

SCREENING:

WHY?

- Most patients are asymptomatic
 - Signs of dyslipidemia when VERY high levels of cholesterol
 - Corneal arcus, xanthoma/xanthelasma
- Objective measure of risk
- Reassure low-risk patients
- Identify modifiable CV risk factors or unhealthy behaviors
- Identify those that may benefit from pharmacotherapy

APPROACH:

- Identify those who should be screened
- Assess individualized CV risk
- Address modifiable risk factors
- Assess need for pharmacotherapy
- Discuss benefits & risks of pharmacotherapy with patient using shared decision-making

ALREADY HIGH RISK PATIENTS:

1. Established CVD (CAS [ACS, stable angina, CABG surgery], PAD, stroke/TIA)
 2. Abdominal aortic aneurysm
 3. Diabetes mellitus (DM)
 - a. Age \geq 40
 - b. Age \geq 30 with duration \geq 15 year
 - c. Microvascular disease
 4. Chronic kidney disease (CKD)
 - a. eGFR $<$ 60 mL/min/1.73 m²
 - b. albumin:creatinine ratio \geq 3 mg/mmol
- * for \geq 3 months

5. LDL-C \geq 5 mmol/L (familial hypercholesteremia)

WHO TO SCREEN IN:

WHO TO SCREEN

<p>Men \geq40 years of age; women \geq40 years of age (or postmenopausal)</p> <p>Consider earlier in ethnic groups at increased risk such as South Asian or First Nations individuals</p>	<p>All patients with the following conditions regardless of age:</p> <ul style="list-style-type: none"> • Clinical evidence of atherosclerosis • Abdominal aortic aneurysm • Diabetes • Arterial hypertension • Current cigarette smoking • Stigmata of dyslipidemia (arcus cornea, xanthelasma or xanthoma) • Family history of premature CVD* • Family history of dyslipidemia • Chronic kidney disease • Obesity (BMI \geq30 kg/m²) • Inflammatory bowel disease • HIV infection • Erectile dysfunction • Chronic obstructive pulmonary disease • Hypertensive diseases of pregnancy
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SERUM LIPIDS: NON-FASTING NOW RECOMMENDED

- Panel: measured in mmol/L
 - Total cholesterol (TC)
 - High-density lipoprotein cholesterol (HDL-C)
 - LDL-C
 - Triglycerides (TG)
 - Non-HDL-C
- Alternate: apolipoprotein B (apoB) – g/L

FASTING vs. NON-FASTING LIPIDS:

- Convenient
 - TG \uparrow by 0.2 – 0.3 mmol/L after eating
 - LDL-C \downarrow by 0.1 – 0.2 mmol/L after eating
- does not affect CV risk assessment
 → recommend fasting lipids if TG $>$ 4.5 mmol/L

CALCULATING CV RISK:

- Multiple CV risk calculators exist
- High variance between calculators
- No tool is 100% accurate
- Arbitrary thresholds for risk
- Not intended for patients on treatment
- Not intended to estimate effect of treatment

CV RISK CALCULATORS:

- Framingham Risk Score
- QRISK2 Risk Calculator
- ACC/AHA ASCVD Risk Estimator

FRAMINGHAM RISK SCORE: estimates 10-year risk of **total** CVD (CAD, stroke, PAD, or heart failure) as a %

COMPONENTS:

- Sex (M or F)
- Age (year)
- TC and HDL-C (mmol/L)
- Systolic BP (mmHg)
- DM (Y or N)
- Smoker (Y or N)
 - > Non-smoker = have stopped smoking for 5-10 years

AVAILABLE AS:

- App (ex// iCCS)
- Online calculator
- Paper version

MODIFIED FRS: for family hx of premature CVD

- Age 30-59 yo without DM
- 1st degree relative (mother, father, sibling)
 - Male with CVD < 55 yrs old
 - Female with CVD < 65 yrs old
- IF YES, MULTIPLY SCORE X 2

LIMITATIONS:

- Middle-aged white American population
- Overestimates risk for older individuals
- Not validated in patients > 75 yrs
- Calculates total CVD
- Limited to 10-year risk

FRS STEPS:

1. Calculate total points
2. Use points to determine risk %
3. Modify for family hx of premature CVD
4. Use points to determine "heart age"
5. Use risk % to determine risk level

RISK LEVEL:

- Low: < 10%
- Intermediate: 10-19%
- High: ≥ 20%

QRISK2 RISK CALCULATOR: estimates 10-year risk of CVD (MI, angina, stroke or TIA) as a %

COMPONENTS:

- Age (year) and sex (M or F)
- Ethnicity
- DM, stage 4 or 5 CKD, atrial fibrillation, rheumatoid arthritis, or smoker (Y or N)
- Family history of CVD (first-degree relative <60)
- TC/HDL-C ratio, systolic BP (mmHg) and BMI (kg/m²)

LIMITATIONS:

- Middle-aged UK population
- Limited to age 35-73 year
- Does not differentiate type of CVD
 - Angina or TIA vs. MI or stroke
- Limited to 10-yr risk
- Less user-friendly

ACC/AHA ASVD RISK ESTIMATOR:

- Estimates 10-year risk of fata/nonfatal MI and fatal/nonfatal stroke as %
- Estimates lifetime risk for those aged 20-59 years old as a %

COMPONENTS:

- Age (20-79 years)
- Sex (M or F)
- Race (AA, WH or other)
- TC and HDL-C (mg/dL)
- Systolic BP (mmHg)
- DM (Y or N)
- Smoker (Y or N)

LIMITATIONS:

- Middle-aged American population (African-American and non-Hispanic whites)
- Age >79 years not included
- Only calculates risk of MI or stroke
- 10-year risk calculation may exceed lifetime risk calculation
- Does not account for family history
- Less clinical experience
- American units

METABOLIC SYNDROME: aka Syndrome X

- No uniform classification system
- Higher risk than individual risk factors alone?
- DO NOT USE METABOLIC SYNDROME FOR CV RISK ASSESSMENT