

Impact of New Guidelines on the Treatment and Management of Dyslipidemia: A Case Discussion

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Introduction / Background on New Guidelines

The Canadian Guidelines for the Management and Treatment of Dyslipidemia were updated in October 2009, affecting treatment for cardiac rehabilitation (CR) as well as primary prevention patients.¹ These incorporate data from a number of clinical studies published since the release of the 2006 guidelines.^{2,3,4} This case discussion will highlight elements of both.

In the 2009 guidelines, the assessment of risk focus switched from non-fatal myocardial infarction and coronary death to total cardiovascular disease (CVD) using a Framingham Risk Score (FRS).⁵ The addition of highly sensitive C-reactive protein (hs-CRP) for moderate risk patients was added. For men over 50 and women over 60 years of age, testing of

hs-CRP may be warranted. In these patients treatment should be initiated when hs-CRP is >2 mg/L. The Reynolds Risk Score (www.reynoldsriskscore.org) can be used instead of the FRS in patients with an available hs-CRP.

Treatment targets for moderate and high-risk individuals have been merged to LDL-C < 2.0 mmol/L OR 50% reduction in pre-treatment LDL-C. ApoB has been added as an alternate target of < 0.8 g/L.

Case Presentation

Mr. C, a 52-year-old male, experienced an inferior STEMI in November 2009. He was seen for his initial stress test one week post-event, as part of Alberta Health Services Early Discharge Program. He had seen his family physician in October 2009 for a physical. See Table 1 for his relevant lab values.

	Oct 2009	Hospital, Nov 2009	CR, 6 week	CR, 12 week
Total Cholesterol (mmol/L)	4.75	4.15	3.75	4.00
LDL-C (mmol/L)	2.75	2.05	1.79	2.10
HDL-C (mmol/L)	0.85	0.87	1.00	0.99
Triglycerides (mmol/L)	2.54	2.70	2.34	2.00
Hs-CRP mg/L (lowest of 2 values)	4.4	NT	NT	NT
Fasting BG (mmol/L)	5.7	5.8	5.6	5.4
ApoB (g/L)	NT	NT	0.65	0.76
CK (U/L)	NT	NT	300	100
Oral Glucose Tolerance Test	NT	NT	8.9 2-hr BG	NT

BG - blood glucose; CR - Cardiac Rehab; NT - Not Tested

Mr. C's family physician used the 2009 guidelines to assess Mr. C by considering the following: Mr. C is of South Asian (SA) descent, no previous CVD history, diabetes or family history of premature coronary artery disease. He is a lifelong non-smoker and not taking any medications. Mr. C's blood pressure was 119/80 mm Hg; height 173 cm; weight 87.7 kg; waist circumference 97 cm.

Mr. C's FRS score was 9%; however, due to his central adiposity (waist circumference > 90 cm for SA's), elevated triglycerides (>1.7 mmol/L),

and low HDL-C (<1.03 mmol/L), his physician diagnosed him with the metabolic syndrome based on the International Diabetes Federation (IDF) criteria,⁶ and considered moving him up an FRS-determined risk score category. While Mr. C's LDL-C level did not indicate treatment, his physician realized he may be at a higher risk of CVD than indicated by FRS due to the diagnosis of the metabolic syndrome.⁷ To help further stratify Mr. C's risk, the physician ordered a measurement of hs-CRP. Mr. C's hs-CRP (lowest of two measured values) had been 4.4

mg/L, indicating initiation of pharmacological therapy based on a moderate level of CVD event risk.¹ He was started on atorvastatin 40 mg daily. Mr. C was also advised to lose weight, reduce his intake of simple sugars, and to engage in moderate exercise for 30-60 minutes at least four times per week.

The Metabolic Syndrome

Metabolic syndrome is a combination of risk factors, including visceral adiposity, dyslipidemia, elevated blood pressure and serum glucose.⁸ Presence of the metabolic syndrome may confer greater long-term CVD risk than estimated solely by the FRS.¹ Individuals may be moved up a FRS risk category at the discretion of the treating clinician. Classification systems of metabolic syndrome vary, and while previous guidelines used the NCEP ATP-III criteria⁹ to diagnose the metabolic syndrome, the current guidelines recommend that the IDF system be used.⁶

Cardiac Rehabilitation

At the initial stress test, Mr. C's medications were: atorvastatin 80 mg daily, ASA 81 mg daily, plavix 75 mg daily, metoprolol 50 mg bid, and ramipril 10 mg daily. Mr. C was cleared for exercise after going 8 minutes (7.7 METS) on the Bruce protocol. His test was ECG and symptom negative. An exercise specialist (ES) used the target heart rate reserve (HRR) method to calculate a target heart rate (THR) range for Mr. C ($THR = [(HR_{max} - HR_{rest}) \times \text{desired intensity}] + HR_{rest}$). Using a moderate intensity of 50-75% HRR, a THR range of 100-110 bpm was calculated for Mr. C. As the new guidelines for exercise have not made a drastic departure from 2006, his ES suggested that he aim to exercise on most days of the week, reaching his target range and maintaining the intensity for 30-60 minutes. Maximizing these recommendations will result in the greatest improvement of plasma HDL-C levels, reductions in body mass index, and the severity of hypertriglyceridemia and diabetes risk.^{10,11} His overall cardiometabolic fitness, as per the Canadian Association of Cardiac Rehabilitation CACR Guidelines¹¹ risk stratification protocol, indicated a low risk for cardiofitness (METS~8 on the treadmill), and low risk for metabolic risk (based on a FRS modified for persons with known CVD: See Chapter 10 of 2009 CACR Guidelines). Therefore, he could either begin supervised exercise or home-exercise, after a

short period of exercise training to ensure he understands the Frequency, Intensity, Time, Type (FITT) exercise principles and the importance of warm-up and cool down.

At Mr.C's 6-week intervention clinic, he was complaining of mild muscle aches, and requested discontinuation of atorvastatin. He reported supervised exercise twice weekly, plus an additional unsupervised session/week. His laboratory values showed an elevated CK and impaired glucose tolerance. He was convinced to continue atorvastatin, at a non-myalgic dose of 40mg. He was also convinced to increase his exercise to five days/week and see the Registered Dietitian for help with his lipids and pre-diabetes. At his 12-week stress test, he had seen the dietitian three times. He reported lower intake of simple sugars and saturated fats, along with an increase in unsaturated fats. His weight was 85.3 kg and waist circumference 93 cm. The reduced dose of atorvastatin resulted in an increase in his LDL-C from the 6-week labs (Table 1), but the increase was attenuated by the positive lifestyle changes he had made. While neither of the primary targets of therapy had been reached (<2 mmol/L or >50% decrease in LDL-C), the alternate primary target of therapy (ApoB < 0.80 g/L) was reached, along with improvements in symptoms of the metabolic syndrome. He reported an improvement in his myalgia symptoms, along with a high degree of motivation to continue managing his dyslipidemia using a combination of healthy lifestyle behaviors and the reduced dose of atorvastatin.

References

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