

## The metabolic syndrome and Lipgene - 10 key facts for health economists

1. The term metabolic syndrome describes a cluster of disorders (raised blood pressure, abdominal obesity, abnormal blood lipids, insulin resistance and high blood glucose concentrations) which are associated with an increased risk of developing type 2 diabetes (2-3 fold) and cardiovascular disease (5-6 fold). It is estimated that between 10-35% of middle aged and elderly Europeans have metabolic syndrome. This figure is likely to rise as the prevalence of both obesity and type 2 diabetes increases across the continent, with a concurrent increase in life expectancy.
2. It is estimated that, in 2002, the total cost of obesity was €32.8 billion. The costs are based on extrapolation of the data from the UK National Audit Office Report, which calculated the direct health care costs and indirect costs associated with obesity in the UK in 1998, and the prevalence of obesity within the 15 EU member states. Obesity is just one component of the metabolic syndrome and, therefore, the associated costs of the metabolic syndrome are likely to be higher. Furthermore, this figure is a conservative estimate as: EU membership has widened since 2002; the prevalence of obesity has continued to increase; and the true prevalence of the metabolic syndrome across the EU is not known.
3. It is believed that changing the amount and type of fat in the diet may reduce an individual's risk of developing the metabolic syndrome or help treat some of the conditions associated with it. Research to investigate this is underway as part of the Lipgene project.
4. Lipgene is an EU 6th Framework Programme Integrated Project (contract FOOD-CT-2003-505944) focusing on the metabolic syndrome. The project, entitled "Diet, genomics and the metabolic syndrome: an integrated nutrition, agro-food, social and economic analysis", began in 2004 and will run until 2009. The Lipgene consortium comprises 25 centres across Europe. For more information see [www.nutrition.org.uk/lipgene](http://www.nutrition.org.uk/lipgene) or [www.lipgene.tcd.ie](http://www.lipgene.tcd.ie)
5. Lipgene is looking at how changing the proportions of saturates, monounsaturates and n-3 (omega 3) polyunsaturated fatty acids consumed may reduce the risk of developing the metabolic syndrome. This may be of particular importance for some individuals because genetic differences are expected to influence future risk of developing the metabolic syndrome
6. Lipgene research will investigate whether changes can be made to the food we eat, to make it easier for people to consume the right balance of fats in their diet. The Lipgene project will explore ways in which the fatty acid content of animal products (e.g. meat,

- milk and their products) can be altered, as well as seek a sustainable and economically viable plant source of long chain *n*-3 fatty acids, using plant biotechnology.
7. The Lipgene project will investigate whether changes to the nutritional composition of these foods will influence their taste and other sensory properties. It will also explore consumer opinions with regards to the acceptability of new technologies being used.
  8. Foods with a modified fatty acid composition may attract increased costs related to: the costs of inputs (i.e. ingredients that are not used in the production of conventional foods); identity preservation costs associated with segregation of ingredients; and costs associated with reduced productivity (e.g. in terms of reduced egg output or reduced weight gain amongst livestock). Also there may be additional costs associated with production on a smaller scale (i.e. lower production efficiency and smaller volume of sales).
  9. Consumers may not be willing to purchase food with a healthier trait at the price needed to cover the increased costs of production, and innovative approaches may be needed to encourage the purchase of healthier foods. One option is to eliminate any cost penalty to the consumer of the modified 'healthier food' through subsidies. This, and other options, are being explored in the economic analysis and in associated consumer research, which will be the focus of a number of workshops being hosted in 2005 and 2006 (for more information see [www.nutrition.org.uk/lipgeneconference](http://www.nutrition.org.uk/lipgeneconference)).
  10. Estimates generated within Lipgene suggests that the potential costs of special inputs (i.e. ingredients and technology) that might be used to produce 'healthy' eggs, poultry, beef and spreads are estimated to amount to €10 billion/year, which is a third of the estimated annual costs associated with obesity.

**For more information visit**

<http://www.lipgene.tcd.ie/>

[www.nutrition.org.uk/lipgeneconference](http://www.nutrition.org.uk/lipgeneconference)

[www.nutrition.org.uk/lipgenepresspack](http://www.nutrition.org.uk/lipgenepresspack)

<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1467-3010.2004.00403.x?prevSearch=allfield%3A%28metabolic+syndrome%29>