CVD Prevention Guidelines

Joint European Societies Guidelines on Prevention of Cardiovascular Disease in Clinical Practice 2012

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www.escardio.org

The Fifth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of nine societies and by invited experts)

Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR)†
On behalf of:

The 5th Joint European Societies’ Task Force on Cardiovascular Disease Prevention in Clinical Practice
Major new key messages since the 2007 prevention guidelines

Four levels of CVD risk: Very high risk; High risk; Moderate risk and Low risk
Risk stratification of European countries: Very high; High and Low
Concept of risk-age
Limited role of novel risk biomarkers

No exposure to passive smoking
The role of specific dietary patterns
Underweight as a possible risk factor
Multimodal behavioural intervention effective in daily clinical practice
Major new key messages continued

**Blood pressure**
All major antihypertensives equal for clinical use
Target blood pressure < 140/90 mmHg
Threshold values for ambulatory and home measurement

**Diabetes mellitus**
Target HbA1c for CVD prevention: < 7.0% (<53 mmol/mol)
Target blood pressure < 140/80 mmHg

**Blood lipids**
Target LDL-cholesterol:
<1.8 mmol/L for very high risk patients
<2.5 mmol/L for high risk patients
<3.0 mmol/L for all others
Priorities in CVD Prevention

Very high risk

- Documented CVD
- Diabetes mellitus (type 1 or 2) with one or more CV risk factors and/or target organ damage
- Severe chronic kidney disease
- SCORE > 10% over 10 years
Systematic coronary risk evaluation

**Women**

- **Non-smoker**
  - Age 65:
    - Systolic blood pressure (mmHg):
      - 180: 2
      - 160: 1
      - 140: 1
      - 120: 1
  - Systolic blood pressure (mmHg):
    - 180: 2
    - 160: 1
    - 140: 1
    - 120: 1
  - Cholesterol (mmol/L):
    - 4: 0
    - 5: 0
    - 6: 0
    - 7: 0
    - 8: 0

- **Smoker**
  - Age 65:
    - Systolic blood pressure (mmHg):
      - 180: 2
      - 160: 1
      - 140: 1
      - 120: 1
  - Systolic blood pressure (mmHg):
    - 180: 2
    - 160: 1
    - 140: 1
    - 120: 1
  - Cholesterol (mmol/L):
    - 4: 0
    - 5: 0
    - 6: 0
    - 7: 0
    - 8: 0

**Men**

- **Non-smoker**
  - Age 65:
    - Systolic blood pressure (mmHg):
      - 180: 2
      - 160: 1
      - 140: 1
      - 120: 1
  - Systolic blood pressure (mmHg):
    - 180: 2
    - 160: 1
    - 140: 1
    - 120: 1
  - Cholesterol (mmol/L):
    - 4: 0
    - 5: 0
    - 6: 0
    - 7: 0
    - 8: 0

- **Smoker**
  - Age 65:
    - Systolic blood pressure (mmHg):
      - 180: 2
      - 160: 1
      - 140: 1
      - 120: 1
  - Systolic blood pressure (mmHg):
    - 180: 2
    - 160: 1
    - 140: 1
    - 120: 1
  - Cholesterol (mmol/L):
    - 4: 0
    - 5: 0
    - 6: 0
    - 7: 0
    - 8: 0

**SCORE**

- 15% and over
- 10% - 14%
- 5% - 9%
- 3% - 4%
- 2%
- 1%
- < 1%
Priorities in CVD Prevention

High risk

- Markedly elevated single risk factors such as familial dyslipidaemia or severe hypertension
- Diabetes mellitus (type 1 or 2) but without other risk factors or target organ damage
- Moderate CKD
- SCORE > 5% but < 10% over 10 years
Priorities in CVD Prevention
Moderate risk

- SCORE > 1% but < 5% at 10 years
Priorities in CVD Prevention
Low risk

- SCORE < 1% at 10 years
SCORE: the European Risk Prediction System

Data from:

