

High cholesterol

[High cholesterol](#), also known as hypercholesterolemia or dyslipidemia, is a condition characterized by elevated levels of cholesterol in the blood. In individuals with high cholesterol, the liver is unable to excrete excess cholesterol, resulting in the development of atherosclerosis (the buildup of plaque deposits in blood vessels). Chronic high cholesterol increases the risk of [cardiovascular](#) diseases.

What is cholesterol?

Cholesterol is a white, waxy substance required for various functions in the body, including providing structure to cell membranes and serving as the base material in the production of [vitamin D](#), steroid hormones, and bile acids. It is transported in the blood by molecules called *lipoproteins*.



Signs, symptoms, and complications

Individuals with high cholesterol typically do not experience any symptoms. It is commonly diagnosed using a lipid panel to detect elevated levels of cholesterol in the blood.

Lipid classification/measurement	Desirable level	Meaning/function
Total cholesterol	< 200 mg/dL (5.2 mmol/L)	All cholesterol values combined
Triglycerides (TGs)	< 150 mg/dL (1.7 mmol/L)	Molecules that enable the transfer and storage of fat in adipocytes (fat cells)
Low-density lipoprotein cholesterol (LDL-C) (commonly called "bad" cholesterol)	< 100 mg/dL (2.6 mmol/L)	Molecules that transport cholesterol from the liver to cells throughout the body to perform its various functions
High-density lipoprotein cholesterol (HDL-C) (commonly called "good" cholesterol)	≥ 60 mg/dL (1.6 mmol/L)	Molecules that transport cholesterol from tissues to the liver to be metabolized and excreted

Uncontrolled or chronic high cholesterol may be associated with complications, including:

- Carotid [artery disease](#)
- Coronary artery disease (e.g., angina, heart attack)
- Peripheral artery disease
- Stroke

Causes and risk factors

- Certain health conditions (e.g., [chronic kidney disease](#), hypertension, [hypothyroidism](#), [type 2 diabetes](#))
- Certain medications (e.g., cyclosporine, diuretics, glucocorticoids)
- Excessive alcohol intake
- Genetics, familial hypercholesterolemia (FH)
- High dietary intake of saturated or trans fat
- Overweight and obesity
- Physical inactivity
- Smoking



Preventing and addressing high cholesterol

Lifestyle modifications shown to improve high cholesterol include a heart-healthy diet, regular physical activity, moderation of alcohol consumption, smoking cessation, and weight management.

Diet

The following table outlines the American Heart Association's dietary recommendations for high cholesterol.

Avoid	Enjoy
Processed grains (e.g., products made with white flour, white rice)	Fruits
Red meats	Vegetables
High-fat dairy products (e.g., butter, cream, whole milk)	Whole grains
Sugar-sweetened beverages	Fish, seafood
Sweets	Legumes
	Low-fat poultry (e.g., chicken, turkey)
	Nuts
	Low-fat dairy products (e.g., low-fat yogurt, skim milk)
	Non-tropical vegetable oils (e.g., olive oil, sunflower oil)

The [DASH diet](#) is another dietary approach shown to improve blood lipid levels and reduce the risk of cardiovascular disease.



Physical activity

Regular physical activity may help lower cholesterol levels and manage weight. For high cholesterol treatment, the AHA recommends adults engage in at least 40 minutes of moderate- to vigorous-intensity aerobic [exercise](#), three to four times a week. Examples of aerobic exercise include brisk walking, cycling, dancing, ice skating, jogging, swimming, and tennis.

Alcohol moderation

Excessive alcohol intake and binge drinking have been associated with elevated total cholesterol. Current guidelines limit alcohol intake to two standard drinks per day for men and one standard drink per day for women. A standard drink is defined as 12 oz (355m mL) of regular beer (5% alcohol), 5 oz (148 mL) of wine (12% alcohol), or 1.5 oz (44 mL) of 80 proof distilled spirits (40% alcohol).

Smoking cessation

In individuals who smoke cigarettes, smoking cessation is an essential step to reducing the risk of high cholesterol and cardiovascular disease. If required, seek social and professional support to help quit smoking.

Weight management

In overweight and obese individuals, a modest weight loss of 5 to 10% of body weight has been associated with improvements in cardiovascular disease risk factors including HDL cholesterol and triglyceride levels.



References

1. Centers for Disease Control and Prevention. (2020, September 8). *Getting your cholesterol checked*. https://www.cdc.gov/cholesterol/cholesterol_screening.htm
2. Craig, M., Yarrarapu, S. N. S., & Dimri, M. (2020). Biochemistry, cholesterol. In *StatPearls*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK513326/>
3. National Heart, Lung, and Blood Institute. (n.d.). *Blood cholesterol*. <https://www.nhlbi.nih.gov/health-topics/blood-cholesterol>
4. Grundy, S. M., Stone, N. J., Bailey, A. L., Beam, C., Birtcher, K. K., Blumenthal, R. S., ... & Yeboah, J. (2019). 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA guideline on the management of blood cholesterol: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation*, 139(25), e1082–e1143.
5. Huff, T., Boyd, B., & Jialal, I. (2020). Physiology, cholesterol. In *StatPearls*. StatPearls Publishing.
6. Karanchi, H., Muppidi, V., & Wyne, K. (2020). Hypertriglyceridemia. In *StatPearls*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK459368/>
7. Karr, S. (2017). Epidemiology and management of hyperlipidemia. *The American Journal of Managed Care*, 23(9 Suppl), S139–S148.
8. Rugee, B., Balslem, H., & Sehgal, R. (2011). Lipid conversion factors. In *Screening and treatment of subclinical hypothyroidism or hyperthyroidism*. Agency for Healthcare Research and Quality (US) <https://www.ncbi.nlm.nih.gov/books/NBK83505/>
9. U.S. Department of Health and Human Services and U.S. Department of Agriculture. (2020). *Dietary Guidelines for Americans 2020-2025*. https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary_Guidelines_for_Americans_2020-2025.pdf



For more educational content and resources: www.fullscript.com/learn



This handout was developed and medically reviewed by Fullscript's Integrative Medical Advisory team.
*These statements have not been evaluated by the Food and Drug Administration. This information is not intended to diagnose, treat, cure, or prevent any disease.

Updated: November 2021