

Red Meat and Cardiovascular Disease

Cardiovascular disease (CVD) is the umbrella term for diseases that affect the heart and circulation such as stroke and coronary heart disease, which includes angina and heart attacks. CVD is the main cause of death worldwide and global death rates due to the condition are rising.

In most European countries, deaths from coronary heart disease have been steadily decreasing. In the UK, for example premature deaths (those affecting people before the age of 75 years) fell by 80% between 1974 and 2013¹. However, CVD remains a leading cause of death (along with cancer) in the UK. In 2014 it was responsible for around a quarter of premature deaths in men, and more than a sixth of premature deaths in women¹.

Causes of CVD

The causes of CVD are complex but diet and lifestyle (e.g. physical activity and smoking cessation) play a key role in influencing risk factors such as hypertension (high blood pressure), obesity, type 2 diabetes, high blood cholesterol and high blood triglyceride levels².

Despite contributing to intakes of some nutrients associated with heart benefits (e.g. *omega*-3 fatty acids and B vitamins), red meat is frequently said to be harmful for heart health due to its fat and saturated fat content, as well as the salt content of some processed meats. However, this view is incorrect as the fat content of meat has decreased considerably during recent years due to changes in animal breeding and feeding, as well as modern butchery techniques to produce leaner cuts of meat. Now, fully trimmed lean raw beef typically contains only 5 per cent fat, fully trimmed lean raw pork only 4 per cent fat and fully trimmed lean raw lamb just 8 per cent fat³.

In the UK, intakes of total fat and saturated fat from red and processed meat has declined slightly over recent years and it now provides around 14 per cent of the total

¹ British Heart Foundation Cardiovascular Disease Statistics 2015. Available at: <https://www.bhf.org.uk/publications/statistics/cvd-stats-2015>

² Stanner S. Cardiovascular Disease: Nutrition and Emerging Risk Factors: The Report of a British Nutrition Foundation Task Force. Blackwell Publishing 2005.

³ www.meatandhealth.com

fat intake and around 18 per cent of the saturated fat intake⁴ Advice remains to choose lean cuts of meat and to trim off any visible fat wherever possible. Leaner meats not only have a lower fat and calorie content but also have a higher proportion of healthier unsaturated fatty acids, compared with saturated fatty acids.

What is the evidence?

Red meat has been associated with increased risk of CVD in studies that have assessed people's diets and followed them up to see if they develop this condition (known as prospective cohort studies). However, these studies have used a range of methods making it difficult to compare findings, and outcomes have been inconsistent. Some have found positive associations between red meat intake^{5 6}, particularly processed meat, and CVD deaths, whilst others have found no associations^{7 8}.

Reviews of these types of studies have also had varied findings. Some have concluded that current evidence doesn't support a clear relationship⁹, others have found a positive link but suggest a stronger relationship for processed meat and only a weak link with red meat¹⁰. A recent analysis of seventeen prospective cohorts found that higher consumption of both total red meat and processed meat was associated with higher risk of deaths from CVD but the link with unprocessed meat was only shown in US populations, not in European or Asian populations¹¹. These types of studies by nature cannot provide very precise measures of dietary intake and make it difficult to tease out the effects of one aspect of the diet alone. In fact, it may simply be that the overall diets and lifestyles of those with higher red meat intakes may be generally less healthy.

This is true of studies looking at dietary patterns. A typical Western lifestyle may be characterised by a high red meat intake, as well as low intakes of fruits and

⁴ Bates B et al. National Diet and Nutrition Survey. Results from Years 5-6 (combined) of the Rolling Programme (2012/13 – 2013/14), Public Health England, 2016

⁵Sinha et al. 2009 Meat intake and mortality: a prospective study of over half a million people. [Arch Intern Med.](#) 2009 169(6): 562-71.

⁶Pan et al. 2012 Red meat consumption and mortality: results from 2 prospective cohort studies. [Arch Intern Med](#) 172: 555-63.

⁷Kappeler et al. 2013 Meat consumption and diet quality and mortality in NHANES III. [Eur J Clin Nutr.](#) 67(6):598-606.

⁸Nagao et al. 2012 Meat consumption in relation to mortality from cardiovascular disease among Japanese men and women. [Eur J Clin Nutr.](#) 66(6):687-93.

⁹ Lippi et al. 2015 Red meat consumption and ischemic heart disease. A systematic literature review. [Meat Sci.](#) 108:32-6.

¹⁰ Abete et al. 2014 Association between total, processed, red and white meat consumption and all-cause, CVD and IHD mortality: a meta-analysis of cohort studies. [Br J Nutr.](#) 112(5):762-75.

¹¹ Wang et al. 2016 Red and processed meat consumption and mortality: dose-response meta-analysis of prospective cohort studies. [Public Health Nutrition:](#) 19(5), 893-905.

vegetables, high alcohol intake, low dietary fibre and low levels of physical activity. Furthermore, some studies are now quite old dating back from a time when the fat content of meat was considerably higher than it is today.

Dietary trials, where other lifestyle factors can be controlled for more easily, have tended to investigate effects on risk factors for CVD rather than the development of the condition itself as this can take more than a decade. A recent review of randomised trials found no effect of meat consumption (around 3.5 servings per week) on key risk factors including blood cholesterol, triglycerides or blood pressure¹².

In Conclusion

Much of the evidence linking red meat and CVD is inconsistent and has looked at different dietary and lifestyle variables. This makes it impossible to single out one food group, such as red meat as a cause of CVD. It is the overall dietary pattern, lifestyle habits and family history that determines an individual's risk of CVD.

¹² O'Connor et al. 2017 Total red meat intake of ≥ 0.5 servings/d does not negatively influence cardiovascular disease risk factors: a systemically searched meta-analysis of randomized controlled trials. [Am J Clin Nutr.](#) 105(1):57-69