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Cholesterol

Also called: Hypercholesterolemia, Hyperlipidemia, Hyperlipoproteinemia

What is cholesterol?

Cholesterol is a waxy, fat-like substance that's found in all the cells in your body. Your body needs some cholesterol to make hormones [<https://medlineplus.gov/hormones.html>] , vitamin D [<https://medlineplus.gov/vitaminD.html>] , and substances that help you digest foods. Your body makes all the cholesterol it needs. Cholesterol is also found in foods from animal sources, such as egg yolks, meat, and cheese.

If you have too much cholesterol in your blood, it can combine with other substances in the blood to form plaque. Plaque sticks to the walls of your arteries. This buildup of plaque is known as **atherosclerosis** [<https://medlineplus.gov/atherosclerosis.html>] . It can lead to coronary artery disease [<https://medlineplus.gov/coronaryarterydisease.html>] , a condition in which your coronary arteries become narrow or even blocked.

What are HDL, LDL, and VLDL?

HDL, LDL, and VLDL are lipoproteins. They are a combination of fat (lipid) and protein. The lipids need to be attached to the proteins so they can move through the blood. Different types of lipoproteins have different purposes:

- **HDL** [<https://medlineplus.gov/hdlthegoodcholesterol.html>] stands for high-density lipoprotein. It is sometimes called "good" cholesterol because it helps your body get rid of cholesterol. It carries cholesterol from other parts of your body back to your liver. Your liver then removes the cholesterol from your body.
- **LDL** [<https://medlineplus.gov/ldlthebadcholesterol.html>] stands for low-density lipoprotein. It is sometimes called "bad" cholesterol because a high LDL level leads to the buildup of plaque in your arteries.
- **VLDL** [<https://medlineplus.gov/vldlcholesterol.html>] stands for very low-density lipoprotein. Some people also call VLDL a "bad" cholesterol because it too contributes to the buildup of plaque in your arteries. But VLDL and LDL are different; VLDL mainly carries triglycerides [<https://medlineplus.gov/triglycerides.html>] and LDL mainly carries cholesterol.

What causes high cholesterol?

The most common cause of high cholesterol is an unhealthy lifestyle. This can include:

- **Unhealthy eating habits**, such as eating lots of saturated fats [<https://medlineplus.gov/dietaryfats.html>] . These fats are found in red meats, full-fat dairy products, chocolate, some baked goods, and many deep-fried and processed foods. Eating too much saturated fat can raise your LDL (bad) cholesterol.
- **Lack of physical activity** [<https://medlineplus.gov/healthrisksofaninactivelifestyle.html>] , with lots of sitting and little exercise. This lowers your HDL (good) cholesterol.
- **Smoking** [<https://medlineplus.gov/smoking.html>] , which lowers HDL cholesterol, especially in women. It also raises your LDL cholesterol.
- **Stress** [<https://medlineplus.gov/stress.html>] , which may raise levels of certain hormones such as corticosteroids. These can cause your body to make more cholesterol.
- **Drinking too much alcohol** [<https://medlineplus.gov/alcohol.html>] , which can raise your total cholesterol level.

Genetics may also cause people to have high cholesterol. For example, [familial hypercholesterolemia](https://medlineplus.gov/genetics/condition/familial-hypercholesterolemia/) (FH) is an inherited condition that causes very high levels of cholesterol in the blood. Other medical conditions and certain medicines may also raise LDL cholesterol levels or lower HDL cholesterol levels.

What can raise my risk of high cholesterol?

A variety of things can raise your risk of high cholesterol:

