



Risk assessment and health promotion of the healthy patient in primary care

PART 1

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Evidence and recommendation

Classes of recommendations

Level of evidence

Level of evidence A	Data derived from multiple randomized clinical trials or meta-analyses.
Level of evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.
Level of evidence C	Consensus of opinion of the experts and/or small studies, retrospective studies, registries.

Classes of recommendations	Definition	Suggested wording to use
Class I	Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.	Is recommended/is indicated
Class II	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.	
<i>Class IIa</i>	<i>Weight of evidence/opinion is in favour of usefulness/efficacy.</i>	Should be considered
<i>Class IIb</i>	<i>Usefulness/efficacy is less well established by evidence/opinion.</i>	May be considered
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective; and in some cases may be harmful.	Is not recommended

CV risk factors

- Genetic/epigenetic
- Family history
- Age
- Sex

Non modifiable
Risk factors

- Smoking
- Cholesterol LDL/Lipid levels
- BP
- BMI
- DM
- Psycho-social factors

Modifiable
Risk factors

CV risk estimation systems

Table 2 Current cardiovascular disease risk estimation systems for use in apparently healthy persons, updated from^{59,60}

	Framingham ⁴⁴	SCORE ³⁰	ASSIGN – SCORE ⁴⁵	QRISK1 ⁴⁶ & QRISK2 ⁴⁷	PROCAM ⁴⁸	Pooled Cohort Studies Equations ⁵⁰	CUORE ⁴⁹	Globorisk ⁵²
Data	Prospective studies: Framingham Heart Study and Framingham offspring study. Latest version includes both	12 pooled prospective studies	SHHEC Prospective study	QRESEARCH database	Prospective study	4 Pooled prospective studies ARIC CHS CARDIA Framingham (original and offspring studies)	CUORE	Derivation cohort: 8 pooled prospective studies - Atherosclerosis Risk in Communities, Cardiovascular Health Study, Framingham Heart Study original cohort and offspring cohort, Honolulu Program, Multiple Risk Factor Intervention Trial, Puerto Rico Heart Health Program, and Women's Health Initiative Clinical Trial
Population	General population, Framingham, Massachusetts, USA. Baselines: 1968–1971, 1971–1975, 1984–1987	12 prospective studies from 11 European countries. Baselines: 1972–1991	Random sample from general population in Scotland, baseline: 1984–1987	Data collected from 1993–2008 from GP databases – imputation of missing data	Healthy employees. Baseline: 1978–1995	Baselines 1987–89 (ARIC), 1990 and 1992–3 (CHS), 1985–6 (CARDIA), 1968–1971, 1971–1975, 1984–1987 (Framingham)	1980s and 1990s	8 prospective studies from North America. Baselines: 1948–1993
Sample size	3969 men and 4522 women	117 098 men and 88 080 women	6540 men and 6757 women	1.28 million (QRISK1) 2.29 million (QRISK2)	18 460 men and 8515 women	11 240 white women, 9098 white men, 2641 African-American women and 1647 African-American men	7520 men and 13 127 women	33 323 men and 16 806 women
Calculates	10-year risk of CAD events originally. Latest version: 10-year risk of CVD events NCEP ATP III version: 10-year risk of hard coronary events	10-year risk of CVD mortality	10-year risk of CVD events	10-year risk of CVD events. Lifetime risk	Two separate scores calculate 10-year risks of major coronary events and cerebral ischaemic events	10-year risk for a first atherosclerotic CVD event. Lifetime risk	10-year probability of developing a first major CV event (myocardial infarction or stroke)	10 year risk of fatal cardiovascular disease
Age range (years)	30–75	40–65	30–74	35–74	20–75	20–79	35–69	40–84

