2016 EUROPEAN CVD PREVENTION IN CLINICAL PRACTICE

European Heart Journal 2016;37:2315–2381- doi:10.1093/eurheartj/ehw106

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2016 European Guidelines on cardiovascular disease prevention in clinical practice

The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts).

Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR).

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Working Groups: Cardiovascular Pharmacotherapy

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ESC Classes of recommendations

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.	
Class IIa	*Weight of evidence/opinion is in favour of usefulness/efficacy.*	Should be considered.
Class IIb	*Usefulness/efficacy is less well established by evidence/opinion.*	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.

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ESC Levels 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.

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Cost-effective prevention of cardiovascular disease

Recommendations	Class	Level
Measures aimed at promoting healthy lifestyles at the population level should be considered.	IIa	B

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Impact of combination of risk factors on risk

Gender	Age (years)	Cholesterol (mmol/L)	SBP (mmHg)	Smoker	Risk (10 year risk of fatal CVD)
F	60	7	120	No	2%
F	60	7	140	Yes	5%
M	60	6	160	No	9%
M	60	5	180	Yes	21%

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Cardiovascular risk assessment

Recommendations	Class	Level
Systematic CV risk assessment is recommended in individuals at increased CV risk, i.e. with family history of premature CVD, familial hyperlipidaemia, major CV risk factors (such as smoking, high BP, DM or raised lipid levels) or comorbidities increasing CV risk.	I	C
It is recommended to repeat CV risk assessment every 5 years, and more often for individuals with risks close to thresholds mandating treatment.	I	C
Systematic CV risk assessment may be considered in men >40 years of age and in women >50 years of age or post-menopausal with no known CV risk factors.	IIb	C
Systematic CV risk assessment in men <40 of age and women <50 years of age with no known CV risk factors is not recommended.	III	C

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How to estimate cardiovascular risk

Recommendations	Class	Level
Total CV risk estimation, using a risk estimation system such as SCORE, is recommended for adults >40 years of age, unless they are automatically categorised as being at *high-risk* or *very high-risk* based on documented CVD, DM (>40 years of age), kidney disease or highly elevated single risk factor.	I	C

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Current cardiovascular disease risk (1)

	Framingham	SCORE	ASSIGN – SCORE	QRISK & QRISK	PROCAM	Pooled Cohort Studies Equations	CUORE	Globorisk
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, 1984-198 (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.**

Current cardiovascular disease risk (2)

	Framingham	SCORE	ASSIGN – SCORE	QRISK & QRISK	PROCAM	Pooled Cohort Studies Equations	CUORE	Globorisk
Age range (years)	30–75	40–65	30–74	35–74	20–75	20–79	35–69	40-84
Variables	Sex, age, total cholesterol, HDL-C, SBP, smoking status, DM, hypertensive treatment.	Sex, age, total Cholesterol or total cholesterol/ HDL-C ratio, SBP, smoking status. Versions for use in high and low-risk Countries.	Sex, age, total cholesterol, HDL-C, SBP, smoking - no. cigs, DM, area based index of deprivation, family history.	QRISK1 - sex, age total cholesterol to HDL-C ratio, SBP, smoking status, DM, area based index of deprivation, family history, BMI, BP treatment, ethnicity and chronic diseases.	Age, sex, LDL-C, HDL-C, DM, smoking, SBP.	Age, sex, race (white or other/African American), total cholesterol, HDL-C, SBP, antihypertensive treatment, DM, smoking.	Age, sex, SBP, total cholesterol, HDL-C, antihypertensive therapy and smoking habit.	Age, sex, smoking, total cholesterol, DM, systolic BP.
Comments/ develop.	Latest version includes version based on non-laboratory values only, substituting BMI from lipid measurements.	National, updated Recalibrations.		QRISK2 includes interaction terms to adjust for the interactions between age and some of the Variables.	Recent change in the methods (Weibull) allows extension of risk estimation to women and broader age range.	Race specific beta coefficients for risk factors have been incorporated. Calculator shown to overestimate risk in external validations - this may indicate the need for recalibration in certain populations.		Recalibrations have been undertaken for 11 countries.
Recom. by guidelines	NCEP guidelines, Canadian CV guidelines, other national guidelines recommend adapted versions including New Zealand.	European Guidelines on CVD Prevention.	SIGN	NICE guidelines on lipid modification, QRISK Lifetime recommended by JBS3 guidelines.	International Task Force for Prevention of Coronary Disease Guidelines.	2013 AHA ACC Guideline on the assessment of CVD Risk.		

Advantage and limitations in using the SCORE risk charts

Advantages

- Intuitive, easy to use tool.
- Establishes a common language of risk for healthcare professionals.
- Allows a more objective assessment of risk.
- Takes account of the multifactorial nature of CVD.
- Allows flexibility in management; if an ideal risk factor level cannot be achieved, total risk can still be reduced by reducing other risk factors.
- Deals with the problem of a low absolute risk in young people with multiple risk factors: the relative risk chart helps to illustrate how a young person with a low absolute risk may be at a substantially high and reducible relative risk; calculation of an individual's "risk age" may also be of use in this situation.

Limitations

- Estimates risk of fatal but not total (fatal + non-fatal) CV risk for reasons outlined in text.
- Adapted to suit different European populations, but not different ethnic groups within these populations.
- Limited to the major determinants of risk.
- Other systems have more functionality, although applicability to multiple countries is uncertain.
- Limited age range (40–65 years).

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Examples of risk modifiers that are likely to have reclassification potential

Socio-economic status, social isolation, or lack of social support.
Family history of premature CVD.
BMI and central obesity.
CT coronary calcium score.
Atherosclerotic plaques determined by carotid artery scanning.
ABI

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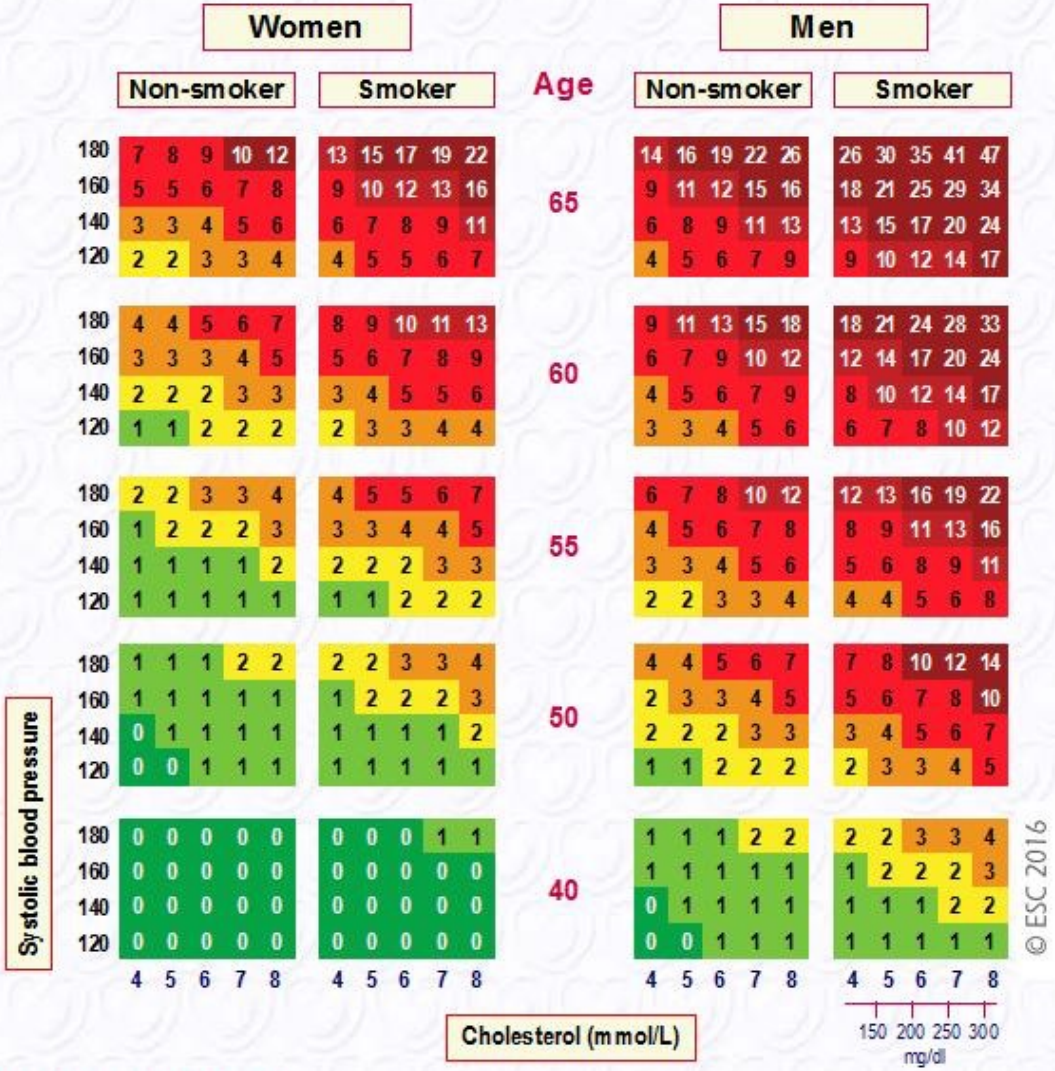
SCORE chart: 10-year risk of fatal cardiovascular disease in populations of countries at high cardiovascular risk