- **Age.** Your cholesterol levels tend to rise as you get older. Even though it is less common, younger people, including children and teens [\[https://medlineplus.gov/highcholesterolinchildrenandteens.html\]](https://medlineplus.gov/highcholesterolinchildrenandteens.html) , can also have high cholesterol.
- **Sex.** Between ages 20 and 39, men have a greater risk of high total cholesterol than women. But after **menopause** [\[https://medlineplus.gov/menopause.html\]](https://medlineplus.gov/menopause.html) , a woman's risk goes up. This happens because menopause lowers levels of female hormones that may protect against high blood cholesterol.
- **Family history.** High blood cholesterol can run in families.
- **Other health conditions.** Conditions such as diabetes [\[https://medlineplus.gov/diabetes.html\]](https://medlineplus.gov/diabetes.html) , chronic kidney disease [\[https://medlineplus.gov/chronickidneydisease.html\]](https://medlineplus.gov/chronickidneydisease.html) , HIV [\[https://medlineplus.gov/hiv.html\]](https://medlineplus.gov/hiv.html) , and lupus [\[https://medlineplus.gov/lupus.html\]](https://medlineplus.gov/lupus.html) can raise your risk of high cholesterol.
- **Medicines.** Certain medicines can raise your level of LDL cholesterol or lower your level of HDL cholesterol, including:
 - Steroids [\[https://medlineplus.gov/steroids.html\]](https://medlineplus.gov/steroids.html)
 - Some chemotherapy medicines [\[https://medlineplus.gov/cancerchemotherapy.html\]](https://medlineplus.gov/cancerchemotherapy.html)
 - Medicines taken after an organ transplant [\[https://medlineplus.gov/organtransplantation.html\]](https://medlineplus.gov/organtransplantation.html)
 - Medicines for certain heart conditions
 - Certain acne [\[https://medlineplus.gov/acne.html\]](https://medlineplus.gov/acne.html) medicines
- **Race or ethnicity.** People from certain racial or ethnic groups may have an increased risk of high cholesterol. For example, Asian Americans are more likely to have high levels of LDL cholesterol than other groups. And non-Hispanic White people are more likely than other groups to have high levels of total cholesterol.
- **Weight.** Being overweight or having obesity raises your cholesterol level.

What other health problems can high cholesterol cause?

Undiagnosed or untreated high blood cholesterol can lead to serious health problems:

- If you have large deposits of plaque in your arteries, an area of plaque can rupture (break open). This can cause a **blood clot** [\[https://medlineplus.gov/bloodclots.html\]](https://medlineplus.gov/bloodclots.html) to form on the surface of the plaque. If the clot becomes large enough, it can mostly or completely block blood flow in a coronary artery.
- If the flow of oxygen-rich blood to your heart muscle is reduced or blocked, it can cause **angina** [\[https://medlineplus.gov/angina.html\]](https://medlineplus.gov/angina.html) (chest pain) or a **heart attack** [\[https://medlineplus.gov/heartattack.html\]](https://medlineplus.gov/heartattack.html) .
- Plaque also can build up in other arteries in your body, including the arteries that bring oxygen-rich blood to your brain and limbs. This can lead to problems such as **carotid artery disease** [\[https://medlineplus.gov/carotidarterydisease.html\]](https://medlineplus.gov/carotidarterydisease.html) , **stroke** [\[https://medlineplus.gov/stroke.html\]](https://medlineplus.gov/stroke.html) , and **peripheral arterial disease** [\[https://medlineplus.gov/peripheralarterialdisease.html\]](https://medlineplus.gov/peripheralarterialdisease.html) .

How is high cholesterol diagnosed?

There are usually no signs or symptoms that you have high cholesterol. A blood test [\[https://medlineplus.gov/lab-tests/cholesterol-levels/\]](https://medlineplus.gov/lab-tests/cholesterol-levels/) can measure your cholesterol levels

[\[https://medlineplus.gov/cholesterollevelswhatyouneedtoknow.html\]](https://medlineplus.gov/cholesterollevelswhatyouneedtoknow.html) . When and how often you should get this test depends on your age, risk factors, and family history. The general recommendations are:

For people who are age 19 or younger::

- The first test should be between ages 9 to 11
- Children should have the test again every 5 years
- Some children may have this test starting at age 2 if there is a family history of high blood cholesterol, heart attack, or stroke

For people who are ages 20 to 65:

- Younger adults should have the test every 5 years
- Men ages 45 to 65 and women ages 55 to 65 should have it every 1 to 2 years

For people over age 65:

- They should be tested every year

How can I lower my cholesterol?



You can lower your cholesterol [<https://medlineplus.gov/howtolowercholesterol.html>] through heart-healthy lifestyle changes. They include a heart-healthy eating plan [<https://medlineplus.gov/howtolowercholesterolwithdiet.html>] , weight management [<https://medlineplus.gov/weightcontrol.html>] , and regular physical activity [<https://medlineplus.gov/howmuchexercisedoined.html>] .