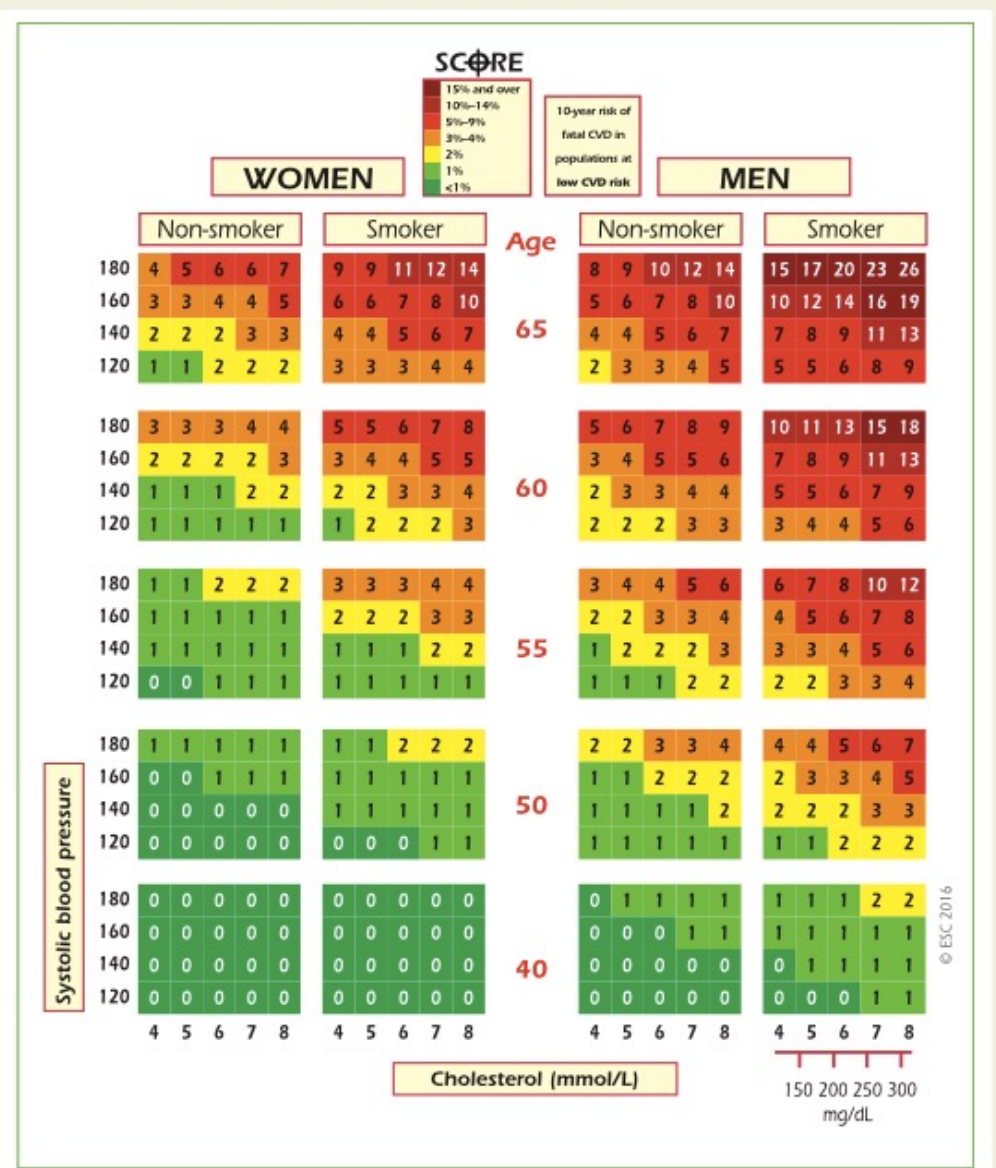


Figure 2 SCORE chart: 10-year risk of fatal cardiovascular disease in populations of countries at low cardiovascular risk based on the following risk factors: age, sex, smoking, systolic blood pressure, total cholesterol. CVD = cardiovascular disease; SCORE = Systematic Coronary Risk Estimation.

Risk categories

Table 5 Risk categories

Very high-risk	<p>Subjects with any of the following:</p> <ul style="list-style-type: none">• Documented CVD, clinical or unequivocal on imaging. Documented clinical CVD includes previous AMI, ACS, coronary revascularization and other arterial revascularization procedures, stroke and TIA, aortic aneurysm and PAD. Unequivocally 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).• A calculated SCORE ≥10%.
High-risk	<p>Subjects with:</p> <ul style="list-style-type: none">• 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%.
Moderate risk	<p>SCORE is ≥1% and <5% at 10 years. Many middle-aged subjects belong to this category.</p>
Low-risk	<p>SCORE <1%.</p>

ACS = acute coronary syndrome; AMI = acute myocardial infarction; BP = blood pressure; CKD = chronic kidney disease; DM = diabetes mellitus; GFR = glomerular filtration rate; PAD = peripheral artery disease; SCORE = systematic coronary risk estimation; TIA = transient ischaemic attack.