- 12 European cohort studies
- Wide geographic spread of countries at different levels of cardiovascular risks
- 3-million person-years of observation
- 7,934 fatal cardiovascular events

Score enabled HeartScore, an interactive tool
HeartScore
The electronic, interactive version of SCORE

Patient Advice
Actual Total CVD Risk Level | Personalized health advice

Examination data
Examination date 02 October 2008
Patient name AN Other
Age 65 (1942)
Sex Male

Risk factors
Systolic blood pressure
Cholesterol
Smoker

Your total CVD risk*

* Total CVD risk refers to the 10-year risk mortality

Alerts
HeartScore is calculated for patients up to age 85. Please be aware that patients older than this may be at a higher risk level than stated.

Actual Total CVD Risk Level
CVD Risk Regions in Europe
based on age, sex, smoking, SBP and TC

Low CVD risk countries:
Andorra, Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, The Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

High CVD risk countries: All others apart from:

Very high risk countries: Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia FYR, Moldova, Russia, Ukraine and Uzbekistan.
10 year risk of fatal CVD in high risk regions of Europe
10 year risk of fatal CVD in **low risk** regions of Europe
Heart age – a new concept

The risk of this 40 year old male smoker with risk factors is the same (3%) as that of a 60 year old man with ideal risk factor levels – therefore his risk age is 60 years.
**Lifestyle and risk factor targets**

**Lifestyle:** No smoking; healthy food choices and physically active

- BMI 20–25 kg/m$^2$
- Waist circumference <94 cm for men and <80 cm for women
- Blood pressure 130/80 - 139/85 mmHg
- LDL cholesterol < 2.5 mmol/l (100 mg/dl) and < 1.8 mmol/l (70 mg/dl) in those at very high CVD risk or ≥ 50% LDL lowering
- Good glycaemic control in all persons with diabetes (HbA1c <7%)
Lifestyle and risk factor targets

Lifestyle:

• No smoking
• Make healthy food choices and limit energy intake to the amount needed to maintain a healthy weight
• Be physically active
Lifestyle and risk factor targets

Lifestyle:

• BMI 20–25 kg/m²
• Waist circumference <94cm for men and <80cm for women
Lifestyle and risk factor targets

Other risk factors:

- Blood pressure < 140/90 mmHg
  and in diabetes mellitus
  < 140/80 mmHg
# Blood Pressure

<table>
<thead>
<tr>
<th>SCORE CVD risk</th>
<th>Normal</th>
<th>High Normal</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Low risk &lt;1%</td>
<td>130/85</td>
<td>130—139/85</td>
<td>140—159/90—99</td>
<td>160—179/100—109</td>
<td>≥180/110</td>
</tr>
<tr>
<td>Moderate risk 1—4%</td>
<td>Lifestyle advice</td>
<td>Lifestyle advice</td>
<td>Lifestyle advice</td>
<td>Drug Rx if persists</td>
<td>Drug Rx</td>
</tr>
<tr>
<td>High risk 5-9%</td>
<td>Lifestyle advice</td>
<td>+consider drug Rx</td>
<td>Drug Rx</td>
<td>Drug Rx</td>
<td>Drug Rx</td>
</tr>
<tr>
<td>Very high risk ≥10%</td>
<td>Lifestyle advice</td>
<td>+consider drug Rx</td>
<td>Drug Rx</td>
<td>Drug Rx</td>
<td>Drug Rx</td>
</tr>
</tbody>
</table>
Lifestyle and risk factor targets

Other risk factors:

• Total cholesterol < 5 mmol/L (190 mg/dl)

• LDL cholesterol < 2.5 mmol/l (100 mg/dl) and < 1.8 mmol/l (70 mg/dl) in those at very high CVD risk or ≥ 50% LDL lowering
# Lipids