If the lifestyle changes alone do not lower your cholesterol enough, you may also need to take medicines. There are several types of cholesterol-lowering medicines [<https://medlineplus.gov/cholesterolmedicines.html>] available, including statins [<https://medlineplus.gov/statins.html>] . If you take medicines to lower your cholesterol, you still should continue with the lifestyle changes.




Some people with familial hypercholesterolemia (FH) may receive a treatment called lipoprotein apheresis. This treatment uses a filtering machine to remove LDL cholesterol from the blood. Then the machine returns the rest of the blood back to the person.

NIH: National Heart, Lung, and Blood Institute

Start Here

- **Control Your Cholesterol: Protect Yourself from Heart Attack and Stroke** [<https://newsinhealth.nih.gov/2019/02/control-your-cholesterol>]  (National Institutes of Health)
Also in Spanish [<https://salud.nih.gov/recursos-de-salud/nih-noticias-de-salud/control-su-colesterol>]
- **What Is Blood Cholesterol?** [<https://www.nhlbi.nih.gov/health/blood-cholesterol>]  (National Heart, Lung, and Blood Institute)
Also in Spanish [<https://www.nhlbi.nih.gov/es/salud/colesterol-en-sangre>]


Diagnosis and Tests

- **Cholesterol Levels** [<https://medlineplus.gov/lab-tests/cholesterol-levels/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/niveles-de-colesterol/>]
- **Fasting for a Blood Test** [<https://medlineplus.gov/lab-tests/fasting-for-a-blood-test/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/ayunar-para-una-prueba-de-sangre/>]
- **Home-Use Test Kits -- Cholesterol** [<https://www.fda.gov/medical-devices/home-use-tests/cholesterol>]
(Food and Drug Administration)
- **Lipoprotein (a) Blood Test** [<https://medlineplus.gov/lab-tests/lipoprotein-a-blood-test/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/analisis-de-sangre-de-lipoproteina-a/>]

Prevention and Risk Factors

- **Community Health Worker Multicultural Resources** [<https://www.nhlbi.nih.gov/education/heart-truth/CHW/multicultural-resources>] (National Heart, Lung, and Blood Institute) - **PDF**

Treatments and Therapies

- **Cholesterol Medicines: MedlinePlus Health Topic** [<https://medlineplus.gov/cholesterolmedicines.html>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/cholesterolmedicines.html>]

[How to Lower Cholesterol with Diet: MedlinePlus Health Topic \[https://medlineplus.gov/howtolowercholesterolwithdiet.html\]](https://medlineplus.gov/howtolowercholesterolwithdiet.html)

 (National Library of Medicine)

Also in Spanish [<https://medlineplus.gov/spanish/howtolowercholesterolwithdiet.html>]

- [How to Lower Cholesterol: MedlinePlus Health Topic \[https://medlineplus.gov/howtolowercholesterol.html\]](https://medlineplus.gov/howtolowercholesterol.html)

 (National Library of Medicine)

Also in Spanish [<https://medlineplus.gov/spanish/howtolowercholesterol.html>]

- [Statins: MedlinePlus Health Topic \[https://medlineplus.gov/statins.html\]](https://medlineplus.gov/statins.html)  (National Library of Medicine)

Also in Spanish [<https://medlineplus.gov/spanish/statins.html>]






Related Issues

- [8 Tips: High Cholesterol and Dietary Supplements \[https://www.nccih.nih.gov/health/tips/high-cholesterol-and-dietary-supplements\]](https://www.nccih.nih.gov/health/tips/high-cholesterol-and-dietary-supplements)  (National Center for Complementary and Integrative Health)



