DYSLIPIDEMIAS

What's new in the last year guidelines of the ESC

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ESC COUNCIL Cardiology Practice

EUROPEAN SOCIETY OF CARDIOLOGY®

UNIVERSITAS STUDIORUM INSUBRIAE

European Heart Journal (2016) **37**, 2999–3058
doi:10.1093/eurheartj/ehw272

ESC/EAS GUIDELINES

2016 ESC/EAS Guidelines for the Management of Dyslipidaemias

The Task Force for the Management of Dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS)

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

https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Dyslipidaemias-Management-of

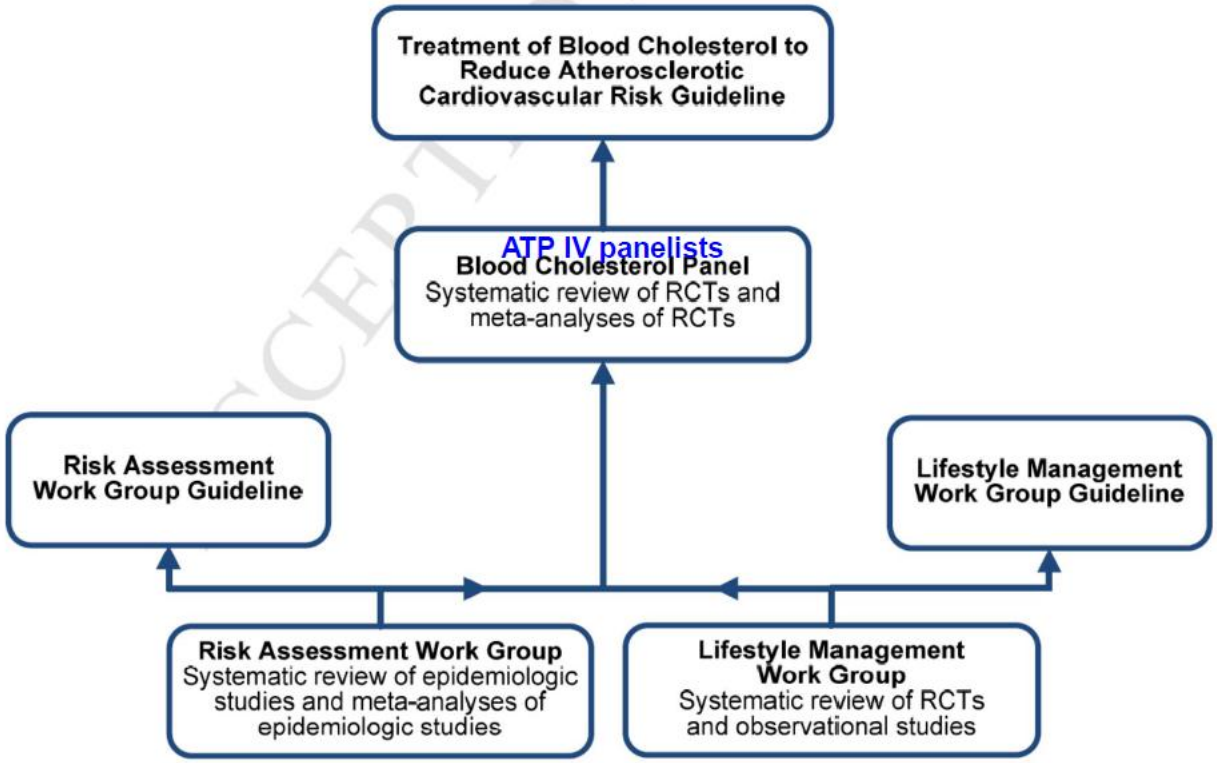
Previously published guidelines

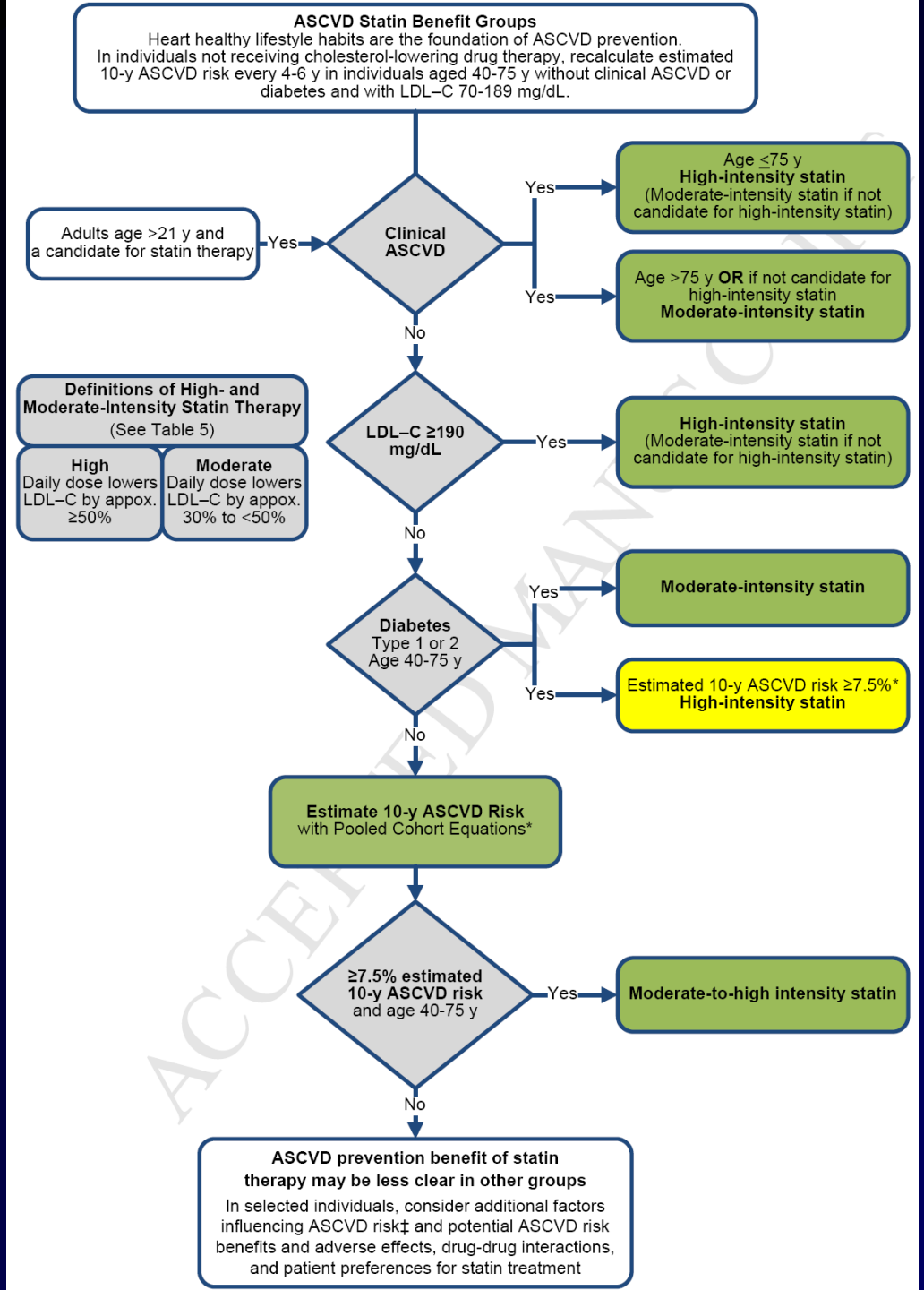
2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines

Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, American Pharmacists Association, American Society for Preventive Cardiology, Association of Black Cardiologists, Preventive Cardiovascular Nurses Association, and WomenHeart: The National Coalition for Women with Heart Disease

Figure 1. Overview of the Expert Panel's guideline





- **Clinical ASCVD:**
  Atherosclerotic CV Disease:
  ACS, history MI, angina/revasc., stroke/TIA, PAD/revasc.

