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Implementing New Guidelines in the Management of Blood Cholesterol

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A 44-year-old white woman treated for hypertension presents for advice on lipid treatment. She smokes but is not diabetic and has no history of cardiovascular disease. Blood pressure is 134/72 mm Hg and body mass index is 36.0. Fasting lipids reveal total cholesterol 203 mg/dL, low-density-lipoprotein cholesterol (LDL-C) 95 mg/dL, triglycerides 350 mg/dL, and high-density-lipoprotein cholesterol (HDL-C) 38 mg/dL. Based on the Pooled Cohort Risk Assessment Equations, this patient's 10-year atherosclerotic cardiovascular disease risk is 7.3%. Her lifetime risk is 50%, or 6 times that of a 50-year-old white woman with optimal risk factors. Her 10-year risk would not suggest treatment, but her lifetime risk is concerning. In addition to smoking cessation, improved diet, and routine exercise, a more in-depth discussion about statin therapy and possible ancillary testing such as coronary artery calcium scoring or high-sensitivity C-reactive protein (hs-CRP) to further stratify her risk may be warranted.

DISCUSSION

The American College of Cardiology, American Heart Association, and the National Heart, Lung and Blood Institute recently released updated guidelines on the management of blood cholesterol (Table 1).[1] Long the cornerstone of primary and secondary prevention, lipid management could be complex based on treatment tolerance, multiple therapeutic classes, reaching targets, identifying appropriate risk, and affordability. The new guidelines redefine atherosclerotic cardiovascular disease, focus on lifestyle modification, simplify medical therapy, and identify risk through Pooled Cohort Risk Assessment Equations. Recommendations were based on a review of available randomized clinical trials, systematic reviews, and meta-analyses examining outcomes related to the treatment of atherosclerotic cardiovascular disease.[2-4]

Implementing the Guidelines

The updated guidelines use Pooled Cohort Risk Assessment Equations to estimate 10-year risk of first fatal or nonfatal myocardial infarction and fatal or nonfatal stroke.[5] This should be used in non-Hispanic white and black men and women aged 40-79 years with or without diabetes mellitus, with LDL-C between 70 and 189 md/dL. Four statin benefit groups (Table 2) were identified for treatment, including all secondary prevention patients and certain primary prevention patients without New York Heart Association Class II-IV heart failure or receiving hemodialysis:

1. Clinical atherosclerotic cardiovascular disease (ie, secondary prevention)
2. Primary elevations of LDL-C ≥190 mg/dL
3. Diabetic patients without clinical atherosclerotic cardiovascular disease aged 40-75 years with LDL-C 70-189 mg/dL
4. Primary prevention patients with LDL-C 70-189 mg/dL and estimated 10-year atherosclerotic cardiovascular disease risk >7.5%

Table 1 Statin Intensity Therapies[1]

High Intensity (Decrease LDL-C ≥50%)	Moderate Intensity (Decrease LDL-C 30%-49%)
Atorvastatin 40-80 mg	Atorvastatin 10-20 mg
Rosuvastatin 20-40 mg	Rosuvastatin 5-10 mg
	Simvastatin 20-40 mg
	Pravastatin 40-80 mg
	Lovastatin 40 mg
	Fluvastatin XL 80 mg
	Fluvastatin 40 mg bid
	Pitavastatin 2-4 mg

LDL-C = low-density lipoprotein cholesterol.

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Table 2 Statin Benefit Groups and Recommended Therapy

Statin Benefit Group	High Intensity	Moderate Intensity	Additional Testing
Clinical atherosclerotic cardiovascular disease	Yes	Consider†	None
Primary LDL-C >190 mg/dL	Yes	Consider†	None
Diabetes without atherosclerotic cardiovascular disease and 10-year risk ≥7.5%*	Yes	Consider†	None
Diabetes without atherosclerotic cardiovascular disease and 10-year risk <7.5%*	Consider‡	Yes	Case-by-case
Primary prevention and 10-year risk ≥7.5%*	Consider‡	Yes	Case-by-case
Primary prevention and 10-year risk <7.5%*	Consider‡	Consider‡	Case-by-case

LDL-C = low-density lipoprotein cholesterol.
*Based on Pooled Cohort Risk Equations.
†If age >75 years or not candidate for high-intensity.
‡If abnormal high-sensitivity C-reactive protein, coronary artery calcium, ankle-brachial index, lifetime risk.

Clinical atherosclerotic cardiovascular disease and primary elevations of LDL-C ≥190 mg/dL (ie, familial hypercholesterolemia) should receive high-intensity statin to achieve an LDL-C reduction of ≥50%. The guidelines focus on statin therapy alone, as there is currently no evidence to support adding other cholesterol-modifying agents to statin therapy to further reduce atherosclerotic cardiovascular disease risk.[6]

Diabetic patients aged 40-75 years with a 10-year atherosclerotic cardiovascular disease risk ≥7.5% should receive high-intensity statin; otherwise, moderate-intensity statin is recommended for diabetic patients without other risk factors for atherosclerotic cardiovascular disease. Therapies to increase HDL-C or lower triglycerides are not recommended due to lack of evidence supporting atherosclerotic cardiovascular disease risk reduction.[6,7] Primary prevention patients with 10-year atherosclerotic cardiovascular disease risk ≥7.5% and LDL-C 70-189 mg/dL should be considered for statin therapy to reduce total mortality and atherosclerotic cardiovascular disease nonfatal events.[8,9]

Many factors were not incorporated in the risk equations, which may influence initiating or altering statin intensity.[5] These include LDL-C ≥160 mg/dL, genetic hyperlipidemias, family history of premature atherosclerotic cardiovascular disease, elevated hs-CRP, coronary artery calcium score >300, or 75th percentile for age/sex, abnormal ankle-brachial index, and elevated lifetime atherosclerotic cardiovascular disease risk.

Measurement of Effectiveness

Obtain fasting lipids at initiation of statin therapy and 4-12 weeks following initiation to assess adherence or effectiveness. Thereafter, assess fasting lipids every 3-12 months if clinically indicated. Routine assessment of creatinine kinase and liver function testing is not recommended. Continuous reassessment of lifestyle (eg, tobacco cessation, healthy weight, heart healthy diet, and exercise) in addition to medication compliance is recommended for optimal atherosclerotic cardiovascular disease risk reduction.[10]

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