

# Management of Hyperlipidemia in the Family Medicine Setting

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**The leading cause of death in the United States is cardiovascular disease, which has been long connected to dyslipidemia in general and hyperlipidemia in particular. Half of the American population are found to have hypercholesterolemia, while one-third of people in the United States have an elevated level of the so-called bad cholesterol known as low-density lipoprotein (LDL) cholesterol. Because of this, a significant number of those who seek medical attention in the primary care setting are expected to have some sort of hyperlipidemia that needs to be corrected.**



## Overview of Hyperlipidemia

The United States, United Kingdom, and Canada have put some national practice guidelines to help primary care physicians in providing the most-recent evidence-based treatment for patients with dyslipidemia. The most important aspect of the management plan of hyperlipidemia in these national practice guidelines is lifestyle modifications. The targeted parameter that was continuously shown to be related to cardiovascular disease risk is LDL cholesterol.

Usually, hyperlipidemia is asymptomatic. However, yellowish fatty growths (xanthomas) can be observed around the eyes and joints of the patients. Most often, hyperlipidemia is

diagnosed on routine investigations or after a cardiovascular event e.g. myocardial infarction or stroke. Other clinical features of hyperlipidemia include corneal arcus, achilles tendon xanthomas, eruptive xanthomas, and hepatosplenomegaly.

## Types of Hyperlipidemia

Type	Serum Elevation	Lipoprotein	Molecular
I	Cholesterol and triglycerides	Chylomicrons	↓CPL or ↓apo C-II
IIa	Cholesterol	LDL	↓LDL receptors (liver)
IIb	Cholesterol and triglycerides	LDL; VLDL	↓LDL receptors (liver)
III	Cholesterol and triglycerides	IDL	↓apo E
IV	Triglycerides	VLDL	Usually lifestyle
V	Cholesterol and triglycerides	VLDL, chylomicrons	↓CPL

## When is Pharmacological Treatment Indicated in Hyperlipidemia

While lifestyle modifications remain the mainstay therapeutic option for hyperlipidemia and lowering the risk of cardiovascular disease, pharmacological treatment is usually needed for optimum care of the patient.

The decision to start pharmacological treatment for hyperlipidemia is dependent on the patient's 10-year risk of coronary heart disease (CHD). The following table summarizes the LDL cholesterol goal in each risk category and when is pharmacological treatment needed to treat hyperlipidemia.

Risk Category	LDL Cholesterol Target	The threshold to start Pharmacological Treatment
<b>High risk:</b> <ul style="list-style-type: none"> <li>• Coronary heart disease or risk equivalent (diabetes, peripheral arterial disease).</li> <li>• 10-year CHD risk &gt; 20 %.</li> </ul>	< 100 mg/dL or < 70 mg/dL if the patient is considered as very high risk.	When LDL cholesterol is > 100 mg/dL. Consider even if LDL cholesterol is below 100 mg/dL.
<b>Moderately high risk:</b> <ul style="list-style-type: none"> <li>• Two risk factors or more (cigarette smoking, hypertension, low high-density lipoprotein (HDL) cholesterol, family history of premature CHD, male &gt; 45 years, female &gt; 55 years).</li> <li>• 10-year CHD risk 10 to 20%.</li> </ul>	< 130 mg/dL. Try to lower below 100 mg/dL if possible.	When LDL cholesterol is > 130 mg/dL. Consider in patients with LDL cholesterol between 100 mg to 129 mg/dL.
<b>Moderate risk:</b> <ul style="list-style-type: none"> <li>• A Same as a moderately high risk but with a 10-year CHD risk below 10%.</li> </ul>	< 130 mg/dL.	Optional if LDL cholesterol is equal to or above 160 mg/dL.
<b>Low risk:</b> <ul style="list-style-type: none"> <li>• Presence one or no risk factors of those mentioned for moderately high risk.</li> </ul>	< 160 mg/dL	Optional if LDL cholesterol is equal to or above 190 mg/dL.

It has been suggested to start simvastatin 40 mg daily for all patients with CHD risk equal to or more than 20 % for primary prevention. Patients who have had a history of CHD before should receive simvastatin 40 mg with a possible increase in dosage up to 80 mg as a secondary prevention measure against future cardiovascular accidents.