High and low risk populations

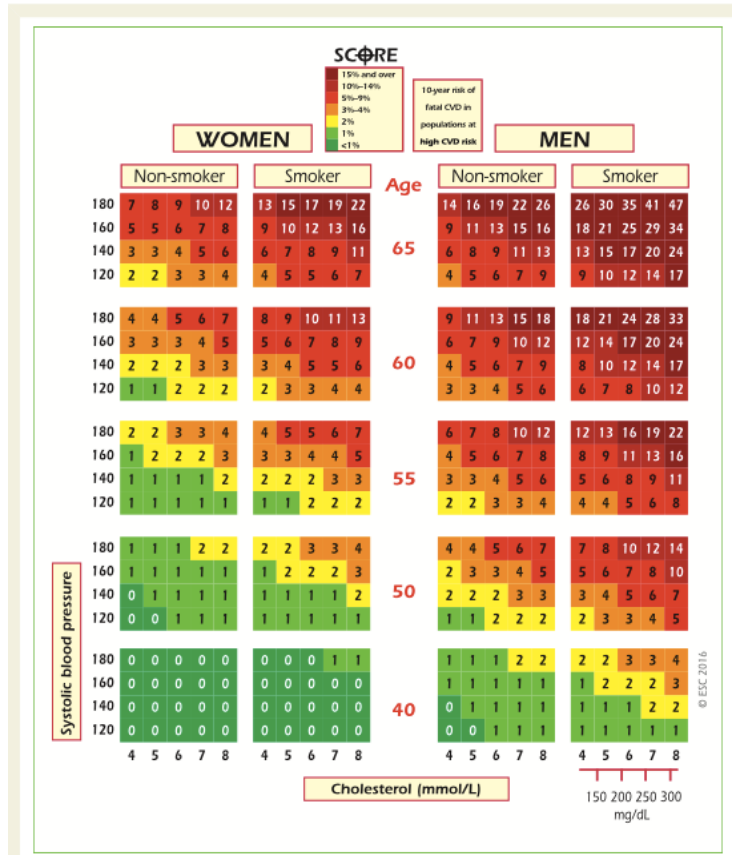


Figure 1 SCORE chart: 10-year risk of fatal cardiovascular disease in populations of countries at high cardiovascular risk based on the following risk factors: age, sex, smoking, systolic blood pressure, total cholesterol. CVD = cardiovascular disease; SCORE = Systematic Coronary Risk Estimation.

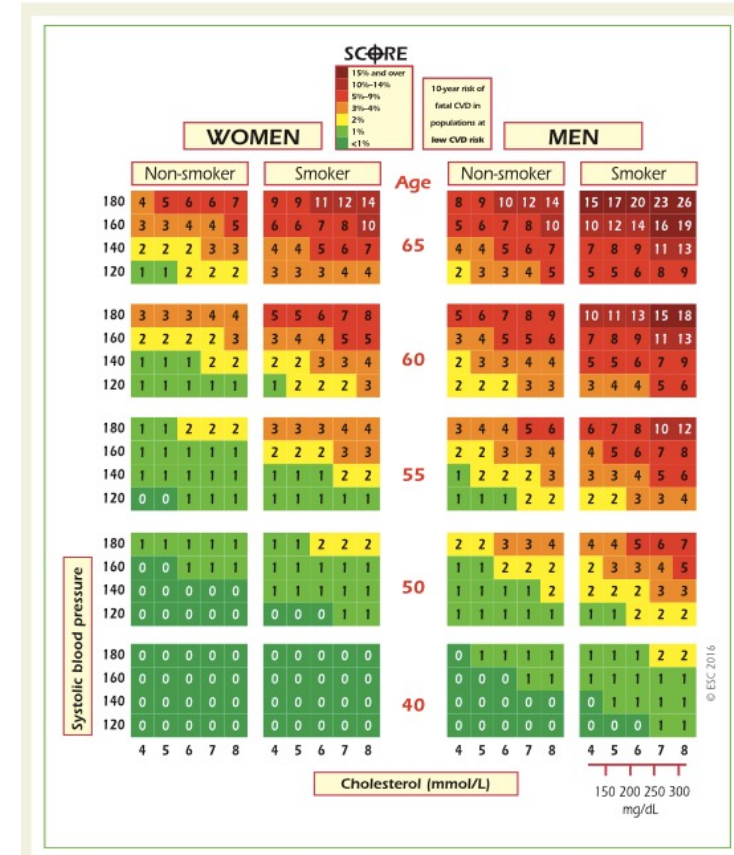


Figure 2 SCORE chart: 10-year risk of fatal cardiovascular disease in populations of countries at low cardiovascular risk based on the following risk factors: age, sex, smoking, systolic blood pressure, total cholesterol. CVD = cardiovascular disease; SCORE = Systematic Coronary Risk Estimation.