- **LDL>190mg/dL**

- **Diabetes**

- **Risk calculator**

Stone NJ, et al.
2013 ACC/AHA Blood Cholesterol Guideline

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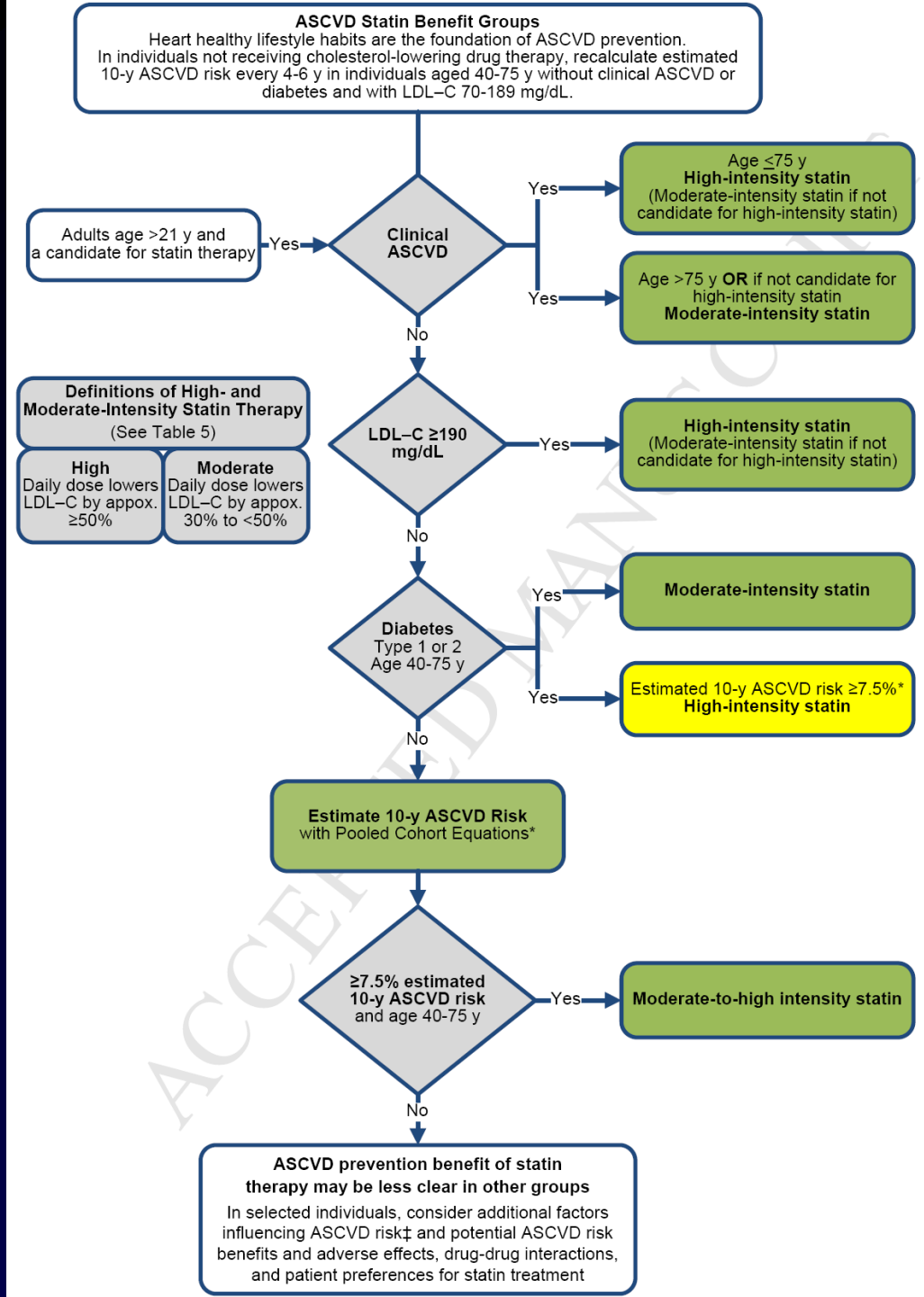

CLASS I

Benefit >>> Risk

Procedure/Treatment SHOULD be performed/ administered

CLASS IIa

Benefit >> Risk

Additional studies with focused objectives needed

IT IS REASONABLE to perform procedure/administer treatment

High-intensity statin: ≥50%

Moderate-intensity: 30-50%

("Low-intensity": no !!)

