

Consumer summary: Dietary advice for reducing the risk of cardiovascular diseases

A review of the effect of dietary advice for reducing cardiovascular risk was conducted by researchers in the Cochrane Collaboration. After searching for all relevant studies, they found 38 studies done by other researchers. Their findings are summarised below.

What is cardiovascular disease and why dietary advice?

Cardiovascular disease (CVD) refers to the class of diseases that involve the heart or blood vessels. High blood pressure and the level of cholesterol are two important risk factors for developing CVD. These can be altered by diet.

Blood pressure (BP) is the pressure exerted by circulating blood on the walls of blood vessels. During each heartbeat, BP varies between a maximum (systolic) and a minimum (diastolic) pressure. BP is measured on an instrument called sphygmomanometer, in millimeters of mercury (mmHg). For example, a systolic blood pressure of 120 mmHg means that the systolic blood pressure is measured in 120 millimeters on a column of mercury. BP is measured as the systolic pressure in relation to the diastolic pressure. Optimal blood pressure is 120 mmHg – 80 mmHg. High blood pressure is 140 – 90 mmHg. High blood pressure over time will increase the risk of heart attack and stroke.

Cholesterol is a substance that is produced in the body and obtained from foods. The body needs this substance, but too much cholesterol in the bloodstream causes the formation of plaques that may narrow or block blood vessels. This condition is called atherosclerosis, and it can lead to heart attack and stroke. The concentration of cholesterol in the blood is most often measured by molecular counts (usually millimoles) per unit (liters of blood), mmol/L.

The two major cholesterol groups are low-density lipoprotein (LDL) and high density lipoprotein (HDL). Increased levels of LDL, the 'bad' cholesterol, are associated with atherosclerosis. Cholesterol contained in HDL particles is considered beneficial for the cardiovascular health. These two types of lipids, along with triglycerides and Lp(a) cholesterol, make up your total cholesterol count, which can be determined through a blood test. usually by measuring molecular particular count per liter blood.

Most experts agree that the level of total cholesterol in high risk populations should be lower than 5mmol/L. For HDL cholesterol the ideal level for men should be higher than 1mmol/l and for women higher than 1.2 mmol/L. LDL cholesterol levels should be lower than 3 mmol.L. For triglycerides, the ideal level is less than 1.69 mmol/L.

Advice that encourages consumption of a diet relatively lower in any one or more of: fat, saturated fatty acids, cholesterol, sodium; or relatively higher in any one of: fruit, vegetables, polyunsaturated fatty acids, monounsaturated fatty acids, fish, fibre, potassium is likely to reduce the risk of CVD.

Adoption of a healthy diet is preferable to long-term medication in the general population in order to prevent or delay the onset of disease and to reduce the burden on health services.

Dietary advice can be communicated in many forms, like verbal or written, single or multiple contacts with individuals or groups, and may be delivered by health professionals or others.

What does the research say?

Not all research provides the same quality of evidence. The higher the quality, the more certain we are about what the research says about an effect. The words *will* (high quality evidence), *probably* (moderate quality evidence) or *may* (low quality evidence) describe how certain we are about the effect. The word *slightly* means that the effect is small.

The studies showed that dietary advice

- may slightly reduce the systolic blood pressure
- may slightly reduce the diastolic blood pressure
- may slightly reduce the total cholesterol level
- may slightly reduce the LDL cholesterol level

Table of results

What was measured	No advise	Dietary advise	Quality of evidence
Mean change in systolic blood pressure from start of treatment	Mean reduction in systolic blood pressure in the control groups was 1.8 mmHg	Mean reduction in systolic blood pressure in the intervention groups was 3.15 mmHg (2.75 to 5) ¹	⊕⊕○○ Low
Mean change in diastolic blood pressure from start of treatment	Mean reduction in diastolic blood pressure in the control groups was 1.7 mmHg	Mean reduction in diastolic blood pressure in the intervention groups was 2.85 mmHg (2.16 to 3.55) ¹	⊕⊕○○ Low
Mean change in total cholesterol from start of treatment	Mean reduction in total cholesterol in the control groups was 0.7 mmol/L	Mean reduction in total cholesterol in the intervention groups was 0.8 mmol/L (0.7 to 0.9) ¹	⊕⊕○○ Low
Mean change in LDL cholesterol from start of treatment	Mean reduction in LDL cholesterol in the control groups was 0.7 mmol/L	Mean reduction in LDL cholesterol in the intervention groups was 0.9 mmol/L (0.8 to 1) ¹	⊕⊕○○ Low

¹The numbers in the brackets show the range in which the actual effect could be.

Where does this information come from?

The Cochrane Collaboration is an independent global network of volunteers, dedicated to summarizing research about health care.

This information is taken from this Cochrane Review: Brunner EJ, Rees K, Ward K, Burke M, Thorogood M. Dietary advice for reducing cardiovascular risk. Cochrane Database of Systematic Reviews 2007, Issue 4. Art. No.: CD002128. DOI: 10.1002/14651858.CD002128.pub3.

This summary was prepared by

Vigdis Underland, Elin Strømme Nilsen and Ingvil von Mehren Sæterdal, the Nordic Cochrane Centre's Norwegian branch, Norwegian Knowledge Centre for Health Services, on behalf of the Cochrane Complementary and Alternative Medicine Field, and with funding from the US National Center for Complementary and Alternative Medicine (NCCAM) of the US National Institutes of Health (grants number R24 AT001293).

dietary advise compared to no advise for reducing cardiovascular risk

Patient or population: patients with reducing cardiovascular risk

Settings:

Intervention: dietary advise

Comparison: no advise

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk no advise	Corresponding risk dietary advise				
Systolic blood pressure change from baseline mmHg Follow-up: 3 to max 48 months	The mean systolic blood pressure change from baseline in the control groups was -1.8	The mean Systolic blood pressure change from baseline in the intervention groups was 2.07 lower (3.19 to 0.95 lower)		6223 (8 studies ²)	⊕⊕⊕⊖ low ¹	
Diastolic blood pressure change from baseline mmHg Follow-up: 3 to max 48 months	The mean diastolic blood pressure change from baseline in the control groups was -1.7	The mean Diastolic blood pressure change from baseline in the intervention groups was 1.15 lower (1.85 to 0.46 lower)		6223 (8 studies ³)	⊕⊕⊕⊖ low ¹	
Total cholesterol change from baseline mmol/L Follow-up: 3 to max 48 months	The mean total cholesterol change from baseline in the control groups was -0.67	The mean Total cholesterol change from baseline in the intervention groups was 0.16 lower (0.25 to 0.06 lower)		2124 (13 studies ⁴)	⊕⊕⊕⊖ low ¹	
LDL cholesterol change from baseline mmol/L Follow-up: 3 to max 48 months	The mean ldl cholesterol change from baseline in the control groups was -0.7	The mean LDL cholesterol change from baseline in the intervention groups was 0.18 lower (0.27 to 0.1 lower)		1484 (11 studies ⁵)	⊕⊕⊕⊖ low ¹	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval;

GRADE Working Group grades of evidence

High quality: Further research is very unlikely to change our confidence in the estimate of effect.

Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Very low quality: We are very uncertain about the estimate.

¹ Most trials had uncertainty of randomisation procedure, allocation concealment and blinding.

² Analysis 1.1.

³ Analysis 1.2.

⁴ Analysis 1.4.

⁵ Analysis 1.5.