Specifics

- [Cholesterol Level: Can It Be Too Low? \[https://www.mayoclinic.org/diseases-conditions/high-blood-cholesterol/expert-answers/cholesterol-level/FAQ-20057952?p=1\]](https://www.mayoclinic.org/diseases-conditions/high-blood-cholesterol/expert-answers/cholesterol-level/FAQ-20057952?p=1) (Mayo Foundation for Medical Education and Research)
Also in Spanish [<https://www.mayoclinic.org/es/diseases-conditions/high-blood-cholesterol/expert-answers/cholesterol-level/faq-20057952?p=1>]
- [Common Misconceptions about Cholesterol \[https://www.heart.org/en/health-topics/cholesterol/about-cholesterol/common-misconceptions-about-cholesterol\]](https://www.heart.org/en/health-topics/cholesterol/about-cholesterol/common-misconceptions-about-cholesterol) (American Heart Association)
- [Overview of Cholesterol and Lipid Disorders \[https://www.merckmanuals.com/home/hormonal-and-metabolic-disorders/cholesterol-disorders/overview-of-cholesterol-and-lipid-disorders\]](https://www.merckmanuals.com/home/hormonal-and-metabolic-disorders/cholesterol-disorders/overview-of-cholesterol-and-lipid-disorders) (Merck & Co., Inc.)
Also in Spanish [<https://www.merckmanuals.com/es-us/hogar/trastornos-hormonales-y-metab%C3%B3licos/trastornos-relacionados-con-el-colesterol/introducci%C3%B3n-a-los-trastornos-relacionados-con-el-colesterol-y-con-los-l%C3%ADpidos>]
- [Xanthelasma Palpebrarum \[https://skinsight.com/skin-conditions/xanthelasma-palpebrarum/?lmiw9cApl=1\]](https://skinsight.com/skin-conditions/xanthelasma-palpebrarum/?lmiw9cApl=1) (VisualDX)

Genetics

- [Familial HDL deficiency: MedlinePlus Genetics \[https://medlineplus.gov/genetics/condition/familial-hdl-deficiency\]](https://medlineplus.gov/genetics/condition/familial-hdl-deficiency)  (National Library of Medicine)
- [Familial hypercholesterolemia: MedlinePlus Genetics \[https://medlineplus.gov/genetics/condition/familial-hypercholesterolemia\]](https://medlineplus.gov/genetics/condition/familial-hypercholesterolemia)  (National Library of Medicine)
- [Hepatic lipase deficiency: MedlinePlus Genetics \[https://medlineplus.gov/genetics/condition/hepatic-lipase-deficiency\]](https://medlineplus.gov/genetics/condition/hepatic-lipase-deficiency)  (National Library of Medicine)
- [Learning about Familial Hypercholesterolemia \[https://www.genome.gov/Genetic-Disorders/Familial-Hypercholesterolemia\]](https://www.genome.gov/Genetic-Disorders/Familial-Hypercholesterolemia)  (National Human Genome Research Institute)
- [Tangier disease: MedlinePlus Genetics \[https://medlineplus.gov/genetics/condition/tangier-disease\]](https://medlineplus.gov/genetics/condition/tangier-disease)  (National Library of Medicine)


Videos and Tutorials

- [Cholesterol Good and Bad \[https://medlineplus.gov/medlineplus-videos/cholesterol-good-and-bad/\]](https://medlineplus.gov/medlineplus-videos/cholesterol-good-and-bad/)   (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/videos-de-medlineplus/colesterol-bueno-y-colesterol-malo/>]


Test Your Knowledge

- [Test Your Cholesterol Knowledge \[https://medlineplus.gov/ency/quiz/000403_9.htm\]](https://medlineplus.gov/ency/quiz/000403_9.htm) (Medical Encyclopedia)
Also in Spanish [https://medlineplus.gov/spanish/ency/quiz/000403_69.htm]


Statistics and Research


- [High Cholesterol and Natural Products: What the Science Says \[https://www.nccih.nih.gov/health/providers/digest/high-cholesterol-and-natural-products-science\]](https://www.nccih.nih.gov/health/providers/digest/high-cholesterol-and-natural-products-science)  (National Center for Complementary and Integrative Health)

• High Cholesterol Facts [<https://www.cdc.gov/cholesterol/data-research/facts-stats/>] (Centers for Disease Control and Prevention)

• Science Snippet: Lipids in the Limelight [<https://biobeat.nigms.nih.gov/2022/07/science-snippet-lipids-in-the-limelight/>]  (National Institute of General Medical Sciences)