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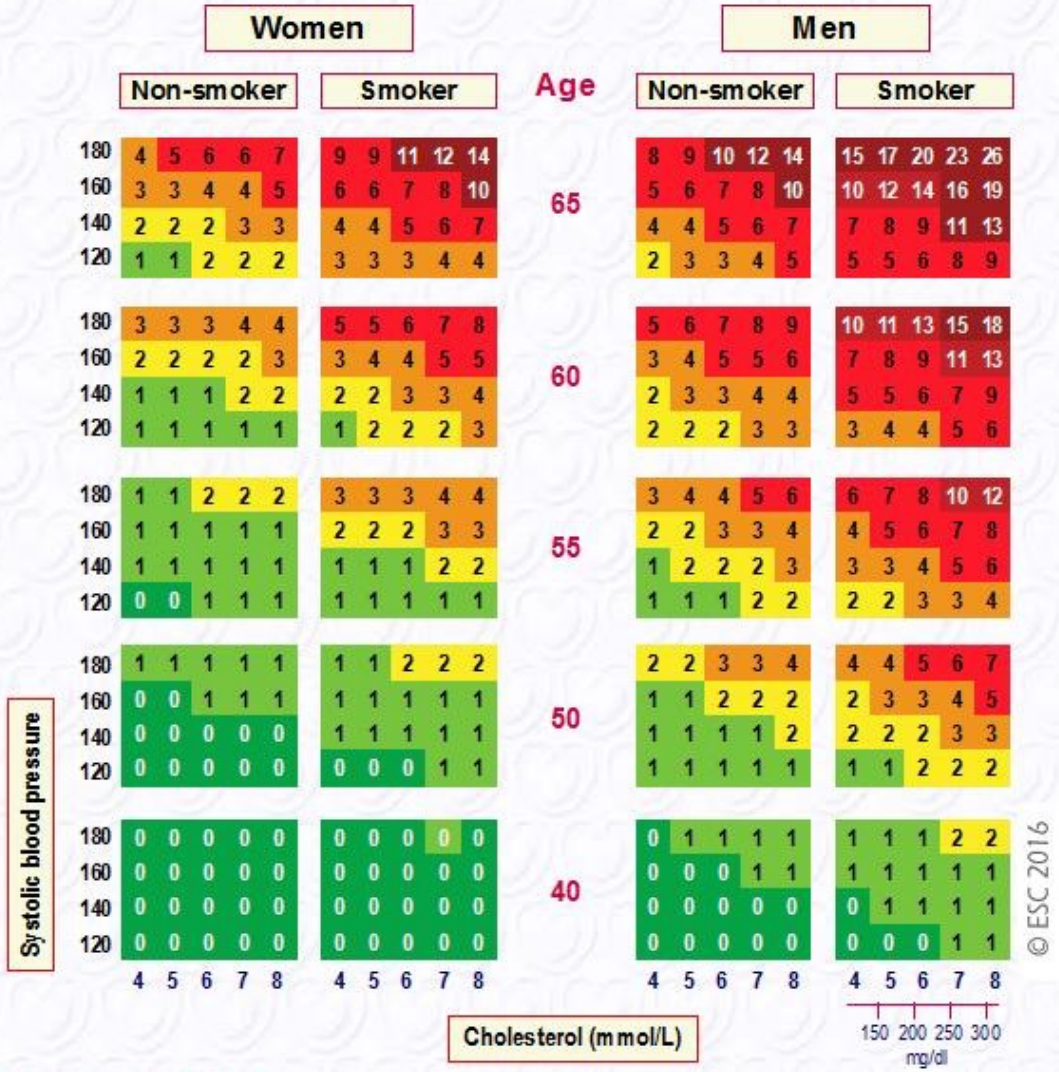
SCORE chart: 10-year risk of fatal cardiovascular disease in populations of countries at low cardiovascular risk



SCORE

- 15% and over
- 10%-14%
- 5%-9%
- 3%-4%
- 2%
- 1%
- <1%

10-year risk of fatal CVD in populations at **Low CVD risk**

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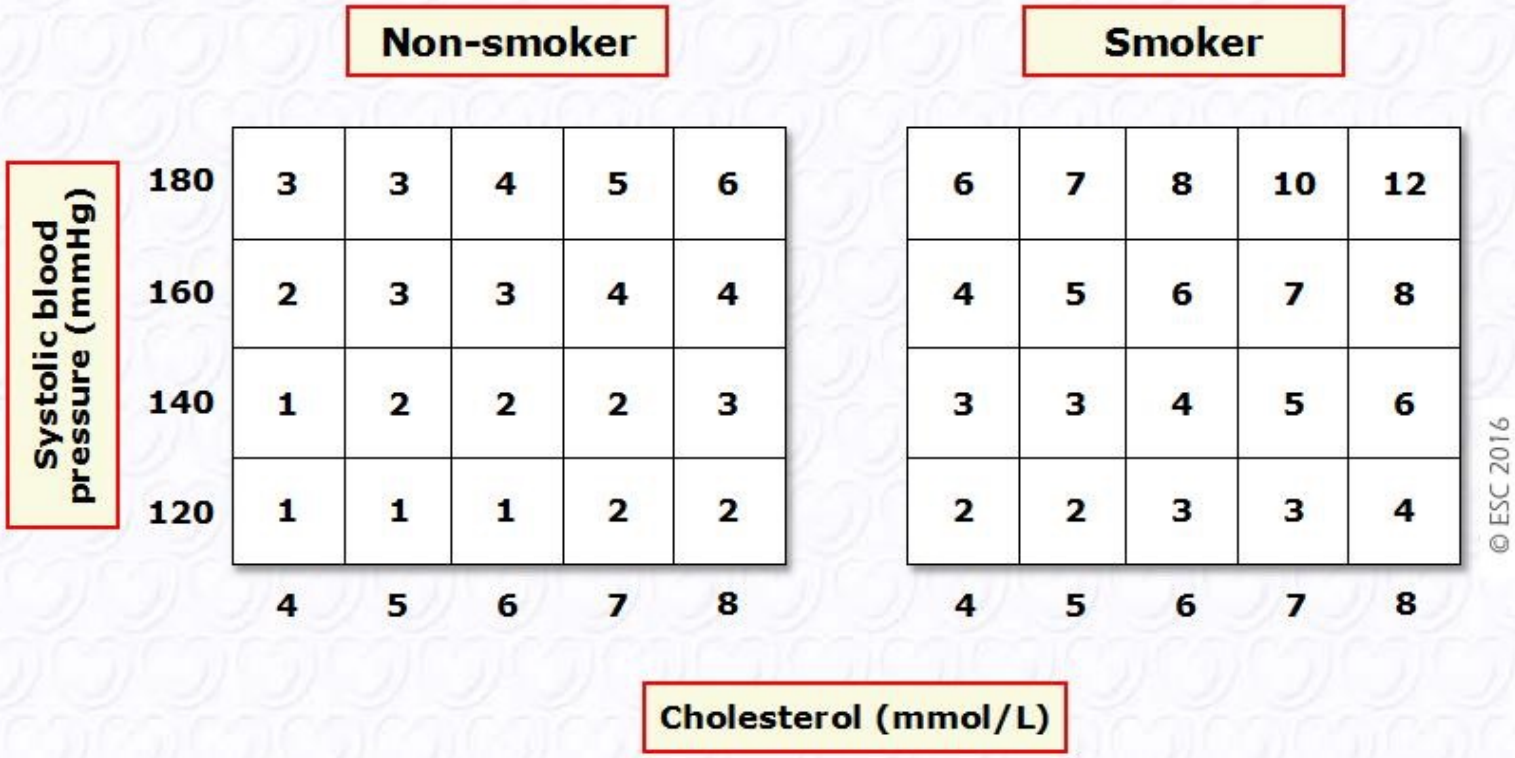
Relative risk chart derived from SCORE Conversion of cholesterol