"shot and forget"

Stone NJ, et al.
2013 ACC/AHA Blood Cholesterol Guideline

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Table 4 Risk categories

Very high-risk	Subjects with any of the following: • Documented cardiovascular disease (CVD), clinical or unequivocal on imaging. Documented CVD includes previous myocardial infarction (MI), acute coronary syndrome (ACS), coronary revascularisation (percutaneous coronary intervention (PCI), coronary artery bypass graft surgery (CABG)) and other arterial revascularization procedures, stroke and transient ischaemic attack (TIA), and peripheral arterial disease (PAD). Unequivocally documented CVD on imaging is what has been shown to be strongly predisposed to clinical events, such as significant plaque on coronary angiography or carotid ultrasound. • DM with target organ damage such as proteinuria or with a major risk factor such as smoking, hypertension or dyslipidaemia. • Severe CKD (GFR <30 mL/min/1.73 m^2). • A calculated SCORE ≥10% for 10-year risk of fatal CVD.

Diabetes
History of vascular diseases (heart, brain, peripheral)
Severely-moderately impaired GFR
Extremely high levels of single risk F

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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 (some young people with type 1 diabetes may be at low or moderate risk). • Moderate CKD (GFR 30–59 mL/min/1.73 m^2). • A calculated SCORE ≥5% and <10% for 10-year risk of fatal CVD.
Moderate-risk	SCORE is ≥1% and <5% for 10-year risk of fatal CVD.
Low-risk	SCORE <1% for 10-year risk of fatal CVD.