Clinical Trials

• ClinicalTrials.gov: Cholesterol [<https://clinicaltrials.gov/search?cond=%22Cholesterol%22&aggFilters=status:not%20rec>]  (National Institutes of Health)

• ClinicalTrials.gov: Hypercholesterolemia [<https://clinicaltrials.gov/search?cond=%22Hypercholesterolemia%22&aggFilters=status:not%20rec>]  (National Institutes of Health)

• ClinicalTrials.gov: Hyperlipoproteinemia Type II [<https://clinicaltrials.gov/search?cond=%22Hyperlipoproteinemia+Type+II%22&aggFilters=status:not%20rec>]  (National Institutes of Health)

• ClinicalTrials.gov: Hyperlipoproteinemia Type III [<https://clinicaltrials.gov/search?cond=%22Hyperlipoproteinemia+Type+III%22&aggFilters=status:not%20rec>]  (National Institutes of Health)

Journal Articles

References and abstracts from MEDLINE/PubMed (National Library of Medicine)

• Article: Multiply doses of FDC of rosuvastatin and ezetimibe versus rosuvastatin monotherapy... [<https://www.ncbi.nlm.nih.gov/pubmed/40696391>]

• Article: Efficacy and safety of Tafolecimab in Chinese patients with type 2... [<https://www.ncbi.nlm.nih.gov/pubmed/40611077>]

• Article: Lower cholesterol level on admission predicts poor outcome after prolonged cardiac... [<https://www.ncbi.nlm.nih.gov/pubmed/40594705>]


• Cholesterol -- see more articles [<https://pubmed.ncbi.nlm.nih.gov/?term=%22Cholesterol%22%5Bmajr%3Anoexp%5D+OR+%22Hypercholesterolemia%22%5Bmajr%3Anoexp%5D+AND+humans%5Bmh%5D+AND+english%5Bla%5D+AND+%22last+1+Year%22+%5Bdat%5D+AND+%28patient+education+handout%5Bpt%5D+OR+guideline%5Bpt%5D+OR+clinical+trial%5Bpt%5D%29++NOT+%28letter%5Bpt%5D+OR+case+reports%5Bpt%5D+OR+editorial%5Bpt%5D+OR+comment%5Bpt%5D%29+AND+free+full+text%5Bsb%5D++>]

Find an Expert

• American Heart Association [<https://www.heart.org/en/>]

• National Heart, Lung, and Blood Institute [<https://www.nhlbi.nih.gov/>] 

Children

• High Cholesterol in Children and Teens: MedlinePlus Health Topic [<https://medlineplus.gov/highcholesterolinchildrenandteens.html>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/highcholesterolinchildrenandteens.html>]

Patient Handouts

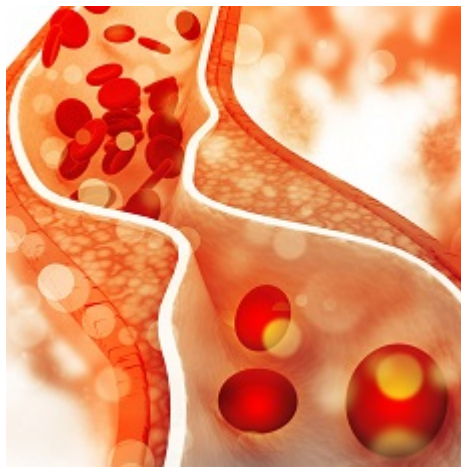
• Cholesterol and lifestyle [<https://medlineplus.gov/ency/patientinstructions/000099.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/patientinstructions/000099.htm>]

• Cholesterol testing and results [<https://medlineplus.gov/ency/patientinstructions/000386.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/patientinstructions/000386.htm>]

• Familial combined hyperlipidemia [<https://medlineplus.gov/ency/article/000396.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/000396.htm>]

• Familial hypercholesterolemia [<https://medlineplus.gov/ency/article/000392.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/000392.htm>]

• High cholesterol - children [<https://medlineplus.gov/ency/article/007701.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/007701.htm>]



MEDICAL ENCYCLOPEDIA

Apolipoprotein B100 [<https://medlineplus.gov/ency/article/003502.htm>]

