

Plenary 4: Cardiovascular Disease and Omega-3: Can We Turn The Tide?

Is our lifestyle killing us? Apparently not at the moment.

Rod Jackson

Epidemiology, School of Population Health, University of Auckland, New Zealand

Despite rising levels of obesity and an obesity epidemic, morbidity and mortality from cardiovascular diseases (CVD) – the main lifestyle diseases – continue to plummet in New Zealand and elsewhere. While trends in CVD are not consistent across ethnic and social groups they appear to be going in the right direction for everybody. The reason is simply that the main risk factors for cardiovascular diseases – smoking, high blood cholesterol and high blood pressure – are falling. This presentation will describe current trends in cardiovascular disease morbidity, mortality and risk factors and the interventions we should invest in to make sure these favourable trends continue.

Cardiovascular benefits of omega-3 fatty acids

WS Harris

Sanford School of Medicine, University of South Dakota, Sioux Falls, USA

The cardioprotective properties of the long-chain omega-3 fatty acids found in fish oils (EPA and DHA) have become clearer in recent years. Intakes of 500-1000 mg/d, either from foods or from supplements (as recommended by the AHA) have been generally associated with significantly reduced risk for CAD events, in particular, sudden cardiac death. Low intakes or blood levels of EPA & DHA are independently associated with increased risk of death from CHD. In randomised secondary prevention trials, fish or fish oil have been demonstrated to reduce total and CHD mortality at intakes of about 1 g/d. The evidence for beneficial effects of the long-chain omega-3 FA from fish is stronger than the evidence for benefit from the short-chain precursor, ALA, from plants. These fatty acids appear to have anti-arrhythmic properties which are unrelated to their effects on blood lipids. The mechanism by which low doses of omega-3 FA (500-1000 mg/d) reduce risk for fatal events is not clear, but may involve reducing the heart rate. Similarly, the biochemical basis for their beneficial effects may include alteration of membrane structure and function, modulation of transcription factors, increased plaque stability, and changes in eicosanoid metabolism. Red blood cell fatty acid composition reflects long-term intake of EPA+DHA. It is proposed that the RBC EPA+DHA (hereafter called the Omega-3 Index) maybe a new risk factor for death from CHD. When the relationship between this putative marker and risk for CHD death was evaluated using published primary and secondary prevention studies, an Omega-3 Index of approximately 8% was associated with the greatest cardioprotection, whereas an Index of less than 4% was associated with the least. The Omega-3 Index is a validated surrogate of cardiac EPA+DHA in humans. Preliminary data are now suggesting that the Omega-3 Index may be a risk marker, not just for CHD fatality, but also for acute coronary syndromes. The Omega-3 Index may represent a novel, physiologically-relevant, easily-modified, independent and graded risk factor for both CHD events and for death from CHD that could have significant clinical utility.