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Diet at the heart of cardiovascular disease prevention

- ***How can we optimise these benefits?***

Therapeutic lifestyle intervention, including diet, is well recognised by guidelines as the fundamental first step in cardiovascular prevention.¹ Importantly, dietary approaches underpin the management of the patient with metabolic syndrome, highly relevant against the setting of an ongoing global obesity crisis. Currently, it is estimated that 65% of the world's population live in countries where being overweight or obese kills more people than being underweight.²

What dietary components are important?

'Diet affects low-density lipoprotein (LDL) cholesterol metabolism and therefore is a logical approach to managing hypercholesterolaemia. Dietary intervention is also critical for weight loss especially in those with central obesity associated with the metabolic syndrome. With escalating obesity rates, dietary intervention is more important now than ever' – Professor Helena Gylling, University of Helsinki, Biomedicum Helsinki, Finland

Elevated LDL cholesterol is the most important modifiable risk factor for the development of atherosclerosis and cardiovascular disease. In the INTERHEART cross-sectional study in 52 countries, dyslipidaemia – defined by the ratio of the excess of cholesterol in atherogenic apolipoprotein (apo)B-containing lipoproteins (among which LDL predominate), relative to that in apoA-I-containing, high-density lipoproteins (HDL) - accounted for most of the population-attributable risk for heart attack.³

Substituting unsaturated or monosaturated fats for saturated fats not only lowers LDL cholesterol, but also has beneficial effects on atherogenic dyslipidaemia, elevated triglycerides and low HDL cholesterol, which is a feature of the metabolic syndrome.

There is extensive evidence of the benefits of a Mediterranean diet, including vegetables, fruits, fish, wholegrain cereals, legumes, unsaturated fats, moderate alcohol intake and limited consumption of red meat on lipids and glycaemic control.⁴⁻⁶ Recent findings from the PrediMed (Prevención con Dieta Mediterránea) study, which assessed the long-term effects of the Mediterranean diet (supplemented with nuts or extra virgin olive oil) in high-risk primary prevention patients, showed significant benefits in terms of reduction in cardiovascular disease events by 30%, as well as improved metabolic control, blood pressure and lipid profiles.⁷⁻⁹

Taken together, these findings reinforce the critical role of dietary intervention, as part of a healthy lifestyle, as the fundamental first step in preventing cardiovascular disease.

Current guideline recommendations for dietary changes include:^{1,10}

- Increase consumption of fruit, vegetables, legumes, nuts, wholegrain cereals and bread, and fish (especially oily fish)
- Replace simple carbohydrates with complex carbohydrates with a low glycaemic index wherever possible
- Replace saturated fat with the above foods and monounsaturated and polyunsaturated fats from vegetable sources. Energy intake from total fat should be <35% and from saturated fat <10%. Trans fats should be avoided.
- Reduce salt intake to <5 g/day
- Limit intake of drinks (especially soft drinks) and foods with added sugars
- Limit alcohol consumption (<10–20 g/day for women and <20–30 g/day for men)

A role for functional foods?

Dietary changes aimed at improving the diet and losing weight are the first steps. Subsequent to this, so-called 'functional foods' may also have a role, as suggested by guidelines.¹

Plant sterols/stanols are natural components of the diet. Plant sterols are mainly found in vegetable oils, spreads and margarines, breads, cereals, vegetables and to a lesser extent fruit; plant stanols are mainly obtained from cereals. However, the average daily intake of both is insufficient for any significant LDL cholesterol lowering effects.¹¹

These dietary components compete with cholesterol (dietary and biliary) for absorption by the small intestine, providing a rationale for the addition of plant sterols and plant stanols in certain types of foods. At recommended intakes (about 2 g/day), these functional foods consistently lower LDL cholesterol on average by 8-10%.¹²⁻¹⁴ Beta-glucan, present in oats, also lowers LDL cholesterol, although to a lesser extent (by 3-5% with a daily intake of 5 g).¹⁵

A recent EAS Consensus Panel on Phytosterols¹⁶ has highlighted the potential of these foods across the spectrum of global cardiovascular risk.

'Functional foods may have particular benefit in individuals with elevated LDL cholesterol at low global cardiovascular risk, as these approaches can reduce LDL cholesterol to recommended levels without the need for pharmacotherapy. This may be an important consideration in the patient who is averse to starting statin treatment. Additionally, these foods can be adjunctive to pharmacotherapy in higher risk groups.' – Professor Helen Gylling.

However, the cost of these products may be an issue for some patients, as these are higher than for their conventional counterparts. In the current austerity climate in Europe, this may be a highly relevant issue, not just influencing the decision to buy such foods, but also other foods considered part of a heart-healthy Mediterranean diet.

The key question is whether inclusion of functional foods with added plant sterols or plant stanols in the diet can reduce cardiovascular disease events such as heart attack. To date no large studies to test this have been conducted; this issue clearly warrants consideration.

Changing diet: need to do better

Undoubtedly diet is at the cornerstone of cardiovascular disease prevention. As many of the beneficial effects of lifestyle changes accrue over time, long-term adherence provides maximal benefit at both individual and population levels. However, the key problem that clinicians and their patients face is how to ensure that changes in diet and lifestyle are sustainable in the long-term.

'We are lacking the means to address this: how to help patients make these changes and keep them. The ideal scenario – although not realistic - would be take patients out of society and start from the beginning so that they learn from the basics, what type of foods, how to prepare, what portion size, how to start and maintain exercise. It is important that we start with the basics and from an early age' – Prof. Helena Gylling

There is clearly a need for improving how lifestyle advice is implemented by clinicians, as illustrated by EURIKA (European Study on Cardiovascular Risk Prevention and Management in Daily Practice), a pan-European primary prevention study.¹⁷ However, the key problem is ensuring dietary changes are sustainable in the long-term. For example, in the Atherosclerosis Risk in Communities Study; in 12,744 people initially free of cardiovascular disease; only 0.1% maintained an ideal healthy lifestyle over the long-term.¹⁸

Early adoption of a heart-healthy diet offers the potential to reduce cardiovascular risk. Addressing the question of how to ensure sustainable change in diet must be a priority, especially relevant in the light of increasing numbers of individuals at risk of heart disease and ever-increasing economic restraint in healthcare budgets.

Details of Congress Sessions:

***BASF/Danone/Raisio/Unilever Educational Symposium: Diet at the Heart of CVD Prevention. Saturday 31st May, 14:00-15:30**

***Workshop: Nutrition and Nutraceuticals: Monday 2nd June, 11:00-12:30**

***Joint ICCR/EAS Workshop: Targeting lifestyle in CVD risk management/prevention: Monday June 2nd, 15:00-16:30**

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Notes for editors:**About the EAS Consensus Panel**

The EAS Consensus Panel is comprised of internationally renowned experts in atherosclerosis and cardiovascular disease, and is co-chaired by Professor John Chapman (INSERM U939, Pitié-Salpêtrière University Hospital, Paris, France) and Professor Henry Ginsberg (Columbia University, New York, USA). The Panel was first convened in November 2009 to consider the evidence for non-LDL lipids as risk factors for cardiovascular disease. Subsequent Consensus Panels have focused on familial hypercholesterolaemia, hypertriglyceridaemia, and the role of foods supplemented with plant sterols/stanols in dyslipidaemia management and cardiovascular disease prevention.