Very high risk / High risk

Risk Score > 10

Risk Score > 5

Fatal 10 y CV events

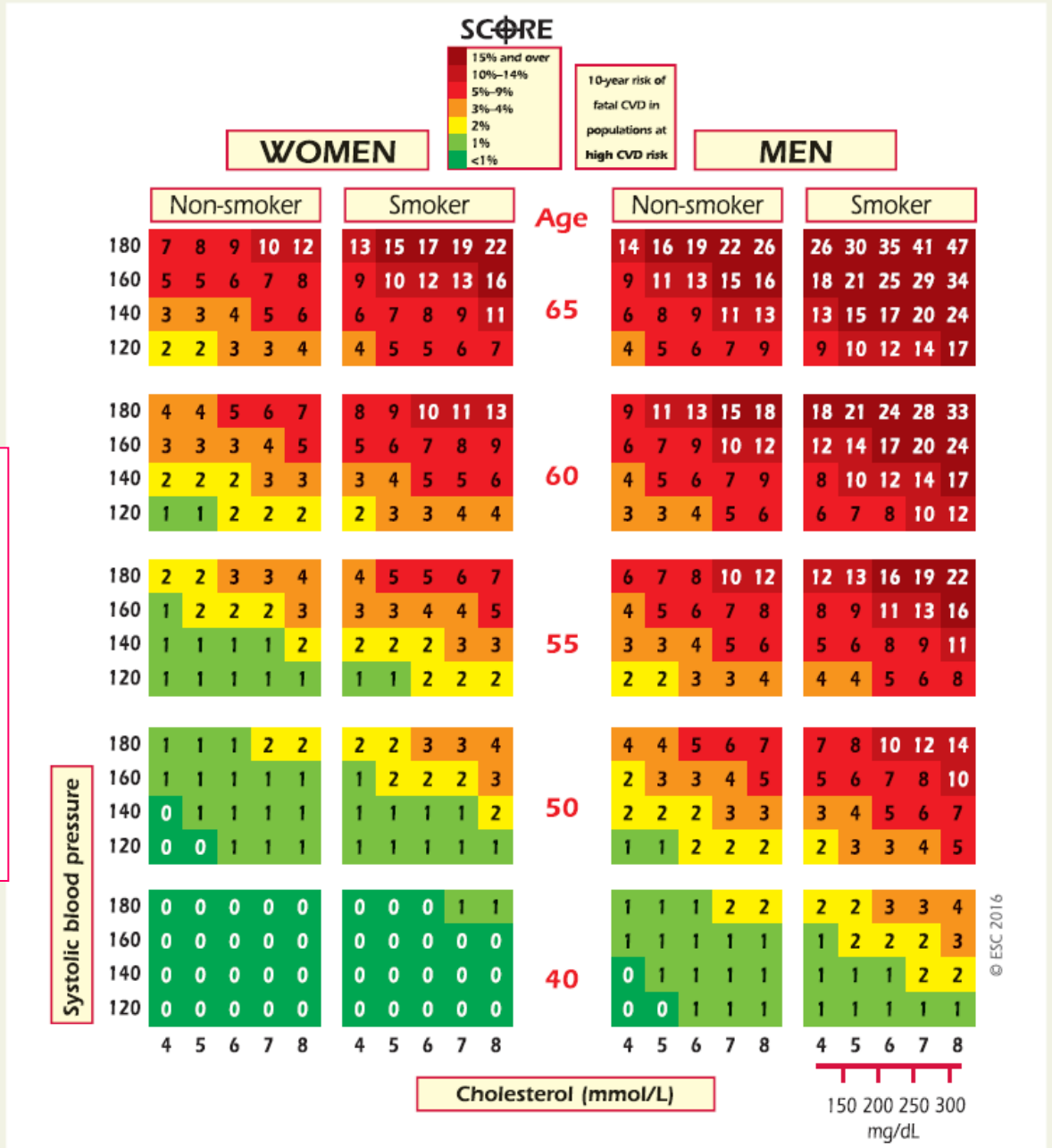


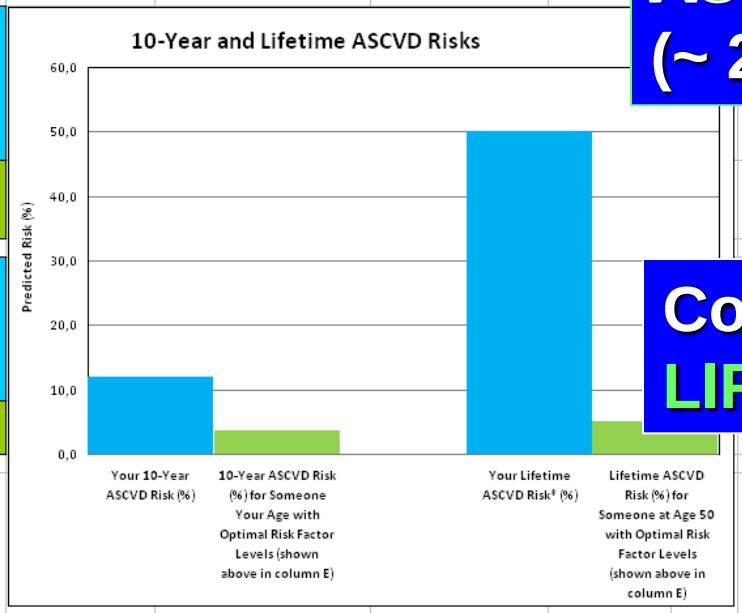
Figure 2 SCORE chart: 10-year risk of fatal cardiovascular disease (CVD) in populations at high CVD risk based on the following risk factors: age, gender, smoking, systolic blood pressure, and total cholesterol. To convert the risk of fatal CVD to risk of total (fatal + nonfatal) hard CVD, multiply by 3 in men and 4 in women, and slightly less in old people. Note: the SCORE chart is for use in people without overt CVD, diabetes, chronic kidney disease, familial hypercholesterolaemia or very high levels of individual risk factors because such people are already at high-risk and need intensive risk factor advice.

Microsoft Excel - CALCOLATORE RISCHIO CV AMERICAN HEART

File Modifica Visualizza Inserisci Formato Strumenti Dati Finestra ?

