

HYPERLIPIDEMIA TREATMENT GUIDELINES

Monitor fasting lipoprotein profile every 5 years for all adults aged 20 years or older

Risk Category	LDL-C Goal	Initiate Therapeutic Lifestyle Changes (TLC)#	Consider Drug Therapy**
<i>High risk: CHD* or CHD risk equivalentst (10-year risk >20%)</i>	<100 mg/dL (optional goal: <70 mg/dL)##	≥100 mg/dL	≥130 mg/dL (100–129 mg/dL; consider drug options)
<i>Moderately high risk: 2+ risk factors‡ (10-year risk 10% to 20%)§§</i>	<130 mg/dL	≥130 mg/dL	≥130 mg/dL
<i>Moderate risk: 2+ risk factors‡ (10-year risk <10%)§§</i>	<130 mg/dL	≥130 mg/dL	≥160 mg/dL
<i>Lower risk: 0–1 risk factor</i>	<160 mg/dL	≥160 mg/dL	≥190 mg/dL (160–189 mg/dL: LDL-lowering drug optional)

* CHD includes history of myocardial infarction, unstable angina, stable angina, coronary artery procedures (angioplasty or bypass surgery), or evidence of clinically significant myocardial ischemia.

† CHD risk equivalents include clinical manifestations of non coronary forms of atherosclerotic disease (peripheral arterial disease, abdominal aortic aneurysm, and carotid artery disease [transient ischemic attacks or stroke of carotid origin or >50% obstruction of a carotid artery]), diabetes, and 2+ risk factors with 10-year risk for hard CHD >20%.

Any person at high risk or moderately high risk who has lifestyle-related risk factors (eg, obesity, physical inactivity, elevated triglyceride, low HDL-C, or metabolic syndrome) is a candidate for therapeutic lifestyle changes to modify these risk factors regardless of LDL-C level.

‡ Risk factors include cigarette smoking, hypertension (BP ≥140/90 mm Hg or on antihypertensive medication), low HDL cholesterol (<40 mg/dL), family history of premature CHD (CHD in male first-degree relative <55 years of age; CHD in female first-degree relative <65 years of age), and age (men ≥45 years; women ≥55 years).

§§Electronic 10-year risk calculators are available at www.nhlbi.nih.gov/guidelines/cholesterol

Very high risk favors the optional LDL-C goal of <70 mg/dL, and in patients with high triglycerides, non-HDL-C <100 mg/dL.

** When LDL-lowering drug therapy is employed, it is advised that intensity of therapy be sufficient to achieve at least a 30% to 40% reduction in LDL-C levels.

Therapeutic Lifestyle Changes (TLC)	Drug Therapy
<p style="text-align: center;"><i>After 6 weeks of TLC:</i></p> <ul style="list-style-type: none"> • If goal achieved: check LDL at 12 weeks • If goal not achieved: intensify LDL-lowering therapy <p style="text-align: center;"><i>After 12 weeks of TLC:</i></p> <ul style="list-style-type: none"> • If goal achieved: monitor adherence to TLC every 4-6 months <p><i>If goal not achieved: consider adding drug therapy</i></p>	<ul style="list-style-type: none"> • Check LDL at 6 weeks and at 12 weeks after initiation of drug therapy and after dosage changes • Check appropriate laboratory tests to monitor for drug side effects <p style="text-align: center;"><i>After LDL goal is achieved, treat other lipid risk factors and monitor response + adherence to therapy every 4-6 months</i></p>

Adapted from:

- Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). *JAMA*. Vol. 285 (19), 2001.
- Pasternak RC, et al. ACC/AHA/NHLBI Clinical Advisory on the Use and Safety of Statins. *Circulation*. 2002;106:1024-8.
- Grundy SM, et al., for the Coordinating Committee of the National Cholesterol Education Program. Implications of Recent Clinical Trials for the National Cholesterol Education Program Adult Treatment Panel III Guidelines. *Circulation*. 2004;110:227-239.
- Drugs for Lipids. Treatment Guidelines. *The Medical Letter*. 2008; (6): 9-16.