# Statins in Primary and Secondary Prevention of CHD

Statins are usually better tolerated than other lipid-lowering drugs. They have been continuously proven to be effective in the primary prevention and secondary prevention of CHD. They are also effective in the prevention of acute coronary syndrome. All these conditions are directly related to LDL cholesterol and HDL cholesterol levels. The most common examples for statins include simvastatin and lovastatin. In addition to their lipid-lowering properties, statins are also known to alter the inflammatory process seen in atherosclerosis.

Statins are contraindicated in patients with active liver disease and in pregnancy. The main side effects of statins that might result in the discontinuation of the drug are myopathies (1 %), rhabdomyolysis (0.2%), and elevated liver function tests (2 %). Other side effects of statins include confusion, forgetfulness, dementia, depression and erectile dysfunction. Introduction of statins in the management of hyperlipidemia has improved the prognosis.

# Non-statins in Primary and Secondary Prevention of CHD

There are other lipid-lowering drugs that can be used to lower LDL cholesterol other than statins. Fibrates are known to lower the risk of future coronary events but not overall mortality. The combination of a statin and a fibrate is known to help in achieving the LDL goal but was not found to be associated with lower mortality.

Niacin monotherapy for the secondary prevention of CHD is not effective. On the other hand, adding niacin to a statin for the secondary prevention of CHD might be effective and beneficial to the patient. Bile-acid binding resins are not effective for the secondary prevention of CHD and its related mortality.

Niacin as monotherapy or add-on therapy for the primary prevention of CHD in patients with isolated low HDL-cholesterol levels is a good example for an effective non-statin treatment for dyslipidemia.

The dietary supplementation of omega-3 fatty acids was found to be ineffective or to have a very small effect on the primary and secondary prevention of CHD. Omega-3 fatty acids do not affect overall mortality in patients with a previous history of myocardial infarction.

# Pharmacological Treatment of Hyperlipidemia and Cerebrovascular Disease

Statins were also found to be effective in lowering the risk of recurrent stroke in patients with a previous history of cerebrovascular disease. Unfortunately, statins were not found to influence overall mortality in patients with a history of cerebrovascular disease.

Initiating statins to lower LDL cholesterol levels in the acute setting of a cerebrovascular accident was proven to be effective in improving the clinical outcome and lowering the disability of the patient.

## Pharmacological Treatment of Hyperlipidemia and Peripheral Arterial Disease

The use of statins in patients with an established history of the peripheral arterial disease is known to improve the total walking distance and pain-free walking distance. Unfortunately, statins were not found to affect overall mortality in patients with peripheral arterial disease. Additionally, pharmacological treatment of hyperlipidemia in patients with the peripheral arterial disease was not found to influence the ankle-brachial index score.

## Pharmacological Treatment of Hyperlipidemia in Women

While statins have been shown to lower the risk of primary and secondary CHD events in men, they were found to be effective as only a secondary prevention intervention in women. Additionally, statins were found to not influence overall mortality in women while to have a direct influence on overall mortality in men.

## Pharmacological Treatment of Hyperlipidemia in the Elderly

Patients aged between 62 and 85 years of age who have had a history of coronary heart disease should be prescribed a lipid-lowering drug, i.e. a statin. Statins were found to influence overall mortality, stroke, and myocardial infarction risk in the elderly. The use of statins in patients with CHD who are older than 85 years of age is discouraged because it has been associated with a higher mortality rate.

## Current Recommendations of the American Family Physician Journal for the Treatment of Hyperlipidemia

The following table summarizes the current recommendations by the American Family Physician Journal for the treatment of hyperlipidemia. An evidence level of A indicates that the recommendation was made based on consistent results from large-scale randomized control trials. An evidence level of B is indicative of a recommendation that was based on the results of several studies and large meta-analyses which had some inconsistency.

<b>Recommendation</b>	<b>Evidence Level</b>
High-risk patients for CHD should receive statin therapy for primary prevention.	B
Statins should be used in all patients with CHD, diabetes, cerebrovascular disease, or peripheral arterial disease.	A
High-dose statin therapy is indicated in all patients with acute coronary syndrome.	A
Non-statin lipid-lowering drugs such as niacin and fibrates do not influence overall mortality or patient-oriented outcomes.	A

Patients who cannot tolerate statins should receive omega-3 fatty acids despite their limited efficacy.	B
Aggressive lowering of lipid levels with statins in patients older than 80 years should be avoided because it increases mortality.	A

## References

[Pharmacologic Treatment of Hyperlipidemia](#) via aafp.org/

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