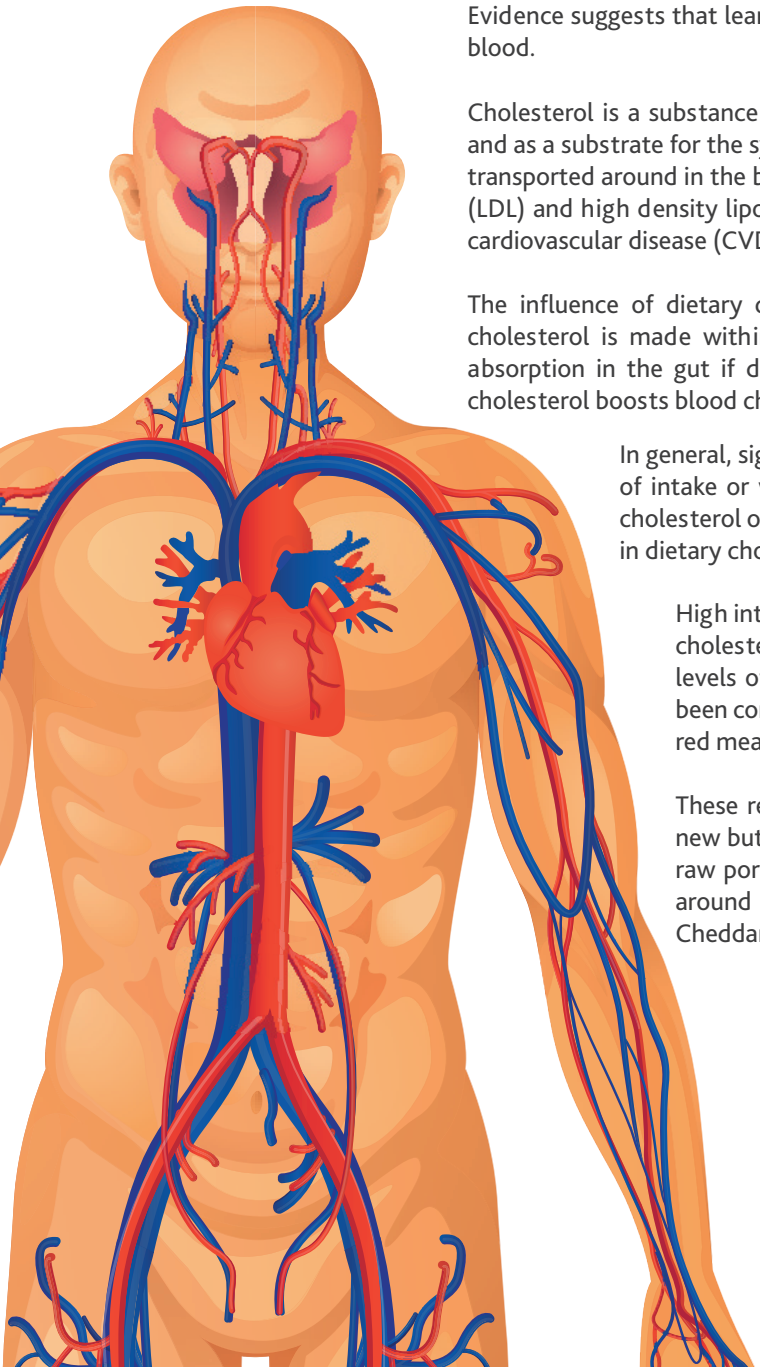
Information
for Health Professionals

RED MEAT & CHOLESTEROL



Evidence suggests that lean red meat does not have adverse effects on cholesterol levels in the blood.

Cholesterol is a substance that is essential to life as a primary component of cell membranes and as a substrate for the synthesis of steroid hormones, bile acids and vitamin D. Cholesterol is transported around in the body in various particles in the blood such as low density lipoproteins (LDL) and high density lipoproteins (HDL). High blood levels of cholesterol increase the risk of cardiovascular disease (CVD).

The influence of dietary cholesterol on blood cholesterol is relatively small because most cholesterol is made within the body and most people can reduce synthesis or cholesterol absorption in the gut if dietary intake is high. Therefore, it is a misconception that dietary cholesterol boosts blood cholesterol.

In general, significant effects of dietary cholesterol are seen only at extreme levels of intake or when an individual is particularly sensitive to the effects of dietary cholesterol on blood cholesterol. Lean red meat, not including offal, is actually low in dietary cholesterol.

High intakes of saturated fatty acids in the diet can cause high blood levels of cholesterol. Contrary to popular belief, lean red meat does not contain high levels of fat or saturated fatty acids. The total fat content of red meat has been considerably reduced over the last few decades and the amount of fat in red meat is actually much lower than most people think.

