors, such as total cholesterol and LDL levels. Some data suggest that patients with an apo e4 allele may respond better to diet modification strategies. However, dietary modifications are a
universal recommendation for those with elevated cholesterol or LDL levels. Other studies have suggested that response to statin therapy may vary with apo E genotype. However, no specific dietary or pharmacologic recommendations exist for those with different apo E genotypes.

An additional search of literature was completed through the MEDLINE database for the period of April 2000 – April 2003. No additional information was found that would change the position of this policy.

PRICING:

None

REFERENCES:

State and federal law, as well as contract language, including definitions and specific inclusions/exclusions, takes precedence over Medical Policy and must be considered first in determining coverage. The member’s contract benefits in effect on the date that services are rendered must be used. Any benefits are subject to the payment of premiums for the date on which services are rendered. Medical technology is constantly evolving, and we reserve the right to review and update Medical Policy periodically. HMO Blue Texas physicians who are contracted/affiliated with a capitated IPA/medical group must contact the IPA/medical group for information regarding HMO claims/reimbursement information and other general polices and procedures.