C10 N

	A	B	C	D	E
1			Enter patient values in this column		
2	Risk Factor	Units	Value	Acceptable range of values	Optimal values
3	Sex	M (for males) or F (for females)	M	M or F	
4	Age	years	55	20-79	
5	Race	AA (for African Americans) or WH (for whites or others)	WH	AA or WH	
6	Total Cholesterol	mg/dL	255	130-320	170
7	HDL-Cholesterol	mg/dL	25	20-100	50
8	Systolic Blood Pressure	mm Hg	120	90-200	110
9	Treatment for High Blood Pressure	Y (for yes) or N (for no)	N	Y or N	N
10	Diabetes	Y (for yes) or N (for no)	N	Y or N	N
11	Smoker	Y (for yes) or N (for no)	N	Y or N	N
12					
13	Your 10-Year ASCVD Risk (%)	12,0			
14	10-Year ASCVD Risk (%) for Someone Your Age with Optimal Risk Factor Levels (shown above in column E)	3,6			
15					
16	Your Lifetime ASCVD Risk* (%)	50,0			
17	Lifetime ASCVD Risk (%) for Someone at Age 50 with Optimal Risk Factor Levels (shown above in column E)	5,0			
18					



*This is the lifetime ASCVD risk for an individual at age 50 years with your risk factor levels. In rare cases, 10-year risks may exceed lifetime risks given that the estimates come from different approaches. While 10-year risk estimates are derived from methods and data using continuous variables, the reported estimate of lifetime risk is based on assigning each person into one of 5 mutually exclusive sex-specific groups, as per Lloyd-Jones et al., Circulation 2006; 113(6):791-8. Within each of the 5 groups, each person receives the same lifetime risk estimate. In other words, using this approach, there are only 5 possible

For patients and the public: *This is the lifetime risk of cardiovascular diseases, including stroke, for an individual at age 50 years with your risk factor levels. In rare cases, 10-year risks may exceed lifetime risks given that the estimates come from different mathematical approaches. If this is the case, the 10-year risk should be the

Omnibus

Pronto

start | Fwd: calcolo del r... | Microsoft Excel - ...

Goff DC Jr, et al.
2013 ACC/AHA Cardiovascular Risk Guideline

2013 ACC/AHA Guideline on the Assessment of Cardiovascular Risk

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Treatment
If 10y risk of ASCVD ≥7.5%
(~ 2.5 SCORE)

Consider LIFETIME risk

available at http://my.americanheart.org/cvriskcalculator and http://www.cardiosource.org/science-and-quality/practice-guidelines-and-quality-standards/2013-prevention-guideline-tools.aspx.

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Box 5 Factors modifying SCORE risks

Social deprivation–the origin of many of the causes of CVD.
Obesity and central obesity as measured by the body mass index and waist circumference, respectively.
Physical inactivity.
Psychosocial stress including vital exhaustion.
Family history of premature CVD (men: <55 years; women: <60 years).
Autoimmune and other inflammatory disorders.
Major psychiatric disorders.
Treatment for human immunodeficiency virus (HIV) infection.
Atrial fibrillation.
Left ventricular hypertrophy.
Chronic kidney disease.
Obstructive sleep apnoea syndrome.

Factors modifying SCORE risk

Social deprivation and psychosocial stress set the scene for increased risk.[57] For those at intermediate risk, other factors, including metabolic factors such as increased apolipoprotein B (apoB), lipoprotein(a) (Lp(a)), triglycerides (TGs) or high-sensitivity C-reactive protein (hs-CRP) or the presence of albuminuria, may improve risk classification. Many other biomarkers are also associated with increased CVD risk, although few of these have been shown to be associated with appreciable reclassification. Total CV risk will also be higher than indicated in the SCORE charts in asymptomatic persons with abnormal markers of subclinical atherosclerotic vascular damage detected by coronary artery calcium (CAC), ankle-brachial index (ABI), pulse wave velocity or carotid ultrasonography. In studies comparing these markers, CAC had the best reclassification ability.[58–60]

(class IIa, level of evidence B)