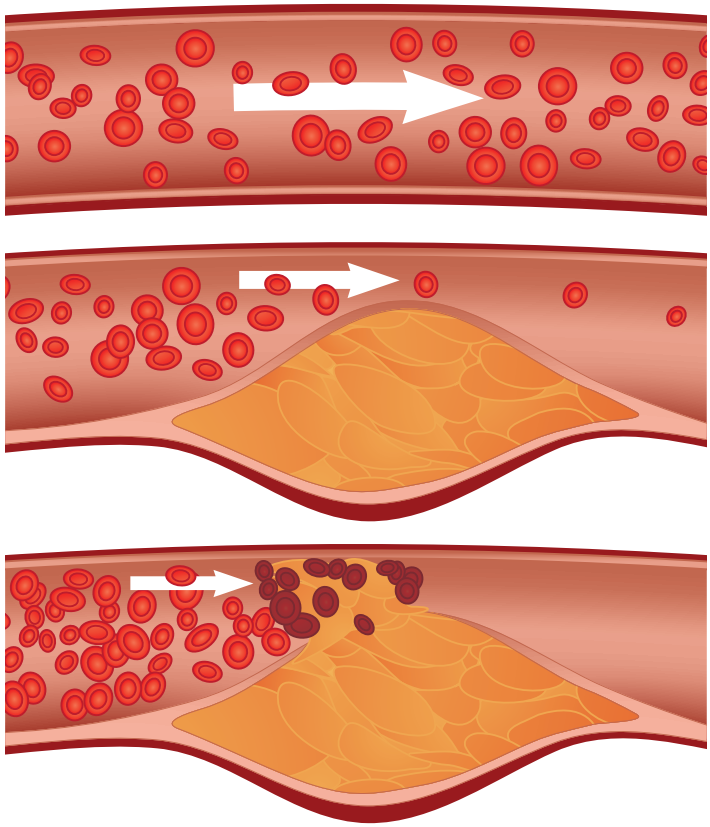
These reductions have been achieved by smarter breeding on the farm and new butchery techniques, which trim off most of the fat. Fully trimmed lean raw pork typically contains only about 4% fat, fully trimmed lean raw beef around 5% and fully trimmed lean raw lamb only 8% fat. By comparison, Cheddar cheese contains an average of 35% fat.

Furthermore, about half of the fatty acids found in red meat are the healthier polyunsaturated or monounsaturated types. Choosing lean cuts of meat and trimming off visible fat helps to reduce the saturated fat content even further.

What is the evidence?

Some cross-sectional observational studies have suggested that meat eaters have significantly higher intakes of dietary fat and saturated fat than vegetarians, leading to increased blood cholesterol levels, especially the 'bad' LDL cholesterol. However, in these trials, fats from fast foods, snacks and other processed foods, rather than red meat, were the primary sources of saturated fat in the meat eater's diets. It is also worth noting that dietary and lifestyle factors other than meat avoidance (e.g. higher fruit and vegetables, fibre intakes and physical activity) may underlie some of these differences between meat eaters and vegetarians. Observational studies can help to generate hypothesises and investigate possible associations between variables but they cannot demonstrate causality. To investigate whether one variable causes another, randomised controlled trials (RCTs) are required.

A number of RCTs have been conducted in this research area enabling a systematic review and meta-analysis to be done. A systematic review answers a defined research question by collecting and summarising all scientific evidence that fits pre-specified inclusion criteria. A meta-analysis is the use of statistical methods to summarise the results of these studies. This type of analysis helps to improve estimates of the size of the effect and/or resolves uncertainty when study results are inconsistent.



A recently published systematic review and meta-analysis assessed the effects of consuming ≥0.5 or <0.5 servings of total red meat per day on CVD risk factors, including blood cholesterol. Studies were included within the meta-analysis if they had a RCT study design, the subjects were >19 years of age, the intervention diet included ≥0.5 servings of red meat per day and the control diet included <0.5 servings of red meat per day. The 0.5 servings (equivalent to 35g cooked red meat) cut-off was based on a previous prospective cohort analysis that estimated that around 10% of CVD-related deaths would be preventable if individuals consumed <0.5 servings of red meat per day . The search criteria did not restrict the type of red meat and some studies included both red and processed meat. For total cholesterol, data from 22 intervention groups were extracted and for LDL and HDL cholesterol, data from 21 intervention groups were extracted. Intervention lengths varied from 2 to 32 weeks. The results found no significant differences in total, LDL and HDL cholesterol between the groups who consumed ≥0.5 or <0.5 servings of red meat per day. Nor were there any significant differences in the other analysed CVD risk factors, triglycerides and blood pressure. Even the highest category of red meat consumption (>3 servings per day) showed no negative effects on cholesterol concentrations.

Conclusion

The evidence suggests that lean red meat does not have negative effects on total cholesterol and LDL cholesterol levels in the blood. This means that red meat is unlikely to be a significant factor in the development of cardiovascular disease.

Li D et al. Clinical Science 1999;97:175-181
Li D et al. European Journal of Clinical Nutrition 1999;53:612-619.
Ashton Y et al. Proceedings of the Nutrition Society 2000;24:104.
Fraser GE. Vegetarian diets: what do we know of their effects on common chronic diseases? Am J Clin Nutr. 2009;89:1607S–1612S.
O'Connor LE et al. Am J Clin Nutr. 2017 Jan;105(1):57-69
Pan A et al. Arch Intern Med 2012; 172:555-63

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