Risk categories: priorities

Individuals at highest risk gain most from preventive efforts, and this guides the priorities.

**Very high-risk**

Subjects with any of the following:
- Documented CVD, clinical or unequivocal on imaging
- Documented clinical CVD includes previous AMI, ACS, coronary revascularization and other arterial revascularization procedures, stroke and TIA, saccular aneurysm and RVD. Unsignificantly documented CVD on imaging includes significant plaque on coronary angiography or carotid ultrasound. It does NOT include some increase in continuous imaging parameters such as intima-media thickness of the carotid artery.
- DM with target organ damage such as proteinuria or with a major risk factor such as smoking or marked hypercholesterolaemia or marked hypertension.
- Severe CKD (GFR <30 mL/min/1.73 m²).
- Most other people with DM (with the exception of young people with type 1 DM and without major risk factors that may be at low or moderate risk).
- Moderate CKD (GFR 30–59 mL/min/1.73 m²).
- A calculated SCORE ≥1%

**High-risk**

Subjects with:
- Markedly elevated single risk factors, in particular cholesterol >8 mmol/L (>310 mg/dL) (e.g. in familial hypercholesterolaemia) or BP >180/110 mmHg.
- Most other people with DM (with the exception of young people with type 1 DM and without major risk factors that may be at low or moderate risk).
- Moderate CKD (GFR 30–59 mL/min/1.73 m²).
- A calculated SCORE ≥5% and <10%.
- A calculated SCORE <1%

**Moderate-risk**

SCORE is ≥1% and ≥5% in 10 years in many middle-aged people belong to this category.

**Low-risk**

SCORE <1%

The main targets and goals

<table>
<thead>
<tr>
<th>The primary target</th>
<th>Very high-risk: &lt;1.8 mmol/L (&lt;70 mg/dL), or a reduction of at least 50% if the baseline is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lipidsa</td>
<td>LDL-C is the primary target</td>
</tr>
<tr>
<td>Diabetesb</td>
<td>HbA1c &lt;7% (&lt;53 mmol/mol)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>BP ≤140/90 mmHg</td>
</tr>
<tr>
<td>Hypercholesterolemia</td>
<td>Triglycerides: No target but &lt;1.7 mmol/L (&lt;145 mg/dL) indicates lower risk, or a reduction of at least 50% if the baseline is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL)</td>
</tr>
</tbody>
</table>

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Visit: www.escardio.org/guidelines
Relevance of CVD prevention in clinical practice

- Atherosclerotic CVD is the leading cause of premature death worldwide. It affects both men and women; of all deaths before the age of 75 years in Europe, 42% are due to CVD in women and 38% in men.

- Healthcare professionals play an important role in achieving this lifetime prevention approach in their clinical practice and in the society at large. Most patients are followed up in primary care and screening the population for CVD risk factors is preferably done there.

Who will benefit from prevention? When and how to assess risk and prioritize

- Atherosclerosis is usually the product of a number of risk factors: prevention of CVD in individuals should be adapted to their total CV risk: the higher the risk, the more intense the actions.

- A systematic approach to CV risk assessment is recommended targeting populations likely at higher CV risk, i.e. with family history of premature CVD, physical activity, obesity, sedentary habit, cancer therapy, obstructive sleep apnoea syndrome).

- Risk scores should be used in apparently healthy people and not in individuals automatically at high to very high CV risk, e.g. because of established CV disease (see table Risk categories). The latter require intensive attention to risk factors anyway.

- The total risk approach allows flexibility: if perfection cannot be achieved with one risk factor, trying harder with others can still reduce risk.

How to estimate total cardiovascular risk?

- It is essential for clinicians to be able to assess CV risk rapidly and with sufficient accuracy. This led to the development of the risk charts used in the 1994 Guidelines: Systemic Coronary Risk Estimation (SCORE) chart (The electronic version of SCORE, HeartScore.org, modified to take HDL-C into account, is therefore more accurate).

- SCORE, which estimates the 10-year risk of a first fatal CVD, is recommended for risk assessment and can assist in making logical management decisions, and may help to avoid both under- and overtreatment. Other validated risk estimation systems are useful alternatives.

- Low to moderate risk persons (calculated SCORE <5%) should be offered lifestyle advice to maintain their low- to moderate-risk status.

- High-risk persons (calculated SCORE >5%) qualify for intensive lifestyle advice, and may be candidates for drug treatment.

- Very high-risk persons (calculated SCORE >10%) drug treatment is more frequently required.

- The chart assesses in risk estimation but must be interpreted in the light of the clinician’s knowledge and experience and in view of the factors that may modify the calculated risk (such as socioeconomic status, social isolation, or lack of social support, family history of premature CVD, BMI and central obesity).

- In persons >60 years of age these thresholds should be interpreted more leniently, because their age-specific risk is normally around these levels, even when individual risk factors are not ‘normal’, in particular, an older initiation of drug treatments of all elderly with risks greater than the 10% threshold should be discouraged.

- The lower risk in women is explained by the fact that risk is deferred by many years, and more often for individuals with risks close to thresholds mandating treatment.

SCORE chart for HIGH-risk countries: 10-year risk

<table>
<thead>
<tr>
<th>WOMEN</th>
<th>Non-smoker</th>
<th>Smoker</th>
<th>Age</th>
<th>Cholesterol (mmol/L)</th>
<th>Systolic blood pressure (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-smoker</td>
<td>1% 2% 3% 4%</td>
<td>1% 2% 3% 4%</td>
<td>1% 2% 3% 4%</td>
<td>4% 5% 6% 7% 8%</td>
<td>1% 2% 3% 4% 5% 6% 7% 8% 9% 10%</td>
</tr>
<tr>
<td>Smoker</td>
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<td>1% 2% 3% 4%</td>
<td>5% 6% 7% 8% 9% 10%</td>
<td>1% 2% 3% 4% 5% 6% 7% 8% 9% 10%</td>
</tr>
</tbody>
</table>

SCORE chart for LOW-risk countries: 10-year risk

<table>
<thead>
<tr>
<th>WOMEN</th>
<th>Non-smoker</th>
<th>Smoker</th>
<th>Age</th>
<th>Cholesterol (mmol/L)</th>
<th>Systolic blood pressure (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-smoker</td>
<td>1% 2% 3% 4%</td>
<td>1% 2% 3% 4%</td>
<td>1% 2% 3% 4%</td>
<td>4% 5% 6% 7% 8%</td>
<td>1% 2% 3% 4% 5% 6% 7% 8% 9% 10%</td>
</tr>
<tr>
<td>Smoker</td>
<td>1% 2% 3% 4%</td>
<td>1% 2% 3% 4%</td>
<td>1% 2% 3% 4%</td>
<td>5% 6% 7% 8% 9% 10%</td>
<td>1% 2% 3% 4% 5% 6% 7% 8% 9% 10%</td>
</tr>
</tbody>
</table>

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