Dyslipidemia Therapy Update: the Importance of Full Lipid Profile Assessment

I. B. A. Menown · G. Murtagh · V. Maher · M. T. Cooney · I. M. Graham · G. Tomkin

ABSTRACT

Lipid guidelines typically focus on total cholesterol ± low-density lipoprotein cholesterol levels with less emphasis on high-density lipoprotein cholesterol (HDL-C) or triglyceride assessment, thus potentially underestimating cardiovascular (CV) risk and the need for lifestyle or treatment optimization. In this article, we highlight how reliance on isolated total cholesterol assessment may miss prognostically relevant lipid abnormalities; we describe from the European Systematic COronary Risk Evaluation (SCORE) data set how incorporation of HDL-C may improve estimation of CV risk; and, finally, we critically evaluate the evidence base surrounding triglycerides and CV risk.

INTRODUCTION

For the treatment of patients with, or at risk of, cardiovascular (CV) disease, some guidelines focus primarily on total cholesterol ± low-density lipoprotein cholesterol (LDL-C) levels. However, this can lead clinicians to disregard, or even fail to measure, high-density lipoprotein cholesterol (HDL-C) and triglycerides (TGs), thus potentially underestimating CV risk and the need for lifestyle or treatment optimization. European guidelines recommend measurement of HDL-C and TGs (although not formal treatment goals) in patients at intermediate or high risk, and the North American National Cholesterol Education Program (NCEP ATP III) identifies non-HDL-C as a secondary target for treatment. A practical example of how knowledge of HDL-C and TG levels may be used to guide lipid treatment is shown in Figure 1. This guide, which was based largely on the Joint British Societies (JBS)-2 recommendations for primary and secondary prevention, additionally suggests consideration of specific HDL-C and TG targets (as agreed by

Keywords: cardiovascular risk; cholesterol; dyslipidemia; high-density lipoprotein cholesterol; triglycerides
Figure 1. 2007/2008 Northern Ireland guide to use of dyslipidemic drugs.

(A) Patients eligible for treatment. CHD=coronary heart disease; CV=cardiovascular; JBS2 chart=Joint British Societies risk charts for primary prevention; TG=triglyceride.

**Who needs lipid treatment?**

1° prevention: ≥20% 10-year CV disease risk (see JBS2 chart)

2° prevention: Established CV disease (CHD, cerebrovascular peripheral vascular disease)

Diabetic patients: ≥40 years, or 18-39 years plus ≥1 other CV risk factor (If suspected inherited dyslipidemia or TG >10, consider specialist referral)

(B) Dyslipidemia treatment guidelines. *Recommended starting doses: simvastatin 40 mg, atorvastatin 40 mg, or rosvuastatin 10 mg. If risk of myopathy, consider a lower starting dose. **Aim for total cholesterol <4 and LDL-C <2 mmol/L, particularly in secondary prevention or high-risk primary prevention, with total cholesterol <5 and LDL-C <3 mmol/L the minimum audit standard. †If AST or ALT ≥3×ULN, reduce or stop statin and recheck in 4-6 weeks. ‡If CK ≥5×ULN, stop statin, check urea & electrolytes and recheck CK every 2 weeks. §HDL-C and TG targets are considered desirable (although not mandatory). Note: for HDL-C and TG management, initial lifestyle measures are strongly encouraged. For low HDL-C, switching the statin to rosvuastatin, if not already on this, is recommended given its moderately greater efficacy for HDL-C elevation (approximately 10%). If further HDL-C elevation is required, addition of prolonged release niacinic acid is recommended based on CDP (Coronary Drug Project), FAFTS (HDL-Atherosclerosis Treatment Study), and ARBITER (Arterial Biology for the Investigation of the Treatment Effects of Reducing Cholesterol-2 trial data although definitive data from AIM-HIGH (Atherothrombosis Intervention in Metabolic Syndrome with Low HDL/High Triglycerides and Impact on Global Outcomes) and HPS-2 THRIVE (Heart Protection Study 2–Treatment of HDL to Reduce the Incidence of Vascular Events) trials are awaited. †Fibrates are an alternative add-on to statins for HDL-C elevation but are typically less efficacious.* For high TGs, switching to a stronger statin, if not already on this, is recommended given the associated greater efficacy for TG reduction. If further TG reduction is required (and not already taking to raise HDL-C) fenofibrate is recommended as it is effective and in the FIELD (Fenofibrate Intervention and Event Lowering in Diabetes) trial, well tolerated in combination with statins. Nicotinic acid is an alternative add-on, although no more efficacious than fenofibrate but less well tolerated. High-dose omega-3 fatty acid may also be useful as a pure TG-lowering agent (with minimal effect on LDL-C or HDL-C). ALT=serum alanine aminotransferase; AST=serum aspartate aminotransferase; Chol=cholesterol; CK=creatine kinase; HDL-C=high-density lipoprotein cholesterol; LDL-C=low-density lipoprotein cholesterol; LFTs=liver function tests; TG=triglyceride; ULN=upper limit of laboratory normal.

### STEP 1
**TOTAL CHOL & LDL-C CONTROL**

If not already on a statin, commence simvastatin 40 mg†

Recheck lipids & LFTs† in 4-6 wks (and CK† if muscle symptoms)

Aim for: total Chol<4 (5) and LDL-C<2 (3) mmol/L**

**YES**

Switch to atorvastatin 40*-80 mg (or rosvuastatin 10*-20 mg if HDL<1 mmol/L)

**NO**

If not achieving target despite maximum tolerated statin dose, consider adding ezetimibe 10 mg

### STEP 2
**HDL-C CONTROL §

If not already on a statin, commence simvastatin 40 mg†

Recheck lipids & LFTs† in 4-6 wks (and CK† if muscle symptoms)

**YES**

HDL-C ≥1.0 mmol/L

**YES**

Fasting TG ≤1.7 mmol/L

**YES**

Annual lipids & LFTs

**NO**

Reinforce lifestyle advice. If not already taking, switch statin to rosvuastatin 10*-20 mg

**NO**

If still not achieving HDL target, consider adding nicotinic acid p/r (or fenofibrate if not tolerated)

### STEP 3
**TG CONTROL §

If not already on a statin, commence simvastatin 40 mg†

Recheck lipids & LFTs† in 4-6 wks (and CK† if muscle symptoms)

**YES**

Fasting TG ≤1.7 mmol/L

**YES**

Annual lipids & LFTs

**NO**

Reinforce lifestyle, reduce alcohol. If diabetic, optimize control. If not on, switch to atorvastatin/rosvuastatin

**NO**

If still not achieving TG target, consider adding fenofibrate, nicotinic acid p/r, or omega-3 FA 1-2 g b.d.