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Heart Disease
Managing Risk

Heart disease is a major problem in the United States[1]:

- Nearly 84 million Americans have heart disease.
- It causes about a third of all deaths.
- On average, 1 American dies from heart disease every 40 seconds.
- More money is spent on heart disease than on any other disease.

Guidelines for treating coronary heart disease have changed.

Many studies have shown that lowering LDL cholesterol (LDL-C) lowers risk of heart disease. So previous guidelines have suggested treating patients to a target LDL-C.[2] In 2013, a new guideline was published.[3] The new guideline does not recommend treating people to a target LDL-C. Instead it focuses on the dose of statin therapy for people who fall into 1 of 4 groups (Table 1). For people in these groups, the benefits of statin therapy likely outweigh the risks.

There are 3 levels of treatment intensity to choose from:

- High intensity: a daily dose lowers LDL-C by about 50%
- Moderate intensity: a daily dose lowers LDL-C by about 30% to 50%
- Low intensity: a daily dose lowers LDL-C by <30%

For each statin, the guideline specifies a dose that fits these treatment levels.

What can you do for your patients?

- Understand the new treatment guideline. It is different from the old ones.
- Know which risk factors your patient has. This can help you determine the right level of treatment for your patient.
- Talk with your patients about their residual risk. Talk about the tests that can measure risk and guide treatment.

Table 1. Old (ATP III) vs New (ACC/AHA) Guidelines

ATP III Guidelines, 2002[2]		ACC/AHA Guidelines, 2013[3]	
Risk Group	LDL-C Treatment Goal	Risk Group	Statin Treatment Intensity
High	<100 mg/dL	People with ASCVD[a]	High, if ≤75 years old; moderate if >75 years old or not a candidate for high-intensity statin therapy
Moderate	<130 mg/dL	People with LDL-C ≥190 mg/dL	High-intensity; moderate if not a candidate for high-intensity statin therapy
Low	<160 mg/dL	40- to 75-year-old people with diabetes and LDL-C 70-189 mg/dL	Moderate unless 10-year risk is ≥7.5%; then use high-intensity
		40 to 75-year-old people with 10-year risk ≥7.5% and LDL-C 70-189 mg/dL	Moderate to high

ATP, Adult Treatment Panel; ACC, American College of Cardiology; AHA, American Heart Association; LDL-C, low-density lipoprotein cholesterol.

[a] Atherosclerotic cardiovascular disease; includes those with coronary heart disease, stroke, and peripheral artery disease, all presumed to be caused by atherosclerosis.

Of course, changes to lifestyle are still the first step to decrease heart disease risk. People should eat right, exercise, stay at a healthy weight, and avoid tobacco.

Managing residual risk: Is focusing on traditional risk factors enough?

Studies have shown that many people who have reached their LDL-C goals still experience cardiac events.[4,5] This is because statin treatment results in only a 3.4% decrease in absolute risk.[6] In fact, people who have been treated have a residual risk of >60%.[4,5] This means they are at risk for future coronary events.

In the meantime, it could be helpful to look at other factors (Table 2) to learn more about a patient's residual risk. Studies have shown that markers other than LDL-C can give information about risk. This information is often independent of the standard risk factors.[5,7,8]

Who benefits from testing?

Anyone, even children, can be at risk of heart disease. Children who are between 9 and 11 years old should be screened for risk using standard screening tests.[9] Screening is not recommended for children between 12 and 16 years old. This is because normal changes in puberty can affect the results.[9] After the age of 17, everyone should get screened on a regular basis.[9,10] Some people may need more than the standard tests. For example, a family history of early heart disease might suggest a need to look at genetic markers. Diabetes suggests a need to look at microalbumin levels. A diet low in fish suggests a need to look at omega-3 levels.[11,12] Some patients who have been treated for heart disease still show signs of risk. They might benefit from more testing to uncover residual risk. The new guideline doesn't talk about testing for residual risk.[3] But many studies have shown that it can be informative.[5,7,8]

The Cardio IQ™ solution

When Cardio IQ tests are ordered from Quest Diagnostics, the doctor receives a special report for patients ≥20 years of age. This report includes:

- Color coding to show if result is in the optimal-, moderate-, or high-risk category

- Result ranges that define the risk categories

- Reference ranges

- Comparison of current result to previous results

- Results grouped according to marker type (lipid, inflammatory, etc.)