<table>
<thead>
<tr>
<th>Total CV risk (SCORE) %</th>
<th>LDL-C levels</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;70 mg/dL</td>
<td>70 to &lt;100 mg/dL</td>
<td>100 to &lt;155 mg/dL</td>
<td>155 to &lt;190 mg/dL</td>
<td>&gt;190 mg/dL</td>
</tr>
<tr>
<td>&lt;1</td>
<td>No lipid intervention</td>
<td>No lipid intervention</td>
<td>Lifestyle intervention</td>
<td>Lifestyle intervention</td>
<td>Lifestyle intervention, consider drug if uncontrolled</td>
</tr>
<tr>
<td>≥1 to &lt;5</td>
<td>Lifestyle intervention</td>
<td>Lifestyle intervention</td>
<td>Lifestyle intervention, consider drug if uncontrolled</td>
<td>Lifestyle intervention, consider drug if uncontrolled</td>
<td>Lifestyle intervention, consider drug if uncontrolled</td>
</tr>
<tr>
<td>≥5 to &lt;10, or high risk</td>
<td>Lifestyle intervention, consider drug*</td>
<td>Lifestyle intervention, consider drug*</td>
<td>Lifestyle intervention and immediate drug intervention</td>
<td>Lifestyle intervention and immediate drug intervention</td>
<td>Lifestyle intervention and immediate drug intervention</td>
</tr>
<tr>
<td>≥10 or very high risk</td>
<td>Lifestyle intervention, consider drug*</td>
<td>Lifestyle intervention and immediate drug intervention</td>
<td>Lifestyle intervention and immediate drug intervention</td>
<td>Lifestyle intervention and immediate drug intervention</td>
<td>Lifestyle intervention and immediate drug intervention</td>
</tr>
</tbody>
</table>

Class/Level:
- Class: IIa/A
- Level: I/A
Lipid modification drug therapies

LDL cholesterol lowering

HMG – CoA reductase inhibitors (statins)

Bile acid sequestrants

Cholesterol absorption inhibitors
<table>
<thead>
<tr>
<th>STARTING LDL-C</th>
<th>% REDUCTION TO REACH LDL-C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;1.8 mmol/L (~70 mg/dL)</td>
</tr>
<tr>
<td>&gt;6.2</td>
<td>&gt;70</td>
</tr>
<tr>
<td>5.2–6.2</td>
<td>65–70</td>
</tr>
<tr>
<td>4.4–5.2</td>
<td>60–65</td>
</tr>
<tr>
<td>3.9–4.4</td>
<td>55–60</td>
</tr>
<tr>
<td>2.9–3.4</td>
<td>35–45</td>
</tr>
<tr>
<td>2.3–2.9</td>
<td>22–35</td>
</tr>
<tr>
<td>1.8–2.3</td>
<td>&lt;22</td>
</tr>
</tbody>
</table>
Lipid modification drug therapies

HDL cholesterol raising

Nicotinic acid

Fibrates

Cholesterol ester transfer protein (CETP) inhibitors
Lipid modification drug therapies

HDL cholesterol raising

Nicotinic acid
AIM-HIGH, HPS 2-THRIVE

Fibrates
FIELD, ACCORD

Cholesterol ester transfer protein (CETP) inhibitors
ILLUMINATE, DAL-OUTCOMES
Lifestyle and risk factor targets

Other risk factors:

• Good glycaemic control in all persons with diabetes (HbA1c <7%)
# Diabetes

## General
- Metformin should be used as first line hypoglycaemic agent
- Excessive weight gain and hypoglycaemia should be avoided
- Statins recommended
- Antiplatelets not recommended in absence of atherosclerotic disease

## Targets

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Target</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>&lt; 7.0%</td>
<td>&lt; 6.5% may reduce microvascular complications</td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>&lt; 4.5 mmol/L</td>
<td></td>
</tr>
<tr>
<td>LDL-C</td>
<td>&lt; 2.5 mmol/L</td>
<td>&lt; 1.8 mmol/L for diabetic patients at very high CVD risk</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>&lt; 140/80 mmHg</td>
<td>• multiple antihypertensives often required</td>
</tr>
</tbody>
</table>
Cardiovascular Disease Prevention

European Society of Cardiology

www.escardio.org/prevention

www.escardio.org/guidelines