

Ankle Brachial Index Combined With Framingham Risk Score To Predict Cardiovascular Events and Mortality: A Meta-Analysis.

Reference:

Fowkes, F.G.R., Murray, G.D., Butcher, C.L. et al. (2008). Ankle brachial index combined with Framingham Risk Score to predict cardiovascular events and mortality: a meta-analysis. *Journal of the American Medical Association*, 300(2):197-208.

Scientific Literature Review

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Podiatric Relevance:

The Framingham Risk Score (FRS) is widely used by many primary care physicians to identify, categorize and treat persons who may be at a low to high risk of experiencing a cardiovascular event in his or her lifetime. Recent studies have suggested that the FRS may overestimate in low risk populations and underestimate in high risk populations. The Ankle Brachial Index (ABI) is an indicator of atherosclerosis and is used by many vascular and podiatric physicians to determine the severity of peripheral artery diseases in the lower extremities. The ABI may therefore greatly influence subsequent treatment and management of these patients. This study seeks to examine if the use of Ankle Brachial Indices independently or in conjunction with the Framingham Risk Scores may provide a more accurate prediction of cardiovascular risks. This study is relevant to podiatric physicians particularly because the health of the lower extremities is often predictive of the overall systemic health. This may also lead to better management and treatment protocols for patients in primary care and other specialties.

Methods:

A search of MEDLINE (1950 to February 2008) and EMBASE (1980 to February 2008) was performed utilizing key words corresponding to the ankle brachial index. Studies were included if the participants originated from the general population, baseline measurements of the ABI were taken, and if individuals were followed to examine total and cardiovascular mortality. Data that was pre-specified in each selected study was extrapolated and used to form a combined data set. For individuals who had no previous history of coronary heart disease, a data meta-analysis was conducted.

Results:

A total of 20 studies fulfilled the inclusion criteria, and 16 were included in this study. The studies were based in Australia, Belgium, Italy, Netherlands, Sweden, the United Kingdom and the United States. The populations were comprised of predominantly white populations with few exceptions. A total of 24,955 men and 23,339 women without a history of coronary heart disease were included. Participants in the studies had a mean age of 47-78 years. The 10-year cardiovascular mortality rate in men with a low ABI (≤ 0.90) was 18.7%, and with a normal ABI (1.11 -1.40) was 4.4%. For women, the rates were 12.6% and 4.1% respectively. The data analysis showed that a low ABI (≤ 0.90) displayed double the 10-year mortality rate, cardiovascular mortality and major coronary event rates when compared with the overall rate in each FRS category. With the inclusion of the ABI in cardiovascular risk using the FRS, the risk category would be re-categorized along with treatment modifications in approximately 19% of men and 36% of women.

Conclusions:

On the basis of these findings, the use of the Ankle Brachial Index may provide a more accurate cardiovascular risk prediction in populations with no history of cardiovascular disease. Additional studies are warranted to include more ethnically diverse populations which may or may not possess a genetic predisposition to cardiovascular diseases.