When and How to Assess Cardiovascular Risk

Yasser Baghdady, MD
Prof. of Cardiology
Cairo University

Cardiovascular Risk Assessment Goals

The clinical goals of cardiovascular risk assessment and management are to:

- Reduce the incidence of cardiovascular disease, including:

  - Coronary heart disease
  - Stroke and transient ischaemic attacks
  - Peripheral arterial disease
  - Atherosclerotic aneurysm of a major artery

- Improve the quality of life

- Improve life expectancy

Clinically-Based CVD Prevention

1. Risk assessment for all patients
2. Set evidence- and guideline-based goals for specific risk factors
3. Lifestyle management
4. Pharmacologic intervention for selected risk factors in *appropriate* patients

Levels of Risk in Primary Prevention

1. Highest: the patient has evidence of CVD
2. High: the patient has high immediate risk (a probability of > 20% in the next 10 years) for having a CVD event

- 2 or more major risk factors
  BP > 160/100
  Diabetes
  Cigarette smoking
  LDL cholesterol > 160 mg/dL
  HDL cholesterol < 35 mg/dL men, < 45 mg/dL women
  Family history of premature CVD

Levels of Risk in Primary Prevention

3. Intermediate: the patient will not likely have a CVD event in the next 10 years, but has a high lifetime risk
   - 1 major risk factor or
   - > 2 minor risk factors
     BP 140-159/90-99 mmHg
     Blood glucose 100-129 mg/dL
     LDL cholesterol 130-159 mg/dL
     HDL cholesterol 35-39 mg/dL men, 45-49 mg/dL women

Levels of Risk in Primary Prevention

4. Low: the patient may develop CVD at older ages without lifestyle adjustment
   - 1 or 2 minor risk factors
   - Minor risk factors are generally correctable with lifestyle change
     - Diet change, exercise, weight loss
5. Very low: the patient will not likely develop CVD during his or her lifetime
   - No major or minor risk factors

What Do We Do with Risk?

1. Highest risk patient
   - Use secondary prevention guidelines to manage risk factors
   - Further evaluation: exercise test ± imaging or angiography
2. High risk patient
   - Treat all major risk factors pharmacologically
   - Provide appropriate lifestyle counseling
   - Exercise test

What Do We Do with Risk?

3. Intermediate risk patient
   - Lifestyle counseling
   - Pharmacologic treatment of any major risk factors
   - Initial follow-up in 3-6 months, annually thereafter
   - Consider exercise test

What Do We Do with Risk?

4. Low risk patient
   - Recommend appropriate lifestyle change
   - Re-evaluate in 3-12 months
5. Very low risk patient
   - Reassure
   - Suggest additional evaluation in 3-5 years

What should we look for?

- Risk assessment should include
  - Ethnicity,
  - Smoking habit history,
  - Family history of CVD and
  - Measurements of weight, waist circumference,
  - Blood pressure,
  - Lipids (total cholesterol and high-density lipoprotein (HDL) cholesterol)
  - Glucose.
  - The American Heart Association (AHA) guidelines also recommend recording the pulse rate and rhythm to screen for atrial fibrillation

What we should look for:

- Once all risk factors have been identified, cardiovascular risk charts or calculator should be used to estimate the total risk of developing CVD over the following 10 years.

- A total CVD risk of over 20% over 10 years is defined as high-risk.

What should we do?

- When an individual has been prioritized for formal risk assessment, they will need the following tests:
  - Total cholesterol and HDL cholesterol (average of at least two tests, at least one of which should be on a fasting sample).
  - Blood glucose.
  - Renal function with an estimated glomerular filtration rate (eGFR) to screen for chronic kidney disease.
  - Creatine kinase may be useful before starting statin treatment if the person is at increased risk for muscle toxicity.

Who should undergo risk assessment?

