The clinical utility of measuring LDL

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Clinical question
Do we really need to bother measuring LDL (low-density lipoprotein) cholesterol nowadays?

Recommendations
LDL measurement is clinically useful to verify that patients are:

- Taking their statin (or other LDL-lowering drug), and
- Achieving the appropriate reduction in LDL.

Group Health recommends specific LDL targets in its guidelines for prevention of atherosclerotic cardiovascular disease (ASCVD).

- For primary ASCVD prevention in patients at moderate or high 5-year risk, the target LDL is < 100 mg/dL. An alternative goal is a 30–40% reduction from the previous LDL measure. (See the Primary Prevention of ASCVD Guideline.)
- For patients on statin therapy for secondary ASCVD prevention, the target LDL is < 70 mg/dL. (See the Secondary Prevention of ASCVD Guideline.)

How could this change my practice?
Measuring LDL in patients being treated to prevent future ASCVD events can help determine if the current treatment is working effectively or may need adjustment.

Why did we choose this topic?
In recent years, some organizations, including the American College of Cardiology (ACC) and the American Heart Association (AHA), have stopped recommending LDL targets in their guidelines. Furthermore, HEDIS® no longer tracks LDL testing as a care quality measure in patients with ASCVD or diabetes.

The emphasis in many national guidelines is now on choosing the most appropriate intensity of statin therapy based on the patient’s baseline risk for future ASCVD events. Baseline risk can be determined based on age; gender; current, past or family history of ASCVD; the presence, duration and severity of diabetes; and a total cholesterol/HDL ratio.

The shift away from LDL targets in national guidelines has led some people to ask whether it is still important to measure LDL before or after starting statin treatment. Yet even the ACA and AHA—while no longer recommending the use of LDL targets in managing ASCVD risk—continue to recognize the importance of LDL measurement after initiating statins, both to confirm patient adherence and to ensure that patients are achieving the desired reduction in LDL.

Evidence summary
Statins (and other drugs like ezetimibe and PCSK9 inhibitors) may confer benefit through a variety of mechanisms. However, it is their effect on lowering LDL that has been most widely
studied and that gives us a quantitative measure of the treatments’ effectiveness for individual patients.

In a 2010 meta-analysis, the Cholesterol Treatment Trialists’ (CTT) Collaboration reported:

- All-cause mortality was reduced by 10% per 1 mmol/L (39 mg/dL) reduction, an absolute risk reduction of 0.2% per year in the higher-dose statin arm compared with the control or lower-dose arm.
- Major vascular events were reduced by 22% per 1 mmol/L (39 mg/dL) reduction, an absolute risk reduction of 0.8% per year in the higher-dose statin arm compared with the control or lower-dose arm.

While a “high-intensity” statin (such as atorvastatin 80 mg or rosuvastatin 20–40 mg) is likely to get most patients to an LDL below 70 mg/dL, that is not always the case. For high-risk patients, an LDL that is not at the appropriate target should prompt a clinical evaluation of whether the patient is taking the drug appropriately or whether additional therapy should be added.

**Lab tests**

Lab tests can measure LDL levels accurately whether the patient is in a fasting or non-fasting state. It is accurate and less expensive to measure LDL as part of the fasting lipoprotein panel, so if a patient needs to be fasting for any reason, a fasting lipoprotein panel is the most cost-effective way to measure LDL. However, LDL can also be measured in the non-fasting state using a “direct LDL” test.

**References**