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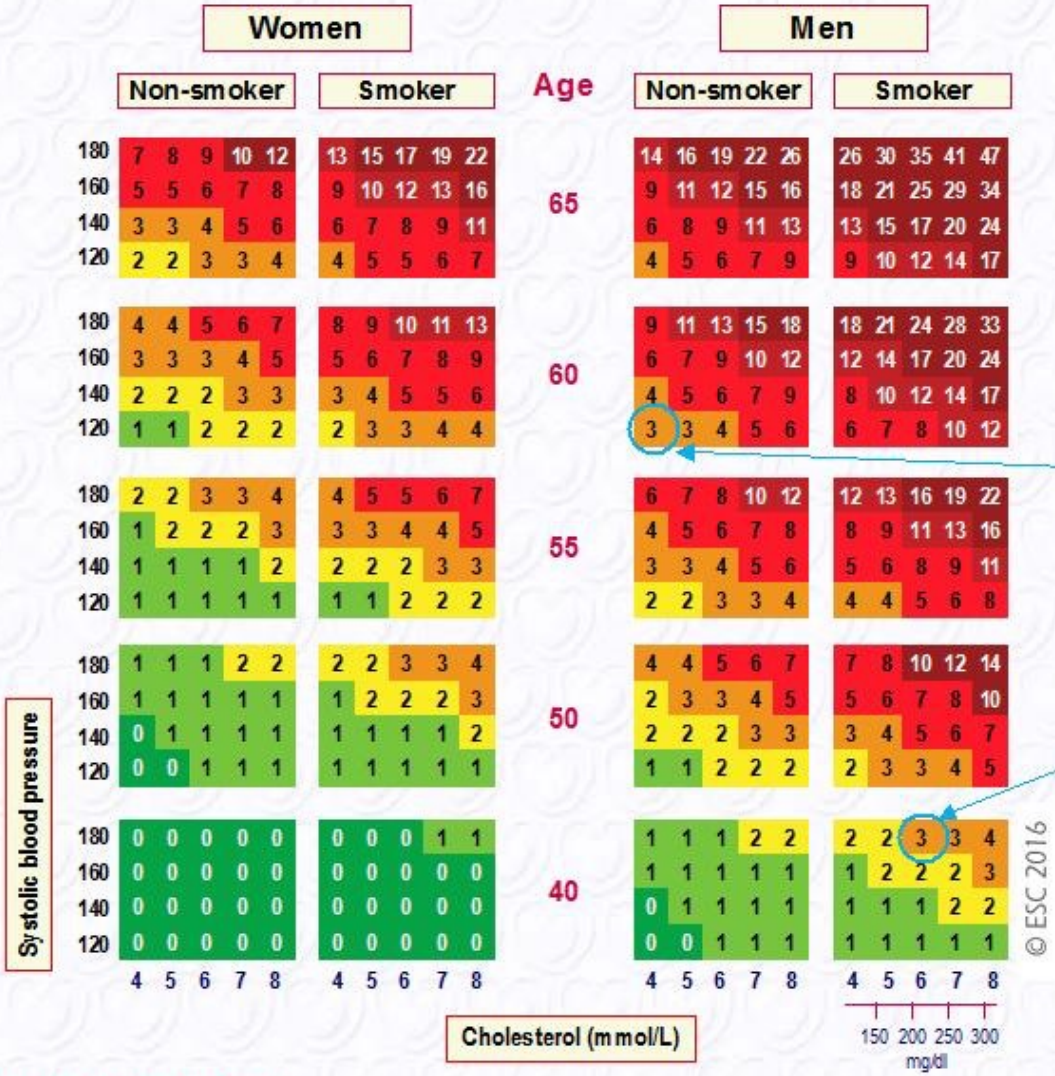
SCORE chart illustrating how the approximate risk age can be read off the chart



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Risk categories

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, 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 m^2). • A calculated SCORE ≥10%.
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 m^2). • A calculated SCORE ≥5% and <10%.
Moderate-risk	SCORE is ≥1% and <5% at 10 years. Many middleaged subjects belong to this category.
Low-risk	SCORE <1%.

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Risk factor goals and target levels

Smoking	No exposure to tobacco in any form.
Diet	Low in saturated fat with a focus on wholegrain products, vegetables, fruit and fish.
Physical activity	At least 150 minutes a week of moderate aerobic PA (30 minutes for 5 days/week) or 75 minutes a week of vigorous aerobic PA (15 minutes for 5 days/week) or a combination thereof.
Body weight	BMI 20–25 kg/m^2. Waist circumference <94 cm (men) and or <80 cm (women).
Blood pressure	<140/90 mmHg.[a]
Lipid	
LDL [b] is the primary target	**Very high-risk: <1.8 mmol/L (<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).[d] **High-risk: <2.6 mmol/L (<100 mg/dL)** or a reduction of at least 50% if the baseline is between 2.6 and 5.2 mmol/L (100 and 200 mg/dL). **Low to moderate risk: <3.0 mmol/L (115 mg/dL).**
Non-HDL-C [b]	<2.6, <3.3 and <3.8 mmol/L (<100, <130 and <145 mg/dL) are recommended for very high, high and low to moderate risk subjects, respectively
HDL-C	No target but >1.0 mmol/L (>40 mg/dL) in men and >1.2 mmol/L (>45 mg/dL) in women indicate lower risk.
Triglycerides	No target but <1.7 mmol/L (<150 mg/dL) indicates lower risk and higher levels indicate a need to look for other risk factors.
Diabetes	HbA1c: <7% (<53 mmol/L).

a. The target can be higher in frail elderly patients, or lower in most patients with DM and in some (very) high risk patients without DM who can tolerate multiple blood pressure lowering drugs
b. A view was expressed that primary care physicians might prefer a single general LDL-C goal of 2.6 mmol/L.
c. Non-HDL-C is a reasonable and practical alternative target because it does not require fasting.
d. This is the general recommendation for those at very high risk. It should be noted that the evidence for patients with chronic kidney disease is less strong

Assessment of family history/(epi)genetics

Recommendations	Class	Level
Assessment of family history of premature CVD (defined as a fatal or non-fatal CVD event or/and established diagnosis of CVD in first degree male relatives before 55 years or female relatives before 65 years) is recommended as part of cardiovascular risk assessment.	I	C
The generalized use of DNA-based tests for CVD risk assessment is not recommended.	III	B

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Assessment of psychosocial risk factors

Recommendations	Class	Level
Psychosocial risk factor assessment, using clinical interview or standardized questionnaires, should be considered to identify possible barriers to lifestyle change or adherence to medication in individuals at high CVD risk or with established CVD.	IIa	B

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Core question for the assessment of psychosocial risk factors in clinical practice

Low socio-economic status	• What is your highest educational degree? • Are you a manual worker?
Work and family stress	• Do you lack control over how to meet the demands at work? • Is your reward inappropriate for your effort? • Do you have serious problems with your spouse?
Social isolation	• Are you living alone? • Do you lack a close confidant? • Have you lost an important relative or friend over the last year?
Depression	• Do you feel down, depressed and hopeless? • Have you lost interest and pleasure in life?
Anxiety	• Do you suddenly feel fear or panic? • Are you frequently unable to stop or control worrying?
Hostility	• Do you frequently feel angry over little things? • Do you often feel annoyed about other people's habits?
Type D personality	• In general, do you often feel anxious, irritable, or depressed? • Do you avoid sharing your thoughts and feelings with other people?
Post-traumatic stress disorder	• Have you been exposed to a traumatic event? • Do you suffer from nightmares or intrusive thoughts?
Other mental disorders	• Do you suffer from any other mental disorder?

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Assessment of circulating and urinary biomarkers

Recommendations	Class	Level
Routine assessment of circulating or urinary biomarkers is not recommended for refinement of CVD risk stratification.	III	B

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Imaging methods

Recommendations	Class	Level
Coronary artery calcium scoring may be considered as a risk modifier in CV risk assessment.	IIb	B
Atherosclerotic plaque detection by carotid artery scanning may be considered as a risk modifier in CV risk assessment.	IIb	B
ABI may be considered as a risk modifier in CV risk assessment.	IIb	B
Carotid ultrasound IMT screening for CV risk assessment is not recommended.	III	A

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Influenza vaccination

Recommendations	Class	Level
Annual influenza vaccination may be considered in patients with established CVD.	IIb	C

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Patients treated for cancer

Recommendations	Class	Level
Cardio-protection in high-risk patients receiving type I chemotherapy should be considered for LV dysfunction prevention.	IIa	B
Optimization of the CV risk profile should be considered in cancer treated patients.	IIa	C

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Autoimmune disease

Recommendations	Class	Level
The use of a 1.5 factor risk multiplier for CV risk in rheumatoid arthritis should be considered, particularly if disease activity is high.	IIa	B
The use of a 1.5 risk multiplier for CV risk in immune inflammatory diseases other than rheumatoid arthritis may be considered on a patient-by-patient basis, depending on disease activity/severity.	IIb	C

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Erectile dysfunction

Recommendations	Class	Level
Assessment of CV risk factors and CVD signs or symptoms in men with ED should be considered.	IIa	C