- Primary care is ideally placed for primary prevention, and this should be done in patients at increased risk:
  - Hypertensives,
  - Diabetics,
  - Familial hyperlipidaemia
  - Strong family history of CVD
  - Opportunistically - The Joint British Societies' (JBS 2) guidelines recommend that all adults from age 40 years onwards should be considered for an opportunistic comprehensive CVD risk assessment in primary care

Who should not undergo risk assessment

Risk assessment is not required in those whose 10-year risk can be assumed to be at least 20%

- People 75 years of age or older, *or with*
- Established cardiovascular disease, *or with*
- Peripheral vascular disease, *or with*
- Familial hypercholesterolaemia, *or with*
- Polycythaemia vera, *or with*
- Type 2 diabetes mellitus and older than 40 years of age, with or without any additional risk factor.

How do we reduce the risk of CVD?

- Lifestyle modifications

- Drug treatments

- Effective management of any underlying medical condition
  - Diabetes
  - Hypertension
  - Hyperlipidaemia.

Lifestyle Modification

- Advise about a healthier diet:
  - Total fat intake is 30% or less of total energy intake.
  - Saturated fats are 10% or less of total energy intake.
  - Dietary cholesterol is less than 300 mg/day.
  - Saturated fats are replaced by monounsaturated and polyunsaturated fats.
  - Advise eating at least:
    - Five portions of fruit and vegetables per day.
    - Two portions of fish per week, including a portion of oily fish.
  - Do not routinely recommend omega-3 fatty acid supplements or plant sterols and stanols for primary prevention.

Lifestyle Modification

■ Physical activity:

- ■ Advise people to take 30 minutes of at least moderate-intensity exercise a day, at least 5 days a week. such as brisk walking, using stairs and cycling.

- ■ Tell people that they can exercise in bouts of 10 minutes or more throughout the day.

- ■ Take into account the person's needs, preferences and circumstances.

- ■ Agree goals and provide written information about the benefits of activity and local opportunities to be active.

Lifestyle Modification

■ Weight management:
- ■ Offer people who are overweight or obese advice and support to work towards achieving and maintaining a healthy weight.

■ Alcohol consumption:
- ■ Advise men to limit their alcohol intake to 3-4 units a day.
- ■ Advise women to limit their alcohol intake to 2-3 units a day.
- ■ Advise everyone to avoid binge drinking.

■ Smoking cessation:
- ■ Advise all people who smoke to stop.
- ■ If people want to stop:
- ■ Provide structured advice and support, with use of medication to help smoking cessation when appropriate.

Drug Treatment

- Hypertension: screen for hypertension and treat appropriately

- Aspirin: although use of aspirin is widely accepted for secondary prevention, results in primary prevention are inconclusive. Recent studies have found that aspirin doubles the risk of gastrointestinal bleeding and current opinion is that this outweighs any benefits which might be conferred in reducing the onset of CVD.

Drug Treatment

- Lipid-lowering drugs: Statin treatment is recommended as part of primary prevention for adults with a 10-year risk of 20%.
  - Usual treatment should be with moderate statin dose. Higher-dose statins should be given according to the guidelines.
  - Do not set a target concentration for total cholesterol or low-density lipoprotein (LDL) cholesterol in primary prevention.
  - Once a patient has started taking a statin, repeat lipid measurement is unnecessary. Clinical judgment and the patient's preference should guide the review of drug treatment and whether to review the lipid profile.

Summary

Approaches to screening for CVD risk: Opportunistic

- Initiate risk assessment when someone attends for any reason.
- Consider using a decision support tool.
- Previous (within last 12 months) cholesterol and HDL measurements can be used.
- Non-fasting cholesterol and HDL levels can also be used (e.g. point-of-care testing).
- Consider setting up an alert on your patient management system to remind yourself that the patient is due for an assessment when they next attend for an appointment.

Resources for calculating cardiovascular risk

- Risk tables (found in BNF, NZGG, MIMS etc)
- Decision support tools
- Online calculators e.g.
  - www.riskscore.org.uk
  - www2.everybody.co.nz/Heart/Risk-Calculator/index.htm
  - http://cvrisk.mvm.ed.ac.uk/calculator/framingham.htm

All health targets should be S.M.A.R.T

- **S**pecific
- **M**easurable
- **A**chievable
- **R**ewarding
- **T**ime bound