Guideline focus on communication

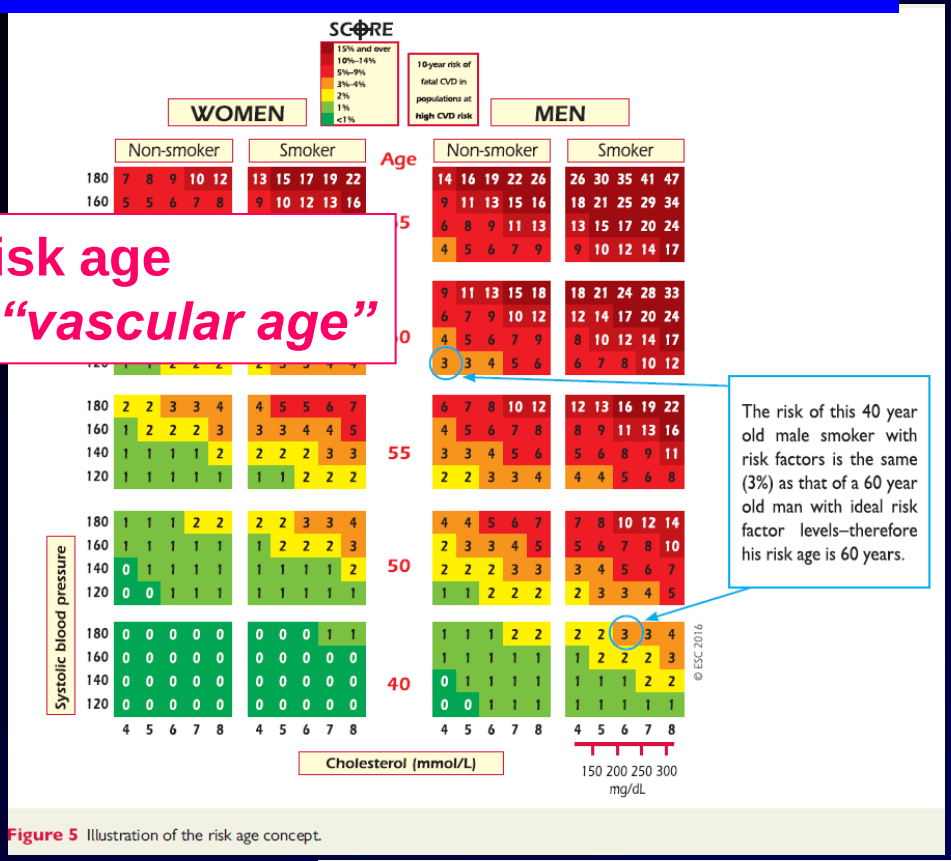

Figure 5 Illustration of the risk age concept.

Risk age
~ *"vascular age"*

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No lifetime risk:

"…more useful as a way of illustrating risk than as a guide to treatment because therapeutic trials have been based on a fixed follow-up period and not on lifetime risk and such an approach would likely lead to excessive use of drugs in young people"

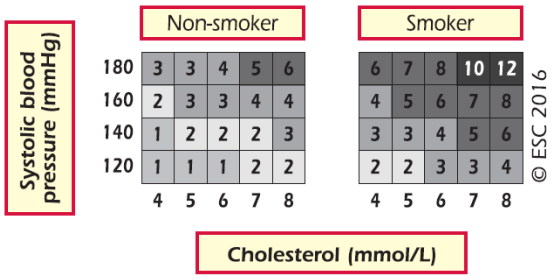

Figure 4 **Relative risk chart for 10-year cardiovascular mortality.** Please note that this chart shows RELATIVE not absolute risk. The risks are RELATIVE to 1 in the bottom left. Thus, a person in the top right hand box has a relative risk that is 12 times higher than a person in the bottom left.