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Individuals <50 years of age

Recommendations	Class	Level
It is recommended to screen all individuals under 50 year of age with a family history of premature CVD in a degree relative (under 55 year of age in males, under 65 year of age in females) for familial hypercholesterolaemia using a validated clinical score.	I	B

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Female-specific conditions

Recommendations	Class	Level
In women with a history of preeclampsia and/or pregnancy-induced hypertension, periodic screening for hypertension and DM should be considered.	IIa	B
In women with a history of polycystic ovary syndrome or gestational DM, periodic screening for DM should be considered.	IIa	B
In women with a history of giving premature birth, periodic screening for hypertension and DM may be considered.	IIb	B

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Ethnic minorities

Recommendations	Class	Level
Ethnicity should be considered in CVD risk assessment.	IIa	A

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Facilitating changes in behaviour

Recommendations	Class	Level
Established cognitive-behavioural strategies (e.g. motivational interviewing) to facilitate lifestyle change are recommended.	I	A
Involvement of multidisciplinary healthcare professionals (e.g. nurses, dieticians, psychologists) is recommended.	I	A
In individuals at very high CVD risk, multimodal interventions integrating medical resources with education on healthy lifestyle, physical activity, stress management and counselling on psychosocial risk factors, are recommended.	I	A

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Principles of effective communication to facilitate behavioural change

- Spend enough time with the individual to create a therapeutic relationship – even a few more minutes can make a difference.
- Acknowledge the individual's personal view of his/her disease and contributing factors.
- Encourage expression of worries and anxieties, concerns and self-evaluation of motivation for behaviour change and chances of success.
- Speak to the individual in his/her own language and be supportive of every improvement in lifestyle.
- Ask questions to check that the individual has understood the advice and has any support he or she requires to follow it.
- Acknowledge that changing life-long habits can be difficult and that sustained gradual change is often more permanent than a rapid change.
- Accept that individuals may need support for a long time and that repeated efforts to encourage and maintain lifestyle change may be necessary in many individuals.
- Make sure that all health professionals involved provide consistent information.

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Ten strategic steps to facilitate behaviour change

1. Develop a therapeutic alliance.
2. Counsel all individuals at risk of or with manifest cardiovascular disease.
3. Assist individuals to understand the relationship between their behaviour and health.
4. Help individuals assess the barriers to behaviour change.
5. Gain commitments from individuals to own their behaviour change.
6. Involve individuals in identifying and selecting the risk factors to change.
7. Use a combination of strategies including reinforcement of the individual's capacity for change.
8. Design a lifestyle-modification plan.
9. Involve other healthcare staff whenever possible.
10. Monitor progress through follow-up contact.

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Psychosocial factors

Recommendations	Class	Level
Multimodal behavioural interventions, integrating health education, physical exercise and psychological therapy, for psychosocial risk factors and coping with illness are recommended in patients with established CVD and psychosocial symptoms in order to improve psychosocial health.	I	A
Referral for psychotherapy, medication or collaborative care should be considered in the case of clinically significant symptoms of depression, anxiety or hostility.	IIa	A
Treatment of psychosocial risk factors with the aim of preventing CAD should be considered when the risk factor itself is a diagnosable disorder (e.g. depression) or when the factor worsens classical risk factors.	IIa	B

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Physical activity

Recommendations	Class	Level
It is recommended for healthy adults of all ages to perform at least 150 minutes a week of moderate intensity or 75 minutes a week of vigorous intensity aerobic PA or an equivalent combination thereof.	I	A
For additional benefits in healthy adults, a gradual increase in aerobic PA to 300 minutes a week of moderate intensity, or 150 minutes a week of vigorous intensity aerobic PA, or an equivalent combination thereof is recommended.	I	A
Regular assessment and counselling on PA is recommended to promote the engagement and, if necessary, to support an increase in PA volume over time.	I	B
PA is recommended in low-risk individuals without further assessment.	I	C
Multiple sessions of PA should be considered, each lasting ≥10 minutes and evenly spread throughout the week, i.e. on 4–5 days a week and preferably every day of the week.	IIa	B
Clinical evaluation, including exercise testing, should be considered for sedentary people with CV risk factors who intend to engage in vigorous PAs or sports.	IIa	C

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Classification of physical activity intensity and examples of absolute and relative intensity levels

Absolute intensity			Relative intensity		
Intensity	**MET**	**Examples**	**%HR max**	**RPE (Borg scale score)**	**Talk Test**
Light	1.1-2.9	Walking <4.7 km/h, light household work.	50-63	10-11	
Moderate	3-5.9	Walking briskly (4.8–6.5 km/h), slow cycling (15 km/h), painting/decorating, vacuuming, gardening (mowing lawn), golf (pulling clubs in trolley), tennis (doubles), ballroom dancing, water aerobics.	64-76	12-13	Breathing is faster but compatible with speaking full sentences.
Vigorous	≥6	Race-walking, jogging or running, bicycling >15 km/h, heavy gardening (continuous digging or hoeing), swimming laps, tennis (single).	77-93	14-16	Breathing very hard, incompatible with carrying on a conversation comfortably.

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Smoking intervention strategies

Recommendations	Class	Level
It is recommended to identify smokers and provide repeated advice on stopping with offers to help, by the use of follow up support, nicotine replacement therapies, varenicline, and bupropion individually or in combination.	I	A
It is recommended to stop all smoking of tobacco or herbal products, as this is strongly and independently causal of CVD.	I	B
It is recommended to avoid passive smoking.	I	B

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The « Five As » for a smoking cessation strategy for routine practice

A–ASK:	Systematically inquire about smoking status at every opportunity.
A–ADVISE:	Unequivocally urge all smokers to quit.
A–ASSESS:	Determine the person's degree of addiction and readiness to quit.
A–ASSIST:	Agree on a smoking cessation strategy, including setting a quit date, behavioural counselling, and pharmacological support.
A–ARRANGE:	Arrange a schedule of follow-up.

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Nutrition

Recommendations	Class	Level
A healthy diet is recommended as a cornerstone of CVD prevention in all individuals.	I	B

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Healthy diet characteristics

• Saturated fatty acids to account for <10% of total energy intake, through replacement by polyunsaturated fatty acids.
• Trans unsaturated fatty acids: as little as possible, preferably no intake from processed food, and <1% of total energy intake from natural origin.
• <5 g of salt per day.
• 30–45 g of fibre per day, preferably from wholegrain products.
• ≥200 g of fruit per day (2–3 servings).
• ≥200 g of vegetables per day (2–3 servings).
• Fish 1–2 times per week, one of which to be oily fish.
• 30 grams unsalted nuts per day.
• Consumption of alcoholic beverages should be limited to 2 glasses per day (20 g/d of alcohol) for men and 1 glass per day (10 g/d of alcohol) for women.
• Sugar-sweetened soft drinks and alcoholic beverages consumption must be discouraged.

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Body weight

Recommendations	Class	Level
It is recommended that subjects with healthy weight maintain their weight. It is recommended that overweight and obese people achieve a healthy weight (or aim for a reduction in weight) in order to reduce BP, dyslipidaemia and risk of developing type 2 DM, and thus improve the CV risk profile.	I	A

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Lipid control

Recommendations	Class	Level
In patients at VERY HIGH CV risk, an LDL-C goal <1.8 mmol/L (<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) is recommended.	I	B
In patients at HIGH CV risk, an LDL-C goal <2.6 mmol/L (<100 mg/dL), or a reduction of at least 50% if the baseline is between 2.6 and 5.2 mmol/L (100 and 200 mg/dL) is recommended.	I	B
In the remaining patients on LDL-C lowering treatment, an LDL-C goal <3.0 mmol/L (<115 mg/dL) should be considered.	IIa	C

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Intervention stratégies

Total CV risk (SCORE) %	LDL-C levels				
	<70 mg/dL <1.8 mmol/L	70 to <100 mg/dL 1.8 to <2.6 mmol/L	100 to <155 mg/dL 2.6 to <4.0 mmol/L	155 to <190 mg/dL 4.0 to <4.9 mmol/L	≥190 mg/dL ≥4.9 mmol/L
<1	Lifestyle advice	Lifestyle advice	Lifestyle advice	Lifestyle advice	Lifestyle advice, consider drug if uncontrolled
Class/Level	I/C	I/C	I/C	I/C	IIa/A
≥1 to <5	Lifestyle advice	Lifestyle advice	Lifestyle advice, consider drug if uncontrolled	Lifestyle advice, consider drug if uncontrolled	Lifestyle advice, consider drug if uncontrolled
Class/Level	I/C	I/C	IIa/A	IIa/A	I/A
≥5 to <10, or high-risk	Lifestyle advice	Lifestyle advice, consider drug if uncontrolled	Lifestyle advice and drug treatment for most	Lifestyle advice and drug treatment	Lifestyle advice and drug treatment
Class/Level	IIa/A	IIa/A	IIa/A	I/A	I/A
≥10 or very high-risk	Lifestyle advice, consider drug	Lifestyle advice and concomitant drug treatment	Lifestyle advice and concomitant drug treatment	Lifestyle advice and concomitant drug treatment	Lifestyle advice and concomitant drug treatment
Class/Level	IIa/A	IIa/A	I/A	IA	I/A