- Graphic display of lipid subclass distribution to help with patient education

References

1. Go AS, Mozaffarian D, Roger VL, et al. Heart disease and stroke statistics—2014 update: a report from the American Heart Association. *Circulation*. 2014;129:e28-e292.

2. 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) final report. *Circulation*. 2002;106:3143-3421.

3. Stone NJ, Robinson J, Lichtenstein AH, et al. 2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Circulation*. 2013 Nov 12. [Epub ahead of print].

4. Libby P. The forgotten majority: unfinished business in cardiovascular risk reduction. *J Am Coll Cardiol*. 2005;46:1225-1228.

5. Kones R. Molecular sources of residual cardiovascular risk, clinical signals, and innovative solutions: relationship with subclinical disease, undertreatment, and poor adherence: implications of new evidence upon optimizing cardiovascular patient outcomes. *Vasc Health Risk Manag*. 2013;9:617-670.

6. Superko HR, King S. Lipid management to reduce cardiovascular risk: a new strategy is required. *Circulation*. 2008;117:560-568.

7. Superko HR. Advanced lipoprotein testing and subfractionation are clinically useful. *Circulation*. 2009;119:2383-2395.

8. Contois JH, McConnell JP, Sethi AA, et al. Apolipoprotein B and cardiovascular disease risk: position statement from the AACC Lipoproteins and Vascular Diseases Division Working Group on Best Practices. *Clin Chem*. 2009;55:407-419.

9. National Heart, Lung, and Blood Institute. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: summary report. *Pediatrics*. 2011;128 (suppl 5):S213-S256.

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Table 2. Markers of Coronary Heart Disease Risk

Marker	Test Information
Lipid markers	
Lipid panel	Includes total cholesterol, LDL-C, HDL-C, and triglycerides
Lipoprotein fractionation	Includes LDL-C, HDL-C, IDL, and VLDL subfraction data
Apolipoprotein B	Used to assess risk, identify patients suitable for drug therapy, and monitor drug therapy; may be superior to LDL-C
Apolipoprotein A1	Used to assess risk
Lipoprotein(a)	Used to assess risk; secondary target of therapy
Markers of inflammation	
hs-CRP	Used to assess risk of first and recurrent heart events
Lp-PLA$_2$	Used to assess risk; elevated levels suggest need for more intensive therapy
Heart failure markers	
BNP or proBNP	Used to assess risk of heart failure
ST2	Used to assess risk of progression in patients with heart failure
Metabolic markers	
Omega-3 fatty acid	Used to assess risk of heart-related events associated with low blood levels; monitor therapeutic intake
Homocysteine	Used to assess risk of heart disease, stroke, and dementia; monitor therapy
Vitamin D	Low levels have been linked to heart disease
Insulin	High levels are linked to insulin resistance, diabetes, and heart disease risk
Microalbumin	High levels are linked to kidney and heart disease
Genetic markers	
Factor V Leiden, HR2	Linked to arterial and venous thrombosis
MTHFR	Linked to risk of high homocysteine levels
Prothrombin 20210G>A	Linked to arterial and venous thrombosis
KIF6 genotype	Linked to clinical event reduction in response to statin therapy
9P21 genotype	Linked to risk of heart attack (including early heart attack)
ApoE genotype	Linked to risk of high LDL-C and coronary heart disease
LPA intron 25 genotype	Linked to risk of high Lp(a) and coronary heart disease
4q25 genotype	Linked to risk of atrial fibrillation and cardioembolic stroke

References (continued)

10. American Heart Association. Heart health screenings. http://www.heart.org/HEARTORG/Conditions/Heart-Health-Screenings_UCM_428687_Article.jsp. Accessed January 22, 2014.

11. Kris-Etherton PM, Harris WS, Appel LJ, American Heart Association Nutrition Committee. Fish consumption, fish oil, omega-3 fatty acids, and cardiovascular disease. *Circulation*. 2002;106:2747-2757.

12. Superko HR, Superko SM, Nasir K, et al. Omega-3 fatty acid blood levels: clinical significance and controversy. *Circulation*. 2013;128:2154-2161.