Decoding Cholesterol

What is Cholesterol?

Cholesterol is a structural component in our cells and it is essential for producing steroid hormones, bile acids, and vitamin D. Our bodies are capable of producing all the cholesterol needed for these processes.

High levels of cholesterol in our blood can lead to atherosclerosis (hardening of the arteries due to plaque buildup). This can lead to coronary artery disease (CAD), stroke, chronic kidney failure (CKD), and peripheral artery disease (PAD).

What About HDL and LDL?

HDL, or high-density lipoprotein, is typically considered our “good” cholesterol because it helps carry cholesterol to our liver, which then removes the cholesterol from our bodies.

LDL, or low-density lipoprotein, is usually considered our “bad” cholesterol because higher levels lead to more plaque buildup in our arteries.

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What Impacts Cholesterol?

What we eat, how much we move, and other habits can impact our blood cholesterol levels.

Here are the basics:

- Eating more saturated fats can raise LDL cholesterol
- Limiting our physical activity can lower our HDL cholesterol
- Smoking can lower HDL cholesterol and raise LDL cholesterol
- Stress can raise levels of certain hormones, which can lead our body to make more cholesterol
- Drinking too much alcohol can also raise our total cholesterol

A great goal for cholesterol management is to lower your LDL cholesterol to keep it in the target range.

While HDL is helpful, higher levels of HDL are not always correlated with a decreased risk of cardiovascular disease (CVD).

What About Triglycerides?

Triglycerides are created in our bodies when we consume more calories than our bodies need at this time. These calories can come from carbohydrates, protein, and fats.

Higher triglyceride levels are associated with a higher risk of stroke, heart attack, and heart disease.

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Typical Lipid Analysis Components

Type	Target	Use in Our Bodies
Total Cholesterol	<200 mg/dL in most cases	A measurement combining the types of cholesterol in your body into one overview Does not provide sufficient information about risk of heart disease
HDL	>60 mg/dL is ideal; at least >40 mg/dL	Our “good” cholesterol Carries free cholesterol away from the arteries to be removed from the body Higher levels may be associated with a lower risk of heart disease and stroke
LDL	<70 mg/dL if known CVD; <100 mg/dL is ideal; at least <130 mg/dL	Our “bad” cholesterol Accumulates in the artery walls and may cause blockages Higher levels associated with increased risk of stroke and heart attack
VLDL	<30 mg/dL	Transports triglycerides Can contribute to plague buildup in the arteries
Triglycerides	<150 mg/dL is ideal; at least <200 mg/dL	Not cholesterol but measured in the same test panel The most common type of fat in our bodies Stores energy from our diet High levels in combination with high LDL or low HDL may cause fatty buildup in the artery walls

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Ratios for Measuring Good Health

Some doctors will consider ratios using your cholesterol panel data. Here are some of the common ratios and what they mean.

Ratio	Target	What Results Mean
Total Cholesterol HDL Ratio	Ideal: Under 3.5 Good: Under 5 Bad: Over 5	Total Cholesterol / HDL = Total Cholesterol HDL Ratio Higher rations correlate with higher risk of health problems, including heart disease
LDL-HDL Ratio	Ideal: Under 2.0 Good: Under 5.0 Bad: Over 5.0	LDL / HDL = LDL-HDL Ratio Higher ratio is linked to an increased risk of sudden cardiac death in the middle-aged male population (one study)
Triglyceride HDL Ratio	Ideal: 2.0 or less Good: 4.0 - 6.0 Bad: Over 6.0	Triglyceride Level / HDL = Triglyceride HDL Ratio Some evidence suggests that high triglyceride HDL rations could indicate a higher risk of metabolic syndrome
Non-HDL Cholesterol Ratio	N/A	Total Cholesterol - HDL = Non-HDL Cholesterol Ratio Non-HDL cholesterol seems to have a stronger correlation with poor health outcomes.