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Management of diabetes (1)

Recommendations	Class	Level
Lifestyle changes including smoking cessation, low fat diet, high fibre diet, aerobic physical activity, and strength training are recommended.	I	A
Reduction in energy intake is recommended to patients to help achieve lower weight or prevent weight gain.	I	B
A target HbA1c for the reduction in risk of CVD and microvascular complications in DM of <7.0% (<53 mmol/mol) is recommended for the majority of non-pregnant adults with either type 1 or type 2 DM.	I	A
For patients with a long duration of DM, the elderly, frail, or those with existing CVD, a relaxing of the HbA1c targets (i.e. less stringent) should be considered.	IIa	B
A target HbA1c of ≤6.5% (≤48 mmol/mol) should be considered at diagnosis or early in the course of type 2 DM in patients, who are not frail and do not have CVD.	IIa	B
When screening for DM in individuals with or without CVD, assessment of HbA1c (which can be done non-fasting) or fasting blood glucose should be considered. An oral glucose tolerance test can be offered when there is still doubt.	IIa	A

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Management of diabetes (2)

Recommendations	Class	Level
Metformin is recommended as first-line therapy, if tolerated and not contra-indicated, following evaluation of renal function.	I	B
Avoidance of hypoglycaemia and excessive weight gain should be considered and individual approaches (with respect to both treatment targets and drug choices) should be considered in patients with advanced disease.	IIa	B
In patients with type 2 DM and CVD, the use of an SGLT2 inhibitor should be considered early in the course of the disease to reduce CV and total mortality.	IIa	B
Lipid lowering agents (principally statins) are recommended to reduce CV risk in all patients with type 2 or type 1 DM above the age of 40 years.	I	A
Lipid lowering agents (principally statins) may be considered also in individuals below 40 years of age if at significantly elevated risk, based on the presence of micro-vascular complications or of multiple CV risk factors.	IIb	A

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Management of diabetes (3)

Recommendations	Class	Level
In DM patients at very high-risk, a LDL-C target <1.8 mmol/L (<70 mg/dL), or a reduction of at least 50% if the baseline LDL-C is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL), is recommended. In DM patients with high-risk, LDL-C target <2.6 mmol/L (<100mg/dL) or a reduction of at least 50% if the baseline LDL-C is between 2.6 and 5.2 mmol/L (100 and 200 mg/dL) is recommended.	I	B
BP targets in type 2 DM are generally recommended to be <140/85 mmHg, but a lower target of <130/80 mmHg is recommended in selected patients (e.g. younger patients at elevated risk for specific complications) for additional gains on stroke, retinopathy and albuminuria risk. Renin-angiotensin-aldosterone system blocker is recommended in the treatment of hypertension in DM, particularly in the presence of proteinuria or micro- albuminuria. Recommended BP target in patients with type 1 DM is <130/80 mmHg.	I	B
The use of drugs that increase HDL-C to prevent CVD in type 2 DM is not recommended.	III	A
Antiplatelet therapy (e.g. with aspirin) is not recommended for people with DM who do not have CVD.	III	A

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Management of hypertension (1)

Recommendations	Class	Level
Lifestyle measures (weight control, increased physical activity, alcohol moderation, sodium restriction, and increased consumption of fruits, vegetables, and low-fat dairy products) are recommended in all patients with hypertension and in individuals with high normal BP.	I	A
All major BP lowering drug classes (i.e. diuretics, ACE-I, calcium antagonists, ARBs, and ß-blockers) do not differ significantly in their BP-lowering efficacy and thus are recommended as BP lowering treatment.	I	A
In asymptomatic subjects with hypertension but free of CVD, CKD, and DM, total CV risk stratification using the SCORE model is recommended.	I	B
Drug treatment is recommended in patients with grade 3 hypertension irrespective of CV risk, as well as in patients with grade 1 or 2 hypertension who are at very high CV risk.	I	B
Drug treatment should be considered in patients with grade 1 or 2 hypertension who are at high CV risk.	IIa	B
In patients at low to moderate total CV risk and with grade 1 or 2 hypertension, lifestyle measures are recommended.	I	B
In patients at low to moderate total CV risk and with grade 1 or 2 hypertension, if lifestyle measures fail to reduce BP, drug treatment may be considered.	IIb	B

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Management of hypertension (2)

Recommendations	Class	Level
SBP <140 mmHg and DBP <90 mmHg are recommended in all treated hypertensive patients <60 years old.	I	B
In patients >60 years old with SBP ≥160 mmHg, it is recommended to reduce SBP to between 150 and 140 mmHg.	I	B
In fit patients <80 years old, a target SBP <140 mmHg may be considered if treatment is well tolerated. In some of these patients a target SBP <120 mmHg may be considered if at (very) high-risk and tolerate multiple BP lowering drugs.	IIb	B
In individuals >80 years and with initial SBP ≥160 mmHg, it is recommended to reduce SBP to between 150 and 140 mmHg, provided they are in good physical and mental conditions.	I	B
In frail elderly patients, a careful treatment intensity (e.g. number of BP lowering drugs) and BP targets should be considered, and clinical effects of treatment should be carefully monitored.	IIa	B
Initiation of BP lowering therapy with a two-drug combination may be considered in patients with markedly elevated baseline BP or at high CV risk. Combination of two drugs at fixed doses in a single pill may be considered because of improved adherence.	IIb	C
ß-blockers and thiazide diuretics are not recommended in hypertensive patients with multiple metabolic risk factors, due to the increased risk of DM.	III	B

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Definition and classification of blood pressure levels

Category	Systolic BP (mmHg)		Diastolic BP (mmHg)
Optimal	<120	and	<80
Normal	120–129	and/or	80–84
High-normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥180	and/or	≥110
Isolated systolic hypertension	≥140	and	<90

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Blood pressure thresholds for definition of hypertension with different type of BP measurement

Category	Systolic BP (mmHg)	Diastolic BP (mmHg)
Office or clinic	140	90
24-hour	125–130	80
Day	130–135	85
Night	120	70
Home	130–135	85

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Clinical indications for the use of out-of-office blood pressure measurements

Suspicion of white-coat or masked hypertension

- High office BP in individuals without organ damage and at low total CV risk.
- Normal office BP in individuals with organ damage or at high total CV risk.
- Considerable variability of office BP over the same or different visits.
- Autonomic, postural, post-prandial, siesta- and drug-induced hypotension.
- Elevated office BP or suspected pre-eclampsia in pregnant women.
- Identification of true and false resistant hypertension.

Specific indications for ABPM

- Marked discordance between office BP and home BP.
- Assessment of dipping status.
- Suspicion of nocturnal hypertension or absence of dipping, such as in patients with sleep apnoea, CKD, or DM.
- Assessment of BP variability.

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Drugs to be preferred in specific conditions

Condition	Drug
Asymptomatic organ damage	
LVH	ACE-I, calcium antagonist, ARB
Asymptomatic atherosclerosis	Calcium antagonist, ACE-I
Microalbuminuria	ACE-I, ARB
Renal dysfunction	ACE-I, ARB
Clinical CV event	
Previous stroke	Any agent effectively lowering BP
Previous MI	ß-blockers, ACE-I, ARB
Angina pectoris	ß-blockers, calcium antagonist
Heart failure	Diuretic, ß-blockers, ACE-I, ARB, mineralocorticoid receptor antagonist
Aortic aneurysm	ß-blockers
Atrial fibrillation: prevention	Consider ARB, ACE-I, ß-blockers or mineralocorticoid receptor antagonist
Atrial fibrillation: rate prevention	ß-blockers, non-dihydropyridine calcium antagonist
ESRD/proteinuria	ACE-I, ARB
Peripheral artery disease	ACE-I, calcium antagonist
Other	
ISH (elderly)	Diuretic, calcium antagonist
Diabetes mellitus	ACE-I, ARB
Pregnancy	Methyldopa, ß-blockers, calcium antagonist
Black people	Diuretic, calcium antagonist

