

Nutriti



n Fact Sheet

LDL "The Bad Cholesterol"

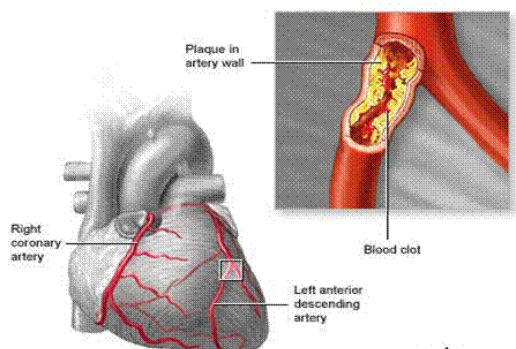
- LDL is a type of cholesterol transporter that moves cholesterol away from the liver and out to peripheral tissues. Dietary intake of saturated and trans fats, as well as cholesterol can increase LDL.
- When too much LDL cholesterol circulates in the blood, it can slowly build up in the inner walls of the arteries that feed the heart and brain, making them narrow. If a clot forms and blocks a narrowed artery, a **heart attack** or **stroke** can result.



How can LDL cause disease?

Blood vessels in the body are constantly exposed to sheer stress caused by blood flow, which can lead to inflammation. The body's immune response to inflammation attracts LDL to the injury site, which can lead to plaque formation or atherosclerosis.

Because inflammation is common, persons with elevated levels of LDL are at increased risk for narrowing arteries in the heart (**coronary artery disease**), brain (leading to **stroke**), or even in the extremities (**peripheral arterial disease**). Unfortunately, once plaque formation has begun, the immune response continues to attract LDL to the injury site, unless cardiovascular risks factors are aggressively reduced, or surgical intervention is employed.



Recommend Range for LDL*

Less than 70 mg/dL	Optimal**
Less than 100 mg/dL	Ideal
100 to 129 mg/dL	Slightly Elevated
130 to 159 mg/dL	Moderately Elevated
160 to 189 mg/dL	Severely Elevated
190 mg/dL and above	Yikes!!!

*Data from the American Heart Association

**Recommended range for persons with more than 2 risk factors for heart disease, known cardiovascular disease, and/or diabetes mellitus







What causes LDL to elevate?

1. **Foods you eat:** saturated fats, trans fats, and cholesterol - examples include egg yolks, meat, cheese, cream, fried foods
2. **Being overweight:** body fat is highly correlated with elevated LDL
3. **Lack of physical activity:** sedentary lifestyle can lead to weight gain, which can elevate your LDL
4. **Genetics:** Genetic predisposition (family history) can cause elevated LDL
5. **Age:** LDL levels elevate in both men and women as they age.

Treating LDL

Lifestyle!

Doctors recommend diet and exercise for patients with elevated LDL. Adopting a healthier lifestyle can help lower LDL, and bring most people into the ideal range (less than 100 mg/dL).

Nutrition Recommendations			Exercise Recommendations	
Eat More Fiber (25-30g/day)		Eat More Good Fats (30g/day)	Type: Aerobic Exercise	
Vegetables Carrots Corn Broccoli Green Beans Green peas Lettuce Mushrooms Raw Spinach Potatoes Beans Kidney Pinto Garbanzo 	Fruits Apple Avocado Banana Blackberries  Blueberries Orange Peach Strawberries  Nuts Almonds Peanuts Walnuts	Monounsaturated Fats Avocados Peanuts Almonds Canola Oil Olive Oil Peanut Oil  Polyunsaturated Fats Safflower Oil Corn Oil Flaxseed Oil Fatty Fish Seeds Nuts 	Frequency: At least 5 days/week	
		Intensity: Moderate (40-70% Heart Rate Reserve Maximum*) <i>Note: Refer to packet for personal HR range</i> *To get Heart Rate Reserve Max: 1. Max HR - Resting HR (estimate max HR if unknown: 220 - age) 2. Multiply by Desired Percentage (40-70%) 3. Add to Resting Heart Rate		
			Time: 40-60 min, 200-300 min/week	
			Calories to Burn: More than 2,000/week	
				

Know Your Limits! (based on a 2,000 cal diet)

- **Less than 15g saturated fat/day** - whole milk, cream, ice cream, cheeses, butter, meats
(2 pieces of bacon = 17g!)
- **Less than 200mg cholesterol/day** - meats, egg, yolks, dairy **(1 egg yolk = 215mg!)**
- **Eliminate trans fats!** - cookies, crackers, cakes, french fries, donuts, fried foods

Dietary Supplements

Herbal supplements are another option to help reduce LDL if your risk for heart disease is low.

Red Yeast Rice - (effective dose = 1,200mg/day) contains small amounts of a statin. Red Yeast Rice is not a proven method; refer to handout on Red Yeast Rice for more detailed information.

Plant Sterols - (effective dose = 2g/day) help reduce absorption of cholesterol. Sources include avocados & sunflower seeds. Plant sterols are added to some orange juice, smoothie, & margarine brands.

Medication

Doctors use this route when lifestyle changes are not enough to lower LDL. Below are the types of medications your doctor might prescribe.

Medication Class	Brand Name	Effect on LDL
Statins	Pravachol, Mevacor, Lipitor, Lescol, Crestor, Zocor	Most effective in lowering LDL
Bile Acid Sequestrants	Questran, Welchol, Colestid	Mild to modest effect in lowering LDL
Cholesterol Absorption Inhibitors	Zetia	
Statin + Absorption Inhibitor Complex	Vytorin (Zocor + Zetia)	Most effective, with low dose of each ingredient