



SCREENING FOR CVD RISK FACTORS

OVERVIEW OF CVD RISK FACTORS

The following summarizes major risk factors for CVD (Coronary Artery Disease and Stroke).

NON-MODIFIABLE:

- Age: Male ≥ 45 years; Female ≥ 55 years⁶
- A history of premature CVD in a first-degree family member (< 55 years male and < 65 years female)⁶

MODIFIABLE:⁷

- Elevated blood pressure
- Smoking
- Sedentary lifestyle (physical inactivity)
- Stress
- Dyslipidemia
- Abdominal obesity
- Poor dietary habits
- Impaired Glucose Tolerance (IGT) or Diabetes Mellitus

TARGET ORGAN DAMAGE:^{7,9}

- Left ventricular hypertrophy
- Microalbuminuria or proteinuria
- Chronic Kidney Disease (CKD) (Glomerular Filtration Rate (eGFR) < 60 ml/min/1.73m²)

PRESENCE OF ATHEROSCLEROTIC VASCULAR DISEASE:⁷

- Known Cerebrovascular Disease; previous Stroke or TIA
- Coronary Artery Disease (CAD)
- Peripheral Vascular Disease (PVD)

OVERVIEW OF RISK FACTORS FOR DIABETES

The following are risk factors for Diabetes which should be considered in determining the frequency of screening for adults.⁸

- First-degree relatives with Diabetes
- Member of high-risk population (e.g., people of Aboriginal, Hispanic, Asian, South Asian, or African descent)
- History of Impaired Glucose Tolerance (IGT) or Impaired Fasting Glucose (IFG)
- Presence of complications associated with Diabetes
- Vascular disease
- History of Gestational Diabetes Mellitus (GDM)
- History of delivery of a macrosomic infant
- Hypertension
- Dyslipidemia
- Overweight
- Abdominal obesity
- Polycystic ovary syndrome
- Acanthosis nigricans
- Schizophrenia



SCREENING RECOMMENDATIONS

The following provides a summary of the recommended frequency of screening for adults. Risk factor screening is recommended for all males 40 years of age and older, all females 50 years of age and older or post-menopausal, and all adults with diagnosed disease (Diabetes, CKD, Stroke, CAD, PVD). Screening is also recommended in all adults with identified risk factors at any age.

Population→ Targets ↓	Adult <40 yrs with Risk Factors Adult Male ≥40 yrs Adult Female ≥50 yrs and/ or post-menopausal	Adult at High Risk* for CVD OR with CAD or PVD OR with TIA/ Stroke	Adult with ↓ eGFR or CKD OR with Diabetes Mellitus (DM)
Smoking	Identify and Advise all smokers to quit at each visit.		
Physical Activity Status	Annually		
BMI & Waist	Annually or as indicated	Every 3 to 6 months or as indicated	
Framingham Risk Score (FRS) for Total CVD**	Every 1 to 3 years	Classified a high risk; no FRS required	
Fasting (9-12h) Lipid Profile	Every 1 to 3 years + FRS Screen at any age in adults with major risk factors	Annually	
Blood Pressure (BP)***	At all appropriate clinic visits Proper BP measurement annually in persons with with borderline hypertension	Proper BP measurement every 3 to 6 months or as indicated	
Fasting Blood Glucose (FBG)	Every 3 years. Earlier and more frequently in individuals with additional risk factors for DM	Every 3 to 6 months or as indicated	
HbA1c	Not indicated unless FBG elevated	In adults with DM every 3 to 6 months; not indicated in other populations unless FBG elevated	
eGFR/ACR	Screen in patients with hypertension, heart failure, First Nations people, unexplained anemia, family history of end-stage renal disease, autoimmune disease, and edema	Annually or as indicated	
Edinburgh Claudication Questionnaire**** & Physical Exam	Annually		

*High risk is defined as a 20% or greater 10-year risk of CAD-related death or non-fatal MI and as determined by the Framingham Risk Score for Total CVD.