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Antiplatelet therapy

Recommendations	Class	Level
In acute coronary syndromes, a $P2Y_{12}$ inhibitor for 12 months is recommended in addition to aspirin, unless there are contra-indications such as excessive risk of bleeding.	I	A
$P2Y_{12}$ inhibitor administration for a shorter duration of 3–6 months after DES implantation may be considered in patients deemed at high bleeding risk.	IIb	A
$P2Y_{12}$ inhibitor administration in addition to aspirin beyond 1 year may be considered after careful assessment of ischaemic and bleeding risks of the patient.	IIb	A
In the chronic phase (>12 months) after MI, aspirin is recommended.	I	A
In patients with non-cardioembolic ischaemic stroke or TIA, prevention with aspirin only, or dipyridamole plus aspirin or clopidogrel alone is recommended.	I	A
Prasugrel is not recommended in patients with stable CAD. Ticagrelor is not recommended in patients with stable CAD without a previous ACS.	III	C
In patients with non-cardioembolic cerebral ischaemic events, anticoagulation is not recommended.	III	B
Antiplatelet therapy is not recommended in individuals without CVD due to the increased risk of major bleeding.	III	B

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Acheving medication adherence

Recommendations	Class	Level
Simplifying the treatment regimen to the lowest acceptable level is recommended, with repetitive monitoring and feedback. In case of persistent non-adherence, multisession or combined behavioural interventions are recommended.	I	A
It is recommended that physicians assess medication adherence, and identify reasons for non-adherence in order to tailor further interventions.	I	C
The use of the polypill and combination therapy to increase adherence to drug therapy may be considered.	IIb	B

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Population-based approaches to diet (1)

	Recommendations	Class	Level
Governmental restrictions and mandates	Legislation on composition of foods to reduce energy density, salt and saturated fat, and (added) sugar content of foods and beverages, and to limit portion sizes is recommended.	I	B
	Elimination of industrially produced transfats is recommended.	I	A
	Facilitating an integrated and coherent policy and activities of the (local) governments, non-governmental organizations, food industry, retail, catering, schools, workplaces and other stakeholders to promote a healthy diet and to prevent overweight is recommended.	I	C
	Legislation restricting marketing aimed at children of foods that are high in fats, sugar and/or salt, less healthy options, junk foods, drinks with alcohol and non-alcoholic beverages rich in sugar (e.g. on TV, internet, social media and on food packages) is recommended.	I	C
Media and education	Reformulation of foods accompanied by educational information campaigns should be considered to create awareness on the nutrition quality of foods among consumers.	IIa	C
Labelling and information	Mandatory and harmonized simplified front-of-pack nutrition labelling is recommended.	I	C
	Independently and coherently formulated criteria for nutrient profiles should be considered in support of health and nutrition claims and front-of-pack logos (e.g. traffic lights, healthy choices, key-holes).	IIa	C
	Mandatory nutrition labelling for non-pre-packaged foods, including in restaurants hospitals and workplaces, should be considered.	IIa	C

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Population-based approaches to diet (2)

	Recommendations	Class	Level
Economic incentives	Pricing and subsidy strategies are recommended to promote healthier food and beverage choices.	I	B
	Taxes on foods and beverages rich in sugar and saturated fat, and on alcoholic drinks are recommended.	I	B
Schools	At all schools, pre-schools and daycare centres a multi-component, comprehensive and coherent policy is recommended to promote a healthy diet.	I	B
	Availability of fresh drinking water and healthy foods in schools, and in vending machines is recommended.	I	B
Workplaces	At all companies a coherent and comprehensive health policy and nutritional education are recommended to stimulate the health awareness of employees.	I	B
	Increased availability of fresh drinking water and improved nutritional quality of food served and/or sold in the workplace, and in vending machines should be considered.	IIa	C
Community setting	Regulation of location and density of fast food and alcohol purchasing outlets and other catering establishments should be considered.	IIa	C

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Population-based approaches to physical activity (1)

	Recommendations	Class	Level
Governmental restrictions and mandates	Consideration of PA when planning new landscaping/buildings or towns is recommended.	I	C
Media and education	Sustained, focused, media and educational campaigns, using multiple media modes (e.g. apps, posters, flyers and signage) may be considered to promote PA.	IIb	C
	Short term community-based educational programmes and wearable devices promoting healthy behaviours, such as walking should be considered.	IIa	C
Labelling and information	Point-of-decision prompts should be considered to encourage use of stairs.	IIa	B
	Exercise prescription for health promotion by physicians, especially GPs, similar to drug prescription should be considered.	IIa	C
Economic incentives	Increased fuel (gasoline) taxes should be considered to increase active transport/commuting.	IIa	C
	Tax incentives for individuals to purchase exercise equipment or health club/fitness memberships may be considered.	IIb	C
	Sustained individual financial incentives may be considered for increased activity/fitness or weight loss.	IIb	C
	Tax incentives to employers to offer comprehensive worksite wellness programmes with nutrition, PA, and tobacco cessation/prevention components may be considered.	IIb	C

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Population-based approaches to physical activity (2)

	Recommendations	Class	Level
Schools	Increased availability and types of school playground spaces and equipment for exercise activity and sports are recommended.	I	C
	Regular classroom PA breaks during academic lessons should be considered.	IIa	B
	Increasing active commuting to school should be considered e.g. a walking school bus programme with supervised walking routes to and from school for safety.	IIa	C
	Increased number and duration of PA classes, with revised PA curricula to implement at least moderate activity and trained teachers in exercise and sports may be considered.	IIb	B
Workplaces	Comprehensive worksite wellness programmes should be considered with nutrition and PA components.	IIa	B
	Structured worksite programmes that encourage PA and provide a set time for PA during work hours should be considered. Improving stairway access and appeal, potentially in combination with "skip-stop" elevators that skip some floors should be considered.	IIa	C
	Promoting worksite fitness centres should be considered.	IIa	C
Community setting	Health care providers should consider inquiring about PA in every medical encounter and adding it to the record. In addition, they should consider to motivate the individual and promote PA.	IIa	C
	Improved accessibility of recreation and PA spaces and facilities (e.g. building of parks and playgrounds, increasing operating hours, use of school facilities during non-school hours), improved walkability should be considered.	IIa	C
	Improved neighbourhood aesthetics (to increase activity in adults) should be considered.	IIa	C

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Population-based approaches to smoking and other tobacco use (1)

	Recommendations	Class	Level
Governmental restrictions and mandates	Banning smoking in public places is recommended to prevent smoking and to promote smoking cessation.	I	A
	Banning smoking in public places, outside public entrances, workplaces, in restaurants and bars is recommended to protect people from passive smoking.	I	A
	Prohibit sales of tobacco products to adolescents are recommended.	I	A
	Banning of tobacco vending machines is recommended.	I	A
	Restrictions on advertising, marketing and sale of smokeless tobacco are recommended.	I	A
	Complete ban on advertising and promotion of tobacco products are recommended.	I	B
	Reduced density of retail tobacco outlets in residential areas, schools and hospitals is recommended.	I	B
	Harmonization of border sales and tax free sales of all tobacco products is recommended.	I	B
	Restrictions on advertising, marketing and sale of electronic cigarettes should be considered.	IIa	A
Media and education	Telephone and internet based lines for cessation counselling and support services are recommended.	I	A
	Media and educational campaigns as part of multicomponent strategies to reduce smoking and increase quit rates, reduce passive smoking and use of smokeless tobacco are recommended.	I	A
	Media and educational campaigns concentrating solely on reducing smoking, increasing quit rates, reducing passive smoking and the use of smokeless tobacco should be considered.	IIa	B

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Population-based approaches to smoking other tobacco use (2)

	Recommendations	Class	Level
Labelling and information	Cigarette package pictorial and text warnings are recommended.	I	B
	Plain packaging is recommended.	I	B
Economic incentives	Higher taxes and prices on all tobacco products are recommended.	I	A
Schools	Banning smoking in school, pre-school and child care to protect from passive smoking is recommended.	I	A
	Promotion and teaching of a healthy lifestyle including tobacco-free life should be considered in all schools.	IIa	B
Workplaces	Workplace specific bans on smoking to reduce passive smoking and increase quit rates are recommended.	I	A
	Workplace policy on healthy choices including tobacco cessation/ prevention is recommended.	I	A
Community setting	It is recommended that health personnel, caregivers and school personnel set an example by not smoking or using tobacco products at work.	I	A
	It is recommended to advise pregnant women to be tobacco-free during pregnancy.	I	A
	It is recommended to advise parents to be tobacco-free when children are present.	I	A
	It is recommended to advise parents to never smoke in cars and private homes.	I	A
	Residence-specific restrictions on smoking should be considered.	IIa	B

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Protecting against alcohol abuse (1)

	Recommendations	Class	Level
Governmental restrictions and mandates	Regulating physical availability of alcoholic beverages is recommended, including minimum legal purchase age, restrictions on outlet density and time and place of sales, public health oriented licensing systems, and governmental monopolies of retail sales.	I	B
	Drink-driving countermeasures are recommended such as lowered blood alcohol concentration limits and "zero tolerance", random breath testing and sobriety check points.	I	B
	Implementing comprehensive restrictions and bans on advertising and promotion of alcoholic beverages is recommended.	I	C
Media and education	Educational information campaigns may be considered to create awareness on the hazardous effects of alcohol.	IIb	B
Labelling and information	Labelling alcohol with information on caloric content and health warning messages of the harmful effects of alcohol may be considered.	IIb	B
Economic incentives	Taxes on alcoholic beverages are recommended.	I	B

