



Lipid Management in the Prevention and Treatment of Cardiovascular Diseases¹

Step 1: Lifestyle/hygienic measures:

- Optimize diet: See [DIET FOR HIGH CHOLESTEROL](#)
- Physical activity: -60 min light or 30-60 min moderate or 20-30 min vigorous activity 4 to 7 days a week
- Maintain ideal body weight/reduce visceral adipose tissue: BMI < 27 kg/m² minimum goal and optimally < 25 kg/m²
- Smoking cessation
- Alcohol in moderation

Step 2: Assess Cardiovascular Risk-Estimate 10 year risk of hard CHD endpoints using [Framingham tables](#) or [European SCORECARD](#), alternate [RISK ENGINES](#) or estimate risk (M 40-70/ F 50-70) based on following categorical risks:

- 1) Age: M ≥ 45; W ≥ 55 or post menopausal
- 2) Family history premature: CHD 1° relative (M ≤ 55/ F ≤ 65)
- 3) Smoking: > 1 cigarette/ day
- 4) Hypertension: BP ≥ 140/90 (at least twice) or on Rx
- 5) Diabetes: FBG ≥ 7.0 mmol/L or 2 hr PCG ≥ 11.1 mmol/L
- 6) LVH

Step 3: Who to Screen

- Routinely screen men above age 40 and women who are post menopausal or over age 50 every 1-3 years
- History of CAD, TIA, CVA, PVD, bruits, CKD (chronic kidney disease), or DM > 30 years old are at highest (2° prevention) category
- Screen at any age those with risk factors such as:
 - Hypertension
 - Smoking
 - Abdominal obesity: Waist circumference > 102 cm (M), > 88 cm (W) (lower cutoffs for South and East Asians)
 - Strong family history of premature atherosclerosis, monogenic lipid disorder or chylomicronemia
 - Stigmata of hyperlipidemia (arcus cornea, xanthelasma or xanthoma)
 - Evidence of symptomatic or asymptomatic atherosclerosis
 - Symptoms: exertional chest discomfort, dyspnea or erectile dysfunction
- Assess full fasting lipid profile
 - Patients with CAD, TIA, CVA, PVD, bruits, CKD (chronic kidney disease) or DM > 30 years old annually to age 75
 - As above on hypolipidemic therapy semi-annually with ALT & CK
- Patients with family history early CHD, or genetic hyperlipidemia, xanthomata
 - one time during youth
 - repeat age 30
 - if normal repeat every 5 year > age 40 M / > age 50 F
- Adult diabetics
 - Repeat every 1-3 years as indicated
- Men ages 40 - 70 / Women ages 50 - 70
 - every 5 years



Step 4: Evaluate risk modifiers in intermediate risk category (10-19% risk strata):

- 1) Presence of metabolic syndrome (abdominal obesity, insulin resistance, elevated triglycerides, low HDL-C and hypertension) elevates CV risk by 1.6-2.6 fold. The greater risk elevation occurs in patient with T2DM or elevated hs-CRP.
- 2) Apolipoprotein B > 1.2 g/L
 - Associated with small dense LDL
 - Optimal targets: high risk < 1.2 g/L, intermediate risk < 1.05 g/L < 0.85 g/L, high risk < 0.85 g/L
- 3) Lipoprotein (a) > 30 mg/dl/300 mg/L (consider measurement intermediate risk category if family history of premature CAD)
 - Increases risk 4X if 2 other risk factors or TC/HDL > 5.5
- 4) Homocysteine > 10-15 μ mol/L associated with increased risk CVD, CVA and DVT. Measurement not recommended in light of negative trials (HOPE-2,NORVIT)
- 5) High-sensitivity CRP: elevated CRP (upper quartile) raises CV risk 3-4 fold
 - Low risk CRP < 1 mg/L/Intermediate risk CRP 1.0-3.0 mg/L/High risk CRP > 3.0 mg/L
- 6) Measure FPG every 1-3 years > age 50 or younger if obesity or FH type 2 DM. Measure HbA1c if FPG > 6 mmol/L
- 7) Genetic Risk:
 - Family history of CAD in CHD 1° relative (M \leq 55/ F \leq 65) raises risk 1.7-2 fold
- 8) Ethnicity
 - South Asian ethnicity living in Western society doubles risk
- 9) Post-menopausal status or combined HRT increases CV risk
- 10) Non-invasive assessment of occult atherosclerosis
 - Don't forget to auscultate for bruits. If present presume atherosclerosis.
 - Assessment of exercise capacity
 - Ankle-brachial index < 0.9 sensitivity 90%/specificity 98% for detecting > 50% stenosis.
 - Carotid imaging: fivefold increase in CAD risk if carotid intimal medial thickness (IMT) > 1 mm
 - Coronary computed tomography
 - CT angiography

* [See % reduction tables](#)

Feedback results to patient to improve compliance.

- 1 **Adapted from the Recommendations for the management of dyslipidemia and the prevention of cardiovascular disease:2003 update. Working Group on Hypercholesterolemia and Other Dyslipidemias:** Genest J.J.G., Frolich J.J., Fodor J.G., McPherson P.R.CMAJ 2003; 168(9): 921-4.
and
- 2 **Guidelines for the Diagnosis and Treatment of Dyslipidemia and Prevention of Cardiovascular Disease: revised recommendations 2006** (draft document). McPherson P.R. et al.