**Framingham Risk Score for Total CVD (see Appendix A)

*** Recommended Technique for Office Blood Pressure Measurement (see page 13)

**** Edinburgh Claudication Questionnaire (see page 57)

ACR = Albumin to Creatinine Ratio

BMI = Body Mass Index

BP = Blood Pressure

CAD = Coronary Artery Disease

CKD = Chronic Kidney Disease

CVD = Cardiovascular Disease

DM = Diabetes Mellitus

eGFR = Estimated Glomerular Filtration Rate

FBG = Fasting Blood Glucose

FRS = Framingham Risk Score for Total CVD

MI = Myocardial Infarction

PVD = Peripheral Vascular Disease

TIA = Transient Ischemic Attack



THE FRAMINGHAM RISK SCORE FOR TOTAL CVD

The Framingham Risk Score (FRS) for total CVD is a key tool in determining the most appropriate treatment target for managing cholesterol.³⁷ Use of the risk assessment tool (see Appendix A) has been shown to increase adherence to therapeutic measures. The FRS is applicable to a large percentage of the Canadian population and provides a reasonable estimate of the 10-year risk of a major CVD (cardiovascular death, nonfatal myocardial infarction, and stroke as a combined end point, and total mortality as a secondary end point). This tool is designed to estimate risk in adults who do not have CAD.

The risk factors included in the Framingham calculation are age, total cholesterol, HDL-C, systolic blood pressure, treatment for hypertension, cigarette smoking, and Diabetes. Because of a larger database, Framingham estimates are more robust for total cholesterol than for LDL cholesterol; however, **LDL cholesterol remains the primary target of therapy.**

- **Low risk** is defined as a 10-year CAD related death or non-fatal MI risk less than 10%.
- **Moderate risk** is defined as a 10-year risk of 10% to 20%.
- **High risk** is defined as a 10-year risk over 20%.

WHO SHOULD BE SCREENED?

Screen with a full lipid profile and the Framingham Risk Score for Total CVD every 1 to 3 years for the following:

- All males ≥ 40 years and all women ≥ 50 years or who are post-menopausal.

In addition, adults with the following risk factors should be screened at any age:

- Diabetes Mellitus;
- Current or recent (within the past year) cigarette smoking;
- Hypertension;
- Abdominal obesity - waist circumference >102 cm for men and >88 cm for women (lower cut-offs are appropriate for South and East Asians);
- A body mass index (BMI) of greater than 27 kg/m^2 (overweight) or greater than 30 kg/m^2 (obese);³⁷
- Autoimmune chronic inflammatory conditions such as rheumatoid arthritis, SLE, and psoriasis;³⁷
- Patients with chronic HIV infection;³⁷
- Family history of premature Coronary Artery Disease (CAD);
- Stigmata of hyperlipidemia (eg, xanthoma);
- Exertional chest discomfort, dyspnea, erectile dysfunction, claudication, Chronic Kidney Disease; or,
- Evidence of atherosclerosis.

Screen children who have a family history of severe hypercholesterolemia or chylomicronemia.

Other patients may be screened at the discretion of their physician, particularly when lifestyle changes are indicated.

METABOLIC SYNDROME

Metabolic syndrome incorporates many of the risk factors considered in the calculation of the Framingham Risk Score for Total CVD along with other risk factors. Individuals who meet the definition of metabolic syndrome by the criteria listed below are often at higher risk than estimated by the Framingham Risk Score for Total CVD and additional investigations (e.g., Lp(a), Apo B, hsCRP) may be appropriate to further define short-term risk and/ or the need for more aggressive management of existing risk factors.⁹

CRITERIA USED TO DEFINE METABOLIC SYNDROME (three or more of the following⁹):

Risk Factor	Defining Level
Abdominal obesity Men Women	Waist circumference >102 cm (40") >88 cm (35") See page 10 for ethnic specific values
Triglycerides	≥ 1.7 mmol/L
High-density lipoprotein cholesterol (HDL-C) Men Women	<1.0 mmol/L <1.3 mmol/L
Blood pressure	$>130/85$ mmHg
Fasting glucose	5.7 – 7.0 mmol/L