Apolipoprotein CII [<https://medlineplus.gov/ency/article/003505.htm>]

Bile acid sequestrants for cholesterol [<https://medlineplus.gov/ency/patientinstructions/000787.htm>]

Cholesterol - drug treatment [<https://medlineplus.gov/ency/patientinstructions/000314.htm>]

Cholesterol - what to ask your doctor [<https://medlineplus.gov/ency/patientinstructions/000211.htm>]

Cholesterol and lifestyle [<https://medlineplus.gov/ency/patientinstructions/000099.htm>]

Cholesterol testing and results [<https://medlineplus.gov/ency/patientinstructions/000386.htm>]

Familial combined hyperlipidemia [<https://medlineplus.gov/ency/article/000396.htm>]

Familial dysbetalipoproteinemia [<https://medlineplus.gov/ency/article/000402.htm>]

Familial hypercholesterolemia [<https://medlineplus.gov/ency/article/000392.htm>]

HDL test [<https://medlineplus.gov/ency/article/007810.htm>]

High blood cholesterol levels [<https://medlineplus.gov/ency/article/000403.htm>]

High cholesterol - children [<https://medlineplus.gov/ency/article/007701.htm>]

How to take statins [<https://medlineplus.gov/ency/patientinstructions/000748.htm>]

LDL test [<https://medlineplus.gov/ency/article/007811.htm>]

Lipid profile test [<https://medlineplus.gov/ency/article/007812.htm>]

Niacin for cholesterol [<https://medlineplus.gov/ency/patientinstructions/000788.htm>]

Total cholesterol [<https://medlineplus.gov/ency/article/007813.htm>]

VLDL test [<https://medlineplus.gov/ency/article/003494.htm>]

Related Health Topics

Cholesterol Levels: What You Need to Know [<https://medlineplus.gov/cholesterollevelswhatyouneedtoknow.html>]

Cholesterol Medicines [<https://medlineplus.gov/cholesterolmedicines.html>]

Dietary Fats [<https://medlineplus.gov/dietaryfats.html>]

HDL: The "Good" Cholesterol [<https://medlineplus.gov/hdlthegoodcholesterol.html>]

Heart Diseases [<https://medlineplus.gov/heartdiseases.html>]

[How to Lower Cholesterol \[https://medlineplus.gov/howtolowercholesterol.html\]](https://medlineplus.gov/howtolowercholesterol.html)

[How to Lower Cholesterol with Diet \[https://medlineplus.gov/howtolowercholesterolwithdiet.html\]](https://medlineplus.gov/howtolowercholesterolwithdiet.html)

[LDL: The "Bad" Cholesterol \[https://medlineplus.gov/ldlthebadcholesterol.html\]](https://medlineplus.gov/ldlthebadcholesterol.html)

[Nutrition \[https://medlineplus.gov/nutrition.html\]](https://medlineplus.gov/nutrition.html)

[Triglycerides \[https://medlineplus.gov/triglycerides.html\]](https://medlineplus.gov/triglycerides.html)

[VLDL Cholesterol \[https://medlineplus.gov/vldlcholesterol.html\]](https://medlineplus.gov/vldlcholesterol.html)

National Institutes of Health

The primary NIH organization for research on *Cholesterol* is the National Heart, Lung, and Blood Institute
[\[http://www.nhlbi.nih.gov/\]](http://www.nhlbi.nih.gov/)

Other Languages

Find health information in languages other than English [\[https://medlineplus.gov/languages/cholesterol.html\]](https://medlineplus.gov/languages/cholesterol.html) on *Cholesterol*

NIH MedlinePlus Magazine

Genetic Condition Teaches Teen Importance of Heart Health [\[https://magazine.medlineplus.gov/article/genetic-condition-teaches-teen-importance-of-heart-health\]](https://magazine.medlineplus.gov/article/genetic-condition-teaches-teen-importance-of-heart-health)

What You Do Now Can Prevent Heart Disease Later [\[https://magazine.medlineplus.gov/article/what-you-do-now-can-prevent-heart-disease-later\]](https://magazine.medlineplus.gov/article/what-you-do-now-can-prevent-heart-disease-later)

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