Relative risk:
~ *used to communicate risk levels to the patients*

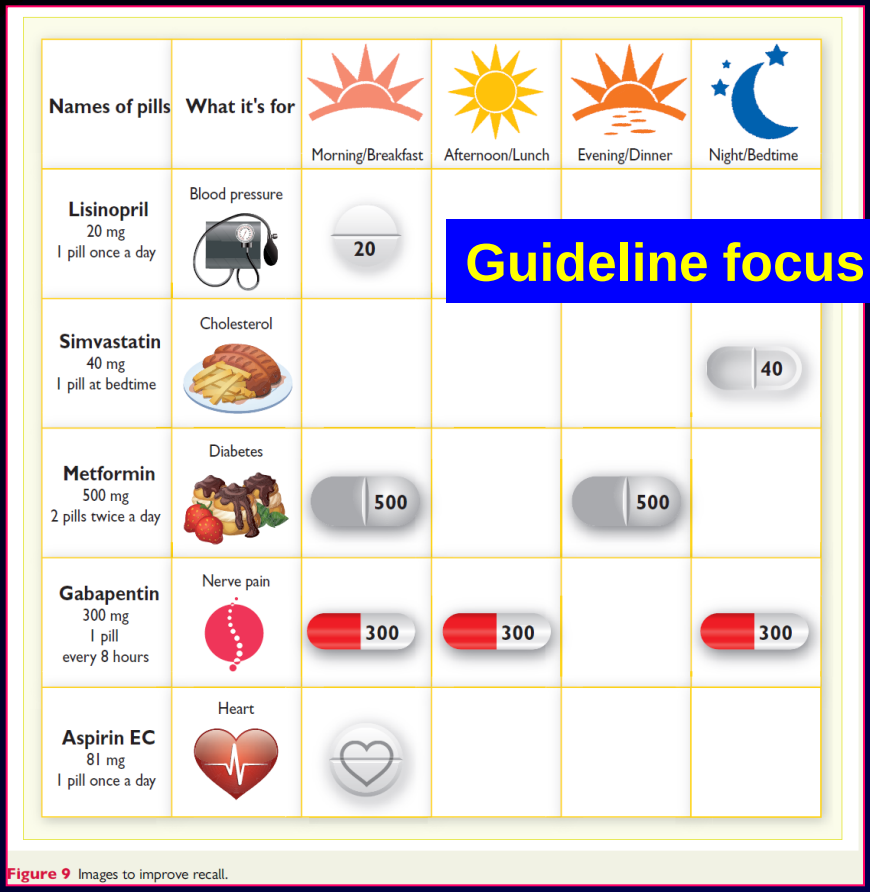

Figure 9 Images to improve recall.

Guideline focus on adherence

Need to know and do
e.g. Important information about diagnosis, key treatment and management of prescribed medications

Nice to know and do
Information that may be covered but can wait for a second consultation

Not necessary now, do later
e.g. Provide information, using leaflets, booklets or web-based resources, about additional services that can be provided

Box 11 Hints to aid adherence to lifestyle changes

1. Explore motivation and identify ambivalence. Weigh pros and cons for change, assess and build self-efficacy and confidence, avoid circular discussion.
2. Offer support and establish an alliance with the patient and his/her family.
3. Involve the partner, other household members or caregiver who may be influential in the lifestyle of the patient.
4. Use the **OARS** method (**O**pen-ended questions, **A**ffirmation, **R**eflective listening, **S**ummarising; http://www.smartrecovery.org/resources/UsingMIinSR.pdf) when discussing behaviour changes.
5. Tailor advice to an individual patient's culture, habits and situation.
6. Use **SMART** goal setting–negotiate goals for change that are **S**pecific, **M**easurable, **A**chievable, **R**ealistic and **T**imely. Follow up on goals and record progress on a shared record.

Box 12 Tips to aid adherence to multiple drug therapies

1. 'Agree' on rather than 'dictate' a drug regimen to your patient and tailor it to his/her personal lifestyle and needs.
2. Back up verbal instructions with clear written instructions.
3. Simplify the dosing regimen and consider a fixed dose combination pill where available.
4. Perform a regular review of medicines to minimize polypharmacy (or ask the pharmacist to assist).
5. Encourage self-monitoring and use cues and technologies to act as reminders.
6. Provide information on common side effects and discuss management strategies.
7. Involve the partner, other family members or the caregiver in the patient's treatment.

Table 10 Treatment targets and goals for cardiovascular disease prevention

Smoking	No exposure to tobacco in any form.
Diet	Healthy diet low in saturated fat with a grain products, vegetables, fruit and fish
Physical activity	2.5–5 h moderately vigorous physical ac 30–60 min most days.
Body weight	BMI 20–25 kg/m^2, waist circumference < <80 cm (women).
Blood pressure	<140/90 mmHg[a]
Lipids LDL-C is the primary target[b]	**Very high-risk: LDL-C <1.8 mmol/L (70 mg/dL)** or a reduction of at least 5 is between 1.8 and 3.5 mmol/L (70 and 1
	High-risk: LDL-C <2.6 mmol/L (100 a reduction of at least 50% if the baseline and 5.2 mmol/L (100 and