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For Baseline LDL With:				LDL Decrease Needed to Achieve Goal	Recommended Therapy: Usual Starting Dose*	
<2 Risk Factors (Goal LDL: <160)	≥2 Risk Factors (Goal LDL: <130)	Established CHD (Goal LDL: <100)	Established CHD (Goal LDL: <70)		First Line	Second Line
161-197	130-160	100-123	70-86	≤19%	Drug Therapy Controversial	Questran 4g -8g BID OR Niacin 0.5g-1g TID
198-210	161-170	124-131	87-92	20-24%	Simvastatin 5mg QD	Lovastatin or Pravastatin 10mg QD
211-225	171-182	132-140	93-99	25-29%	Simvastatin 10mg QD	Lovastatin or Pravastatin 20mg QD
226-242	183-196	141-151	100-106	30-34%	Simvastatin 20mg QD	Lovastatin or Pravastatin 40mg QD
243-266	197-216	152-166	107-116	35-40%	Simvastatin 40mg QD	Pravastatin 80mg QD
267-319	217-259	167-199	117-139	40-50%	Simvastatin 80mg QD	Lipitor 20mg QD
>319	>259	>199	>139	>50%	Lipitor 40-80mg QD	Crestor 20-40mg QD*

*PA required

- Lipid 600mg BID can be used for <19% LDL lowering, but should be combined with Niacin or a statin for higher LDL levels
- Consideration can be given to combining a fibrate or nicotinic acid with an LDL-lowering drug
- Avoid resins such as Questran in patients with elevated triglycerides (≥200 mg/dL):

Statins

GENERIC NAME	SAMPLE TRADE NAME	20% LDL ↓		25% LDL ↓		30% LDL ↓		35% LDL ↓		40% LDL ↓		>45% LDL ↓	
		DOSE	COST/MONTH	DOSE	COST/MONTH	DOSE	COST/MONTH	DOSE	COST/MONTH	DOSE	COST/MONTH	DOSE	COST/MONTH
fluvastatin	Lescol	20mg QD	\$100	40mg QD	\$100	80mg XL QD	\$125	NA‡					
atorvastatin	Lipitor	10mg QD	\$55*	10mg QD	\$55*	10mg QD	\$55*	10mg QD	\$55*	20mg QD	\$75*	40-80mg QD	\$75*
pravastatin	Pravachol	10mg QD	\$10	20mg QD	\$15	40mg QD	\$15	80mg QD	\$20	NA‡			
lovastatin	Mevacor	10mg QD	\$10	20mg QD	\$15	40mg QD	\$20	40mg BID	\$40	40mg BID	\$40	NA‡	
simvastatin	Zocor	5mg QD	\$15	5mg QD	\$15	10mg QD	\$15	20mg QD	\$15	40mg QD	\$15	80mg QD	\$15
rosuvastatin	Crestor	5mg QD	\$140	5mg QD	\$140	5mg QD	\$140	5mg QD	\$140	5mg QD	\$140	10-20mg QD	\$140

* Cost reflects tablet splitting

* Cost based on AWP or average MAC based on generic 30-day supply; rounded to the nearest \$5 as of February 2010

‡=No dose available for this level of LDL-cholesterol lowering

Lipid-Lowering Agents (Non-Statins)

Generic Name	Brand Name	Formulary Status	Usual Daily Dose	Average Cost	Lipid-Lowering Effects
Bile Acid Sequestrants					
Colesevelam	Welchol	PA	3.75 g QD or 1.9 g BID	\$235	Decrease LDL: 15-19% Increase HDL: 3-8%
Colestipol	Colestid	Formulary	10 g QD or 5 g BID	\$140-\$390	Decrease LDL: 5-26% Increase TG: 12-15%
Cholestyramine	Questran	Formulary	8 g QD or 4 g BID	\$10	Decrease LDL: 9% Increase TG: 11%
Cholesterol Absorption Inhibitors					
Ezetimibe	Zetia	PA	10 mg QD	\$120	Decrease LDL: 18% Increase HDL: 3%
Fibrates					
Gemfibrozil	Lopid	Formulary	600 mg BID	\$15	Increase HDL: 6% Decrease TG: 31%
Fenofibrate	Tricor	PA	48mg, 145 mg QD	\$45-\$135	Decrease LDL: 20% Increase HDL: 11-17% Decrease TG: 29-32%
Fenofibrate micronized	Antara	PA	130 mg QD	\$140	
Fenofibrate micronized	Lofibra	Formulary	54mg, 67mg, 134mg, 200 mg QD	\$25-\$75	
Fenofibrate	Triglide	PA	160 mg QD	\$150	
Fenofibrate	Lipofen	PA	50mg, 150 mg QD	\$45-\$105	
Fenofibric acid	Trilipix	PA	135mg QD	\$130	
Niacin					
Niacin IR (OTC)	Niacin	Formulary	1000 mg TID	\$10	Decrease LDL: 5-25%
Niacin ER	Niaspan	Formulary	1000 mg QD	\$135	Increase HDL: 15-35%
Niacin SR	Slo-niacin	PA	1000 mg BID	\$20	Decrease TG: 20-35%

- The ENHANCE study showed that combination therapy with simvastatin/ezetimibe did not reduce progression of carotid artery intima-media thickness (CA IMT) more than simvastatin monotherapy.
- CA IMT is a measurement of plaque build-up and a surrogate marker for cardiovascular events and stroke.