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# Could Thyroid Disease Lead To High Cholesterol?

## Addressing Thyroid Disease Could Help To Lower Your Risk Of Heart Disease

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**(LifeWire)** - When you think of high cholesterol causes, don't forget thyroid problems.

Most people know that cholesterol levels are tied to heart disease, and affected by diet, exercise, and genes. Too much dietary fat, and cholesterol levels can skyrocket. But cholesterol is also tied to thyroid levels and the body's overall metabolism. Understanding this link can help to keep the body's engine running and protect your heart health.

### **Cholesterol and Thyroid: The Link**

The [thyroid](#), a butterfly-shaped gland located in the neck, produces the hormone [thyroxine](#). Thyroxine acts to regulate our metabolism, or how quickly we burn energy. In a sense, the thyroid acts like the body's accelerator pedal. When the thyroid produces more thyroxine, it is similar to pressing the accelerator and revving up the engine. When the thyroid doesn't produce enough thyroxine, it is as though your foot is off the gas; the body slows down.

When the thyroid slows down (hypothyroidism), it also slows down the body's ability to process cholesterol. This processing lag is largely explained by a reduction in the number and activity of what are known as LDL receptors. LDL receptors help remove bad cholesterol from the body; when the number of receptors decreases, LDL accumulates in the bloodstream, acting to increase both LDL and total cholesterol levels.

Along with the risk of higher cholesterol, a 2008 study found that patients with low thyroid hormone levels were also at greater risk for fatal [coronary artery disease](#). This association was stronger for women than for men. This finding strengthens the web of connections between high cholesterol and heart disease, suggesting that high cholesterol levels caused by low thyroid function -- along with other cardiovascular risk factors such as high blood pressure, a high-fat diet and smoking -- contribute to overall heart risk.

An overactive thyroid ([hyperthyroidism](#)) is far less common than [hypothyroidism](#), affecting 1.3% of the population (versus 4.6% for hypothyroidism). While hyperthyroidism can lead to cardiovascular problems, including an increase in heart rhythm disorders, it actually reduces cholesterol levels. Just as the number and activity of LDL receptors decrease in hypothyroidism, the opposite happens in hyperthyroidism. The increase of LDL receptors and receptor activity can lead to increased metabolism of cholesterol molecules and lower cholesterol blood levels. Once hyperthyroidism is treated and thyroid hormone levels return to normal, cholesterol levels return to pre-hyperthyroid levels.

### **Diagnosing and Treating Hypothyroidism and Cholesterol**

Just like cholesterol, thyroid levels are checked by a simple blood test that measures the blood levels of thyroxine and thyroid-stimulating hormone ([TSH](#)). TSH is produced by the pituitary gland, which is located in the brain. If thyroxine levels in the bloodstream are low, the pituitary gland releases more TSH in an effort to stimulate the thyroid to make more thyroid hormone. Conversely, if thyroxine levels are high, the pituitary gland releases less TSH, allowing the hormone levels to readjust downward.

Hypothyroidism is easily treated with thyroid replacement hormone such as [Levoxyll](#) and [Synthroid](#) (levothyroxine), [Cytomel](#) (liothyronine) or [Armour Thyroid](#) (thyroid desiccated) and can be monitored with repeat blood tests to check TSH levels. These medications increase thyroid hormone levels to a normal range, reactivating and increasing the number of LDL receptors. With more active LDL receptors, the body is able to process more "bad" LDL cholesterol out of the bloodstream, causing a drop in LDL and total cholesterol to help return high cholesterol to a healthy level. Studies have shown that patients with very low thyroid function tend to experience the most significant improvement in cholesterol levels as a result of thyroid replacement therapy.

Even mildly depressed thyroid levels that would not usually require treatment with thyroid replacement medications are associated with higher cholesterol levels. Some research studies have shown that thyroid replacement in these cases does not help to lower cholesterol levels. Therefore, people with mildly low thyroid and high cholesterol may need to take cholesterol lowering medications in order to combat this problem.

### **When to Have a Thyroid Function Test**

Experts recommend that anyone with high cholesterol levels be screened for hypothyroidism with a thyroid function test. Even if you do not feel tired or run down, as though your body's engine is idling instead of revving, you may be at higher risk for low thyroid levels that could impact your overall risk of heart disease.

Similarly, people with hypothyroidism should be screened for high cholesterol and cardiovascular disease. While treating low thyroid levels may help to correct high cholesterol in some patients, you may need additional medications and heart healthy lifestyle changes in order to reduce the risk of heart disease.

By understanding the links between cholesterol and thyroid, you can correct your high cholesterol levels and reduce your risk of developing coronary heart disease -- including a heart attack -- in the future.

#### Sources:

Asvold, Bjorn O., et. al.. "Thyrotropin Levels and Risk of Fatal Coronary Heart Disease: The HUNT Study." *Archives of Internal Medicine*. 168. 2008. 855 - 860.

Asvold, Bjorn O., et. al.. "The Association Between TSH Within the Reference Range and Serum Lipid Concentrations in a Population-Based Study: The HUNT Study." *European Journal of Endocrinology*. 156. 2007.181 - 186.

Diekman, T., et. al.. "Prevalence and Correction of Hypothyroidism in a Large Cohort of Patients Referred for Dyslipidemia." *Archives of Internal Medicine*. 155. 1995. 1490 - 1495.

O'Brien, T., et. al. "Hyperlipidemia in Patients With Primary and Secondary Hypothyroidism." *Mayo Clinic Proceedings*. 68. 1993. 860 - 866.

Ross, Douglas S. "Diagnosis of and Screening for Hypothyroidism." *UpToDate.com*. 2008. UpToDate. 3 May 2008.

<[http://www.uptodate.com/online/content/topic.do?topicKey=thyroid/9963&selectedTitle=1~150&source=search\\_result](http://www.uptodate.com/online/content/topic.do?topicKey=thyroid/9963&selectedTitle=1~150&source=search_result)> (subscription).

Ross, Douglas S. "Lipid Abnormalities in Thyroid Disease." *UpToDate.com*. 2008. UpToDate. 3 May 2008.

<[http://www.uptodate.com/online/content/topic.do?topicKey=thyroid/21252&selectedTitle=1~150&source=search\\_result](http://www.uptodate.com/online/content/topic.do?topicKey=thyroid/21252&selectedTitle=1~150&source=search_result)> (subscription)

Ross, Douglas S. "Overview of the Clinical Manifestations of Hyperthyroidism in Adults." *UpToDate.com*. 2008. UpToDate. 5 May 2008.

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