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Protecting against alcohol abuse (2)

	Recommendations	Class	Level
Schools	At every school, pre-school and day care a multi-component, comprehensive and coherent education may be considered to prevent alcohol abuse.	**IIb**	**B**
Workplaces	At every company a coherent and comprehensive health policy and nutritional education on stimulating the health of employees, including limiting excessive alcohol intake, are recommended.	**I**	**B**
Community setting	Measures to support and empower primary care to adopt effective approaches to prevent and reduce harmful use of alcohol are recommended.	**I**	**B**
	Enacting management policies relating to responsible serving of alcoholic beverages should be considered to reduce the negative consequences of drinking.	**IIa**	**B**
	Planning of location and density of alcohol purchasing outlets and other catering establishments should be considered.	**IIa**	**C**

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Cardiovascular disease prevention in primary care

Recommendations	Class	Level
It is recommended that GPs, nurses and allied health professionals within primary care deliver CVD prevention for high-risk patients.	I	C

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CVD prevention strategies in the acute hospital admission setting

Recommendations	Class	Level
It is recommended to implement strategies for prevention in CVD patients, including lifestyle changes, risk factor management and pharmacological optimization, after an acute event before hospital discharge to lower risk of mortality and morbidity.	I	A

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Specialized prevention programmes

Recommendations	Class	Level
Participation in a CR programme for patients hospitalized for an acute coronary event or revascularization, and for patients with HF, is recommended to improve patient outcomes.	I	A
Preventive programmes for therapy optimisation, adherence and risk factor management are recommended for stable patients with CVD to reduce disease recurrence.	I	B
Methods to increase referral to and uptake of CR should be considered such as electronic prompts or automatic referrals, referral and liaison visits, structured follow-up by physicians, nurses or therapists, and early starts to programmes after discharge.	IIa	B
Nurses and allied health professional led programmes should be considered to deliver CVD prevention across healthcare settings.	IIa	B

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Monitoring preventive strategies

Recommendations	Class	Level
Systematically monitoring the process of delivery of cardiovascular disease prevention activities as well as outcomes may be considered.	IIb	C

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Example of performance measurements of CVD prevention

• Subjects identified as tobacco users who received cessation intervention.
• Subjects for whom sedentary habits have been recorded and are counselled to increase PA.
• Subjects for whom unhealthy diet/nutritional habits have been recorded and are counselled to improve diet.
• Subjects for whom weight and BMI and/or waist circumference is documented above normal limits and are counselled on weight management.
• Subjects >40 years old with at least one lipid profile performed within the past 5 years.
• Patients <60 years old and with hypertension (not DM) who had a recorded BP reading at their most recent visit of <140/90 mmHg.
• Patients with DM who had a recorded HbA1c <7.0% (<53 mmol/mol) at the most recent visit.
• Patients with a qualifying event/diagnosis who have been referred to an in-patient CR or out-patient CR programme before hospital discharge.

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To do and not to do messages from the Guidelines (1)

Recommendations	Class	Level
Cardiovascular risk assessment		
Systematic CV risk assessment is recommended in individuals at increased CV risk, i.e. with family history of premature CVD, familial hyperlipidaemia, major CV risk factors (such as smoking, high BP, DM or raised lipid levels) or comorbidities increasing CV risk.	I	C
It is recommended to repeat CV risk assessment every 5 years, and more often for individuals with risks close to thresholds mandating treatment.	I	C
Systematic CV risk assessment in men <40 of age and women <50 years of age with no known CV risk factors is not recommended.	III	C
How to estimate cardiovascular risk		
Total CV risk estimation, using a risk estimation system such as SCORE, is recommended for adults >40 years of age, unless they are automatically categorised as being at high risk or very high risk based on documented CVD, DM (>40 years of age), kidney disease or a highly elevated single risk factor.	I	C
Routine assessment of circulating or urinary biomarkers is not recommended for refinement of CVD risk stratification.	III	B
Carotid ultrasound IMT screening for CV risk assessment is not recommended.	III	A

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To do and not to do messages from the Guidelines (2)

Recommendations	Class	Level
How to intervene		
It is recommended for healthy adults of all ages to perform at least 150 minutes a week of moderate intensity or 75 minutes a week of vigorous intensity aerobic PA or an equivalent combination thereof.	I	A
PA is recommended in low risk individuals without further assessment.	I	C
It is recommended to identify smokers and provide repeated advice on stopping with offers to help, by the use of follow up support, nicotine replacement therapies, varenicline, and bupropion individually or in combination.	I	A
A healthy diet is recommended as a cornerstone of CVD prevention in all individuals.	I	B
It is recommended that subjects with healthy weight maintain their weight. It is recommended that overweight and obese people achieve a healthy weight (or aim for a reduction in weight).	I	A
In patients at VERY HIGH CV risk, an LDL-C goal <1.8 mmol/L (<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) is recommended. In patients at HIGH CV risk, an LDL-C goal <2.6 mmol/L (<100 mg/dL), or a reduction of at least 50% if the baseline is between 2.6 and 5.2 mmol/L (100 and 200 mg/dL) is recommended.	I	B

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To do and not to do messages from the Guidelines (3)

Recommendations	Class	Level
How to intervene *(cont'd)*		
In treated hypertensive patients <60 years old, SBP <140 mmHg and DBP <90 mmHg are recommended. In patients >60 years old with SBP ≥160 mmHg, it is recommended to reduce SBP to between 150 and 140 mmHg. In individuals >80 years and with initial SBP ≥160 mmHg, it is recommended to reduce SBP to between 150 and 140 mmHg, provided they are in good physical and mental conditions.	I	B
BP targets in type 2 DM are <140/85 mmHg, but a lower target of <130/80 mmHg is recommended in selected patients (e.g. younger patients at elevated risk for complications) for additional gains on stroke, retinopathy and albuminuria risk.	I	B
BP targets in patients with type 1 DM are <130/80 mmHg.	I	B
Drug treatment is recommended in patients with grade 3 hypertension irrespective of CV risk, as well as in patients with grade 1 or 2 hypertension who are at very high CV risk.	I	B
All major BP lowering drug classes (i.e. diuretics, ACE-I, calcium antagonists, ARBs, and ß-blockers) do not differ significantly in their BP-lowering efficacy and thus are recommended as BP lowering treatment.	I	A

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To do and not to do messages from the Guidelines (4)

Recommendations	Class	Level
How to intervene *(cont'd)*		
Renin-angiotensin-aldosterone system blocker is recommended in the treatment of hypertension in DM, particularly in the presence of proteinuria or micro-albuminuria.	I	B
ß-blockers and thiazide diuretics are not recommended in hypertensive patients with multiple metabolic risk factors due to the increased risk of DM.	III	B
A target HbA1c for the reduction in risk of CVD and microvascular complications in DM of <7.0% (<53 mmol/mol) is recommended for the majority of non-pregnant adults with either type 1 or type 2 DM.	I	A
In DM, metformin is recommended as therapy, if tolerated and not contra-indicated, following evaluation of renal function.	I	B
Lipid lowering agents (principally statins) are recommended to reduce CV risk in all patients with type 2 or type 1 DM above the age of 40 years.	I	A
Antiplatelet therapy is not recommended in individuals without CVD due to the increased risk of major bleeding.	III	B

European Heart Journal 2016 ;37:2315–2381-doi:10.1093/eurheartj/ehw106

To do and not to do messages from the Guidelines (5)

Recommendations	Class	Level
Achieving medication and healthy lifestyle adherence		
Simplifying the treatment regimen to the lowest acceptable level is recommended, with repetitive monitoring and feedback. In the case of persistent non-adherence, multi-session or combined behavioural interventions are recommended.	I	A
It is recommended that health personnel, caregivers set an example by following healthy lifestyle, such as not smoking or using tobacco products at work.	I	A
CVD Prevention implementation		
In primary care, it is recommended that GPs, nurses and allied health professionals within primary care deliver CVD prevention for highrisk patients.	I	C
In acute hospital setting, It is recommended to implement strategies for prevention in CVD patients, including lifestyle changes, risk factor management and pharmacological optimization, after an acute event before hospital discharge to lower risk of mortality and morbidity.	I	A
Participation in a cardiac rehabilitation programme for patients hospitalized for an acute coronary event or revascularization, and for patients with HF, is recommended.	I	A

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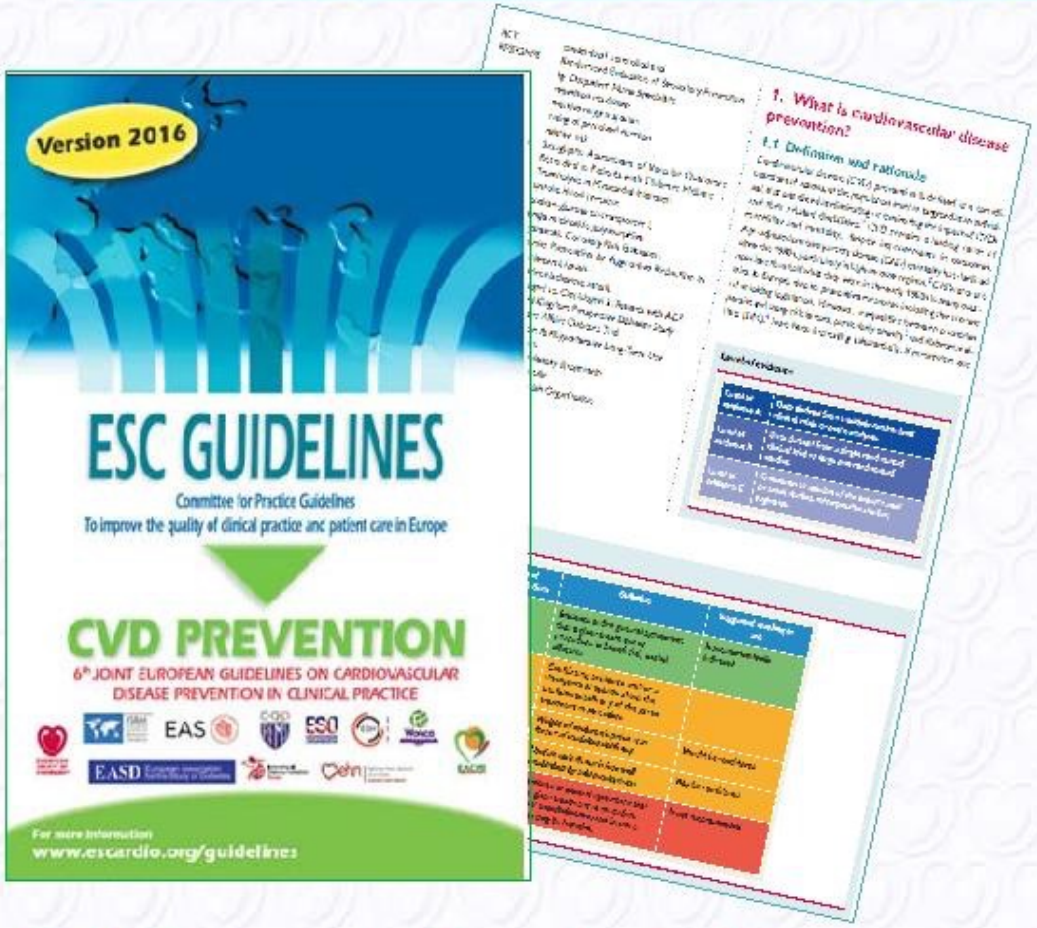
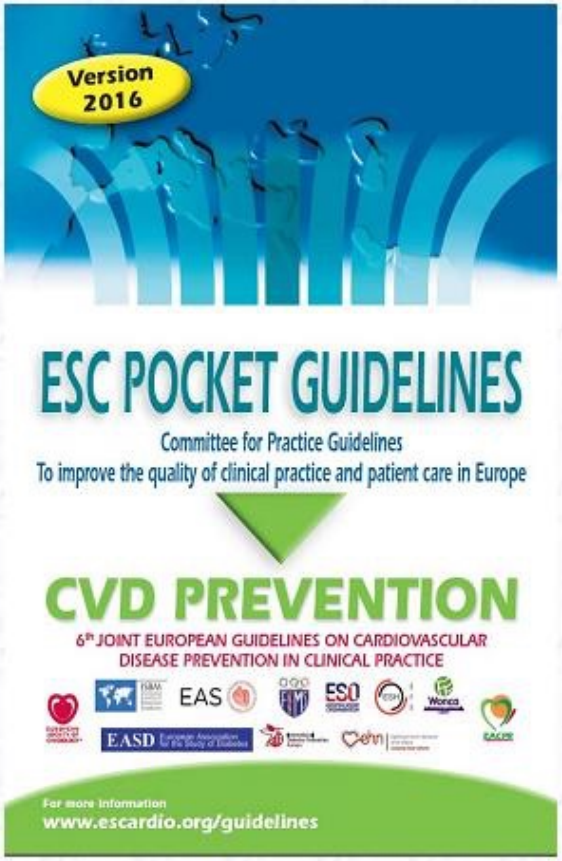
European CVD Prevention in Clinical Practice (2016)





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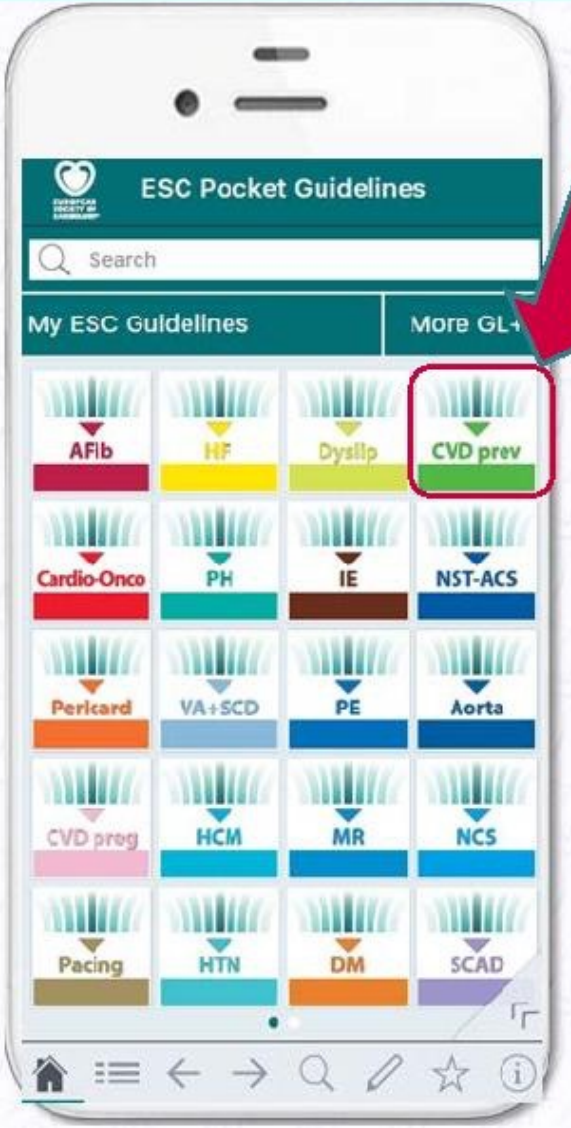

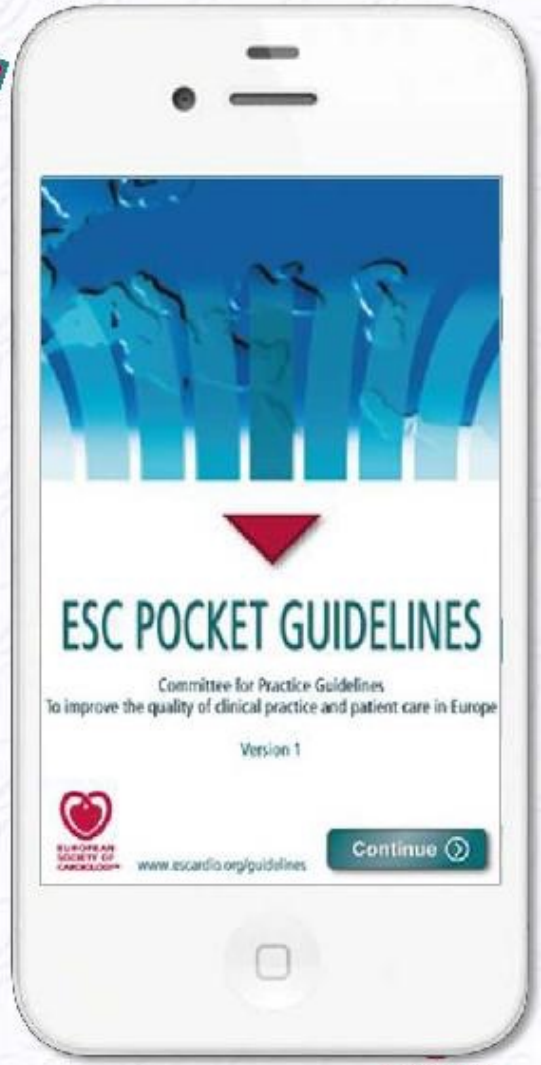

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