The chart we use: low risk

- **Low risk**
- 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 and the United Kingdom.
- **High risk**
- Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Hungary, Lithuania, Montenegro, Morocco, Poland, Romania, Serbia, Slovakia, Tunisia and Turkey.
- Albania, Algeria, Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, Georgia, Kazakhstan, Kyrgyzstan, Latvia, former Yugoslav Republic of Macedonia, Moldova, Russian Federation, Syrian Arab Republic, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

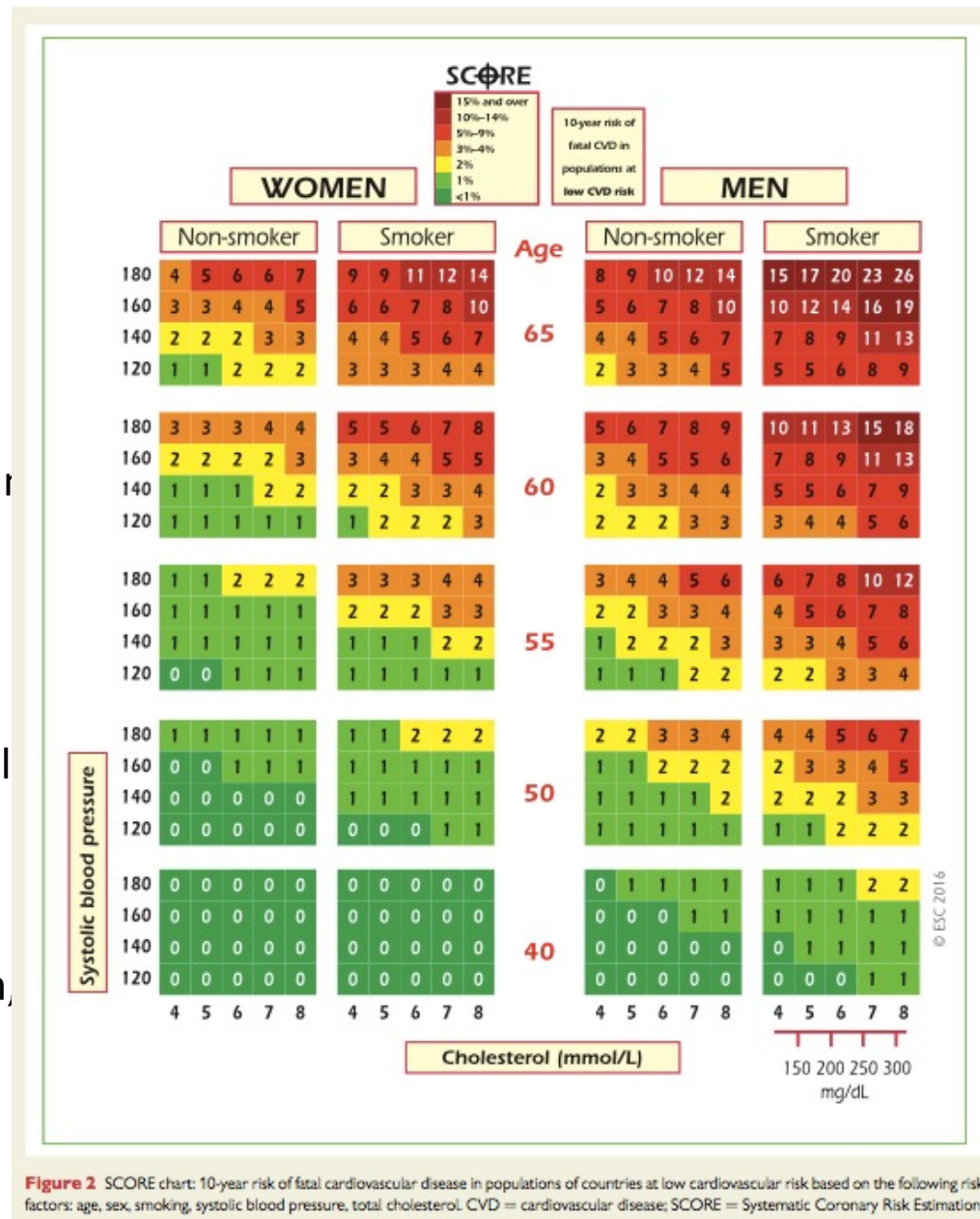


Figure 2 SCORE chart: 10-year risk of fatal cardiovascular disease in populations of countries at low cardiovascular risk based on the following risk factors: age, sex, smoking, systolic blood pressure, total cholesterol. CVD = cardiovascular disease; SCORE = Systematic Coronary Risk Estimation.