AT A GLANCE: 2021 CCS Guideline for the Management of Dyslipidemia in Adults

Who to screen with fasting or non-fasting TC, TG, HDL-C, calculated LDL-C and non-HDL-C with ApoB when appropriate and Lp(a) once:

1. Men ≥40 yrs old; Women ≥40 yrs old or postmenopausal; at younger age in indigenous and South Asian individuals
2. At any age in patients with:
   a. Clinical ASCVD
   b. Evidence of preclinical ASCVD (e.g., CACS or carotid ultrasound abnormalities)
   c. Abdominal aortic aneurysm (AAA)
   d. Diabetes
   e. Arterial hypertension
   f. Currently smoking
   g. Stigmata of dyslipidemia: tendinous xanthomas (also corneal arcus, xanthelasmata if <45 yrs old)
   h. Family history of premature CVD in first degree relative (male <55 yrs old; female <65 yrs old)
   i. Family history of dyslipidemia (including Elevated Lp(a), especially >50 mg/dL or ≥100 mg/dL)
   j. Chronic kidney disease (eGFR ≤60 mL/min/1.73 m² or ACR ≥3 mg/mmol)
   k. Obesity (BMI ≥30 kg/m²)
   l. Inflammatory diseases (e.g., RA, SLE, PsA, AS, IBD)
   m. HIV infection
   n. Erectile dysfunction
   o. Chronic obstructive pulmonary disease
   p. Pregnancy-related complications (hypertensive disease of pregnancy, gestational diabetes, pre-term birth, stillbirth, low birthweight infant, placental abruption)

Factors not in FRS suggesting that calculated risk may be underestimated:

1. From RCTs:
   a. JUPITER: CRP ≥2.0 mg/L
   b. HOPE-3: Waist/hip ratio ≥0.85 (women) or ≥0.90 (men), IFG/IGT, (pre-diabetes, metabolic syndrome)
   c. ASCOT: LVH/other EKG abnormalities
2. From epidemiology (consider ethnicity and factors g – p Step 1)

Factors not in FRS suggesting that calculated risk may be overestimated:

1. CAC = 0 Agatston Units in Moderate FRS patients

What to monitor:

1. If TG <1.5 mmol/L, monitor treatment with LDL-C, non-HDL-C or ApoB (fasting or non-fasting)
2. If TG ≥1.5 mmol/L, monitor treatment with non-HDL-C or ApoB (fasting or non-fasting)

What to use:

1. Behavioural advice to optimize diet (including alcohol use), weight, and activity levels and to promote smoking cessation (including specific pharmacotherapy when warranted)
2. Maximal tolerated statin for those described in Tables 2 and 3
3. In CV primary prevention of patients with FH, using threshold of LDL-C ≥2.5 mmol/L, non-HDL-C ≥3.2 mmol/L, ApoB ≥0.85 g/L, or <50% lowering of LDL-C, consider adding PCSK9 inhibitor, with/without ezetimibe
4. In other settings of CV primary prevention, using threshold of LDL-C ≥2.0 mmol/L, non-HDL-C ≥2.6, ApoB ≥0.80 g/L or <50% lowering of LDL-C, consider use of ezetimibe (or bile acid sequestrant)
5. Add therapy in CV secondary prevention, using thresholds of LDL-C ≥1.8 mmol/L, non-HDL-C ≥2.4, ApoB ≥0.70 g/L
   a. Ezetimibe ± PCSK9 inhibitor (if LDL-C 1.8 – 2.2 mmol/L, non-HDL-C 2.4 – 2.9 mmol/L, or ApoB 0.7 – 0.8 g/L, ezetimibe may suffice)
   b. PCSK9 inhibitor ± ezetimibe (PCSK9 inhibitor particularly if LDL-C ≥2.2 mmol/L, non-HDL-C ≥2.9 mmol/L or ApoB >0.8 g/L) or in very high risk patients who derive the most benefit from PCSK9 inhibitors, e.g., ACS within 1 year, diabetes mellitus or metabolic syndrome, poly-vascular disease, MI within 2 years, recurrent MI, prior coronary artery bypass surgery, symptomatic peripheral arterial disease, FH or residual LDL-C ≥2.6 on maximal statins, elevated Lipoprotein (a) ≥60 mg/dL)
6.icosapent ethyl in primary prevention patients with diabetes and an additional risk factor or secondary prevention patients when, in both instances, TG is ≥1.5 mmol/L and ≤5.6, on maximally tolerated statin
7. When icosapent ethyl is not indicated but TG requires management (e.g., very high TG ≥10 mmol/L or concern about TG-related pancreatitis), use micronized fenofibrate

Who to treat based on clinical factors (Framingham Risk Score [FRS] not needed):

1. Statin-indicated Conditions:
   a. Clinical ASCVD/AAA
   b. Diabetes mellitus if ≥40 yrs old, or ≥30 yrs old with microvascular disease or >15 years duration
   c. Chronic kidney disease (non-dialysis, eGFR <60 mL/min or urine ACR ≥3.0 mg/mmol)
   d. FH or LDL-C ≥5.0 or non-HDL-C ≥5.8 mmol/L or ApoB ≥1.45 g/L
2. Patients with very high TG ≥10 mmol/L and/or history of TG-related pancreatitis.

Who to treat based on FRS:

1. High FRS (≥20%/10yrs)
2. Intermediate FRS (10-19%/10-yrs) and LDL-C ≥3.5 mmol/L or non-HDL-C ≥4.2 mmol/L or ApoB ≥1.05 g/L
3. Intermediate FRS (10-19%/10-yrs) and LDL-C <3.5 mmol/L or non-HDL-C <4.2 mmol/L or ApoB <1.05 g/L or other risk modifiers FHx, Lp(a) ≥50 mg/dL [or ≥100 mmol/L] or CAC ≥0 AU
4. Low FRS (5-9.9%/10-yrs) with LDL-C ≥ 3.5 mmol/L or non-HDL-C ≥4.2 mmol/L or ApoB ≥1.05 g/L or other risk modifiers FHx, Lp(a) ≥50 mg/dL [or ≥100 mmol/L] or CAC ≥0 AU

AAA = abdominal aortic aneurysm; APC = albumin-to-creatinine ratio; ASC = acute coronary syndrome; ApoB = apolipoprotein B; AAS = atherosclerotic cardiovascular disease; AU = Agatston unit; BMI = body-mass index; CACS = coronary artery calcium score; CRP = C reactive protein; CVD = cardiovascular disease; eGFR = estimated glomerular filtration; EKG = electrocardiogram; FH = familial hypercholesterolemia; FHx = family history; FRS = Framingham Risk Score; HIV = human immunodeficiency virus; IHD = inflammatory bowel disease; IFG = impaired fasting glucose; IGT = impaired glucose tolerance; LDL-C = low-density lipoprotein cholesterol; Lp(a) = lipoprotein (a); LVH = left ventricular hypertrophy; MI = myocardial infarction; non-HDL-C = non-high-density lipoprotein cholesterol; PCSK9 = proprotein convertase subtilisin/kexin type 9; RCT = randomized controlled trial; SLE = systemic lupus erythematosus; TC = total cholesterol; TG = triglyceride.