ESC Guidelines on cardiovascular disease prevention in clinical practice

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The European Society of Cardiology and 12 other medical societies have developed consensus guidelines on cardiovascular disease prevention in clinical practice. What are the key findings in ASCVD and dyslipidemia?

Risk classification of atherosclerotic cardiovascular disease (ASCVD)

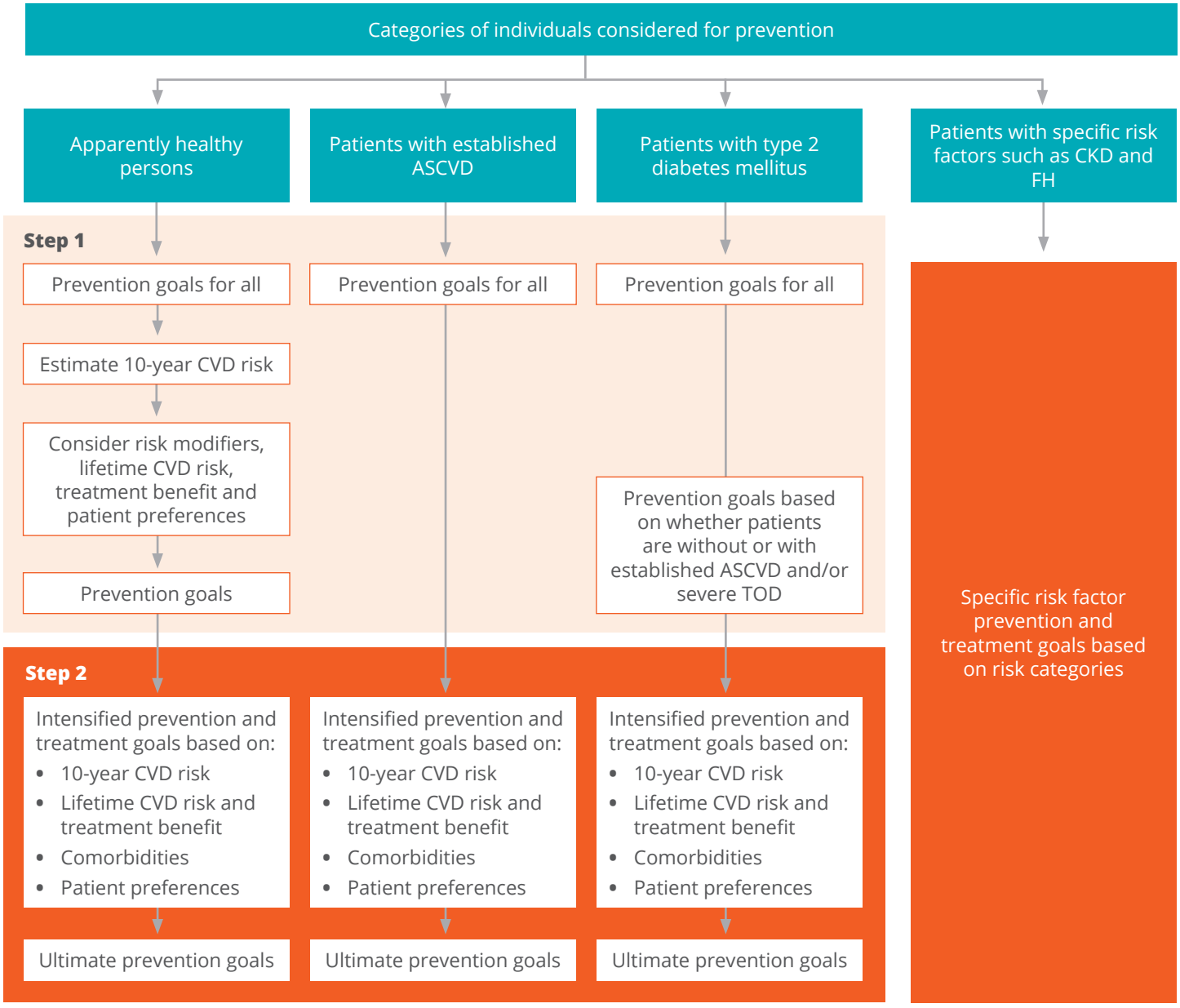
A stepwise approach is proposed for treatment intensification to suit patient profiles and preferences.

All patients start with prevention goals, and are then stratified according to risk. Prevention and treatment goals are based on:

- 10 year cardiovascular disease (CVD) risk
- Lifetime CVD risk and treatment benefit
- Comorbidities
- Patient preferences

Treatment is managed through a shared decision-making process

The stepwise approach has proven benefits for patients with diabetes mellitus (DM)



Examples of a stepwise approach to risk stratification and treatment options. ASCVD = atherosclerotic cardiovascular disease; CKD = chronic kidney disease; DM = diabetes mellitus; FH = familial hypercholesterolaemia; TOD = target organ damage.

Adapted from the 2021 ESC Guidelines on Cardiovascular Disease Prevention in Clinical Practice. ***European Heart Journal*** 2021;42(34). doi:10.1093/eurheartj/ehab484

Risk estimation in apparently healthy people

An apparently healthy person is free from:

Established ASCVD

Type 2 DM

Severe comorbidities

A risk estimate is calculated according to:

- Risk region
- Sex
- Smoking status
- Age
- Blood pressure
- Non-high density lipoprotein cholesterol (Non-HDL-C)

10-year risk of death was previously estimated using **SCORE** algorithm to give a 10-year risk of CVD death

An updated **SCORE2** algorithm now gives a 10 year risk of:

- Fatal and non-fatal CVD events (e.g. myocardial infarction, stroke)
- In apparently healthy people aged 40-69 years
- With risk factors that have been untreated or stable for several years

SCORE2-OP algorithm estimates 5-year and 10-year risk of fatal and non-fatal CVD events adjusted for competing risks in apparently healthy people aged ≥70 years

SCORE2 and **SCORE2-OP** are calibrated to four clusters of countries according to CVD mortality rates

Translating cardiovascular disease risk to treatment thresholds

Intensity of treatment should increase with increasing CVD risk

Treatment should not be mandatory for those with high total CVD risk

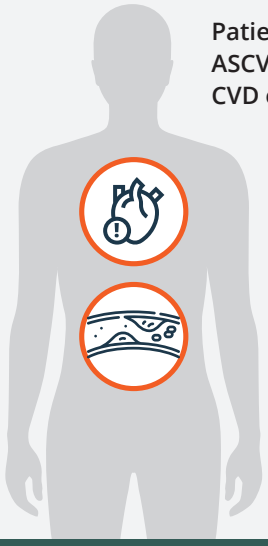
Cut-off levels for CVD risk are numerically different for different age groups as risk increases with age

There is no lowest threshold for treating CVD risk factors

The decision to initiate treatment should be a matter of individual consideration and shared decision-making

Countries may set their own higher or lower treatment thresholds as these will impact healthcare spending and resources

Patients with established atherosclerotic cardiovascular disease



Patients with clinically established ASCVD are at very high risk of recurrent CVD events if risk factors are untreated

Smoking cessation, healthy lifestyle changes and risk factor treatment is recommended in all patients

Treatment should not be mandatory for those with high total CVD risk

Further intensification of risk factor treatment is beneficial in most patients and must be considered in a shared decision making process, taking into account:

10-year CVD risk

Comorbidities

Lifetime risk

Treatment benefit

Frailty

Patient preferences

Risk stratification tools include:

- **SMART:** calculates 10-year residual CVD risk in patients with ASCVD defined as CAD, PAD or cerebrovascular
- **EUROASPIRE:** calculates 2-year risk of recurrent CVD in patients with stable CAD

Where recurrent CVD risk is very high despite maximum tolerated conventional treatments, other treatments may be considered:

- Dual antithrombotic pathway inhibition
- Icosapent ethyl
- Anti-inflammatory therapy with colchicine

Persons with type 2 diabetes mellitus

On average, type 2 DM doubles CVD risk and reduces life expectancy by 4-6 years

Patients with well-controlled short-standing DM (<10 years), no evidence of TOD and no additional ASCVD risk factors may be considered moderate CVD risk

Persons with type 1 diabetes mellitus

Type 1 DM increases CVD risk, and earlier manifestation of type 1 DM relates to more lost life-years in women than men, mainly due to CVD

The absolute risk of CVD events or CVD mortality is highest among those with evidence of microvascular disease, particularly renal complications, and is strongly influenced by age

DM-specific risk models can be used to refine estimates:

- **ADVANCE:** predicts 10-year CVD risk
- **UKPDS:** predicts fatal and non-fatal CVD risk

Intensification of risk factor treatment in STEP 2 must be considered in all patients

Measurement of lipids and lipoproteins

- Non-fasting sampling of lipid parameters should be used for general risk screening
- For patients with metabolic syndrome, DM or hypertriglyceridaemia, calculated LDL-C from non-fasting samples should be interpreted with care
- Patients with low LDL-C levels and/or hypertriglyceridaemia can have LDL-C measured directly or use an alternative formula

Calculating non-HDL-C

- HDL-C is subtracted from total cholesterol
- Non-HDL-C may be an alternative treatment goal for all patients, especially those with hypertriglyceridaemia or DM
- Apolipoprotein provides a direct estimate of total concentration of atherogenic lipid particles, particularly in patients with elevated triglycerides

Defining lipid goals

A shared decision-making process should focus on achieving LDL-C levels as close as possible to recommended goals in the 2019 ESC/EAS Dyslipidemia Guidelines

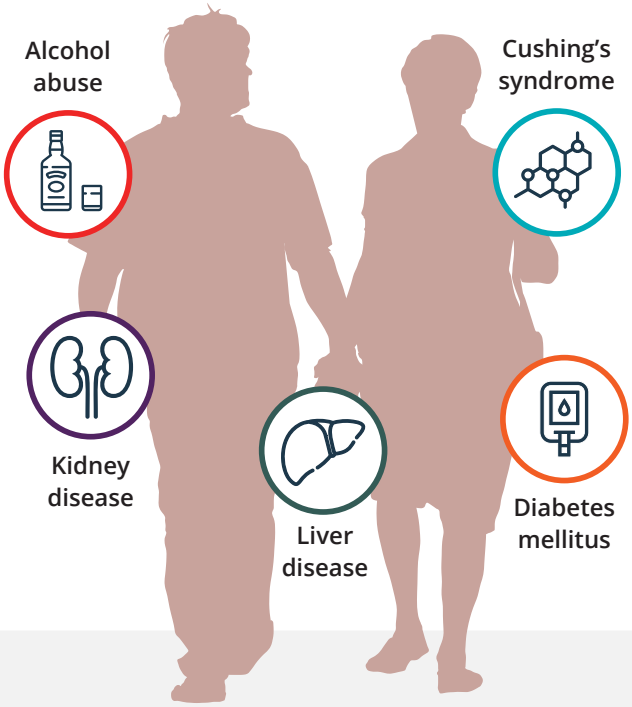
A stepwise approach to treatment should be used and STEP 2 intensification must be considered in all patients after STEP 1

There are no treatment goals for triglycerides but <1.7 mmol/L (150 mg/dL) is considered to indicate lower risk

No specific goals for HDL-C levels have yet been determined in clinical trials

Important at-risk groups

- Women
- Older patients
- Patients with DM
- Chronic Kidney Disease (CKD)
- Familial Hypocholesterolaemia (FH)



Strategies to control Dyslipidemias (diet/lifestyle and pharmacological interventions)

Rule out Dyslipidemias secondary to other conditions such as alcohol abuse, DM, Cushing's syndrome and liver or kidney disease

Drug treatments include:

- Statins
- Fibrates
- Bile acid sequentrants
- Selective cholesterol absorption inhibitors
- PCSK9 inhibitors
- Bempedoic acid (cholesterol synthesis inhibitor) and Inclisiran (small interfering ribonucleic acid) are emerging treatments

Dietary factors influence ASCVD, directly or through action on traditional risk factors:

Increase consumption of fruit, non-starchy vegetables, nuts, legumes, fish, vegetable oils, yoghurt, wholegrains

Reduce consumption of red and processed meat, refined carbohydrates, salt

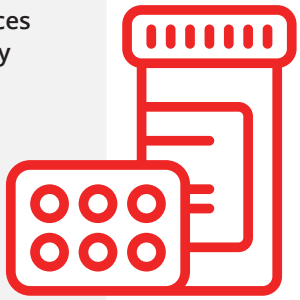
Replacement of animal fats including dairy fat with vegetable sources of fats and polysaturated fats

Statins

Statins are the drug of first choice for patients at increased risk of ACSVD.

Statins work by:

- Decreasing LDL-C, which reduces ASCVD morbidity and mortality
- Lower triglycerides
- May reduce risk of pancreatitis



- Statins can be combined with cholesterol absorption inhibitors (ezetimibe)
- Proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors decrease LDL-C by up to 60%
- CVD risk is increased when fasting triglycerides are >1.7 mmol/L (150 mg/dL)
- Lifestyle measures should be tried first before using drugs to lower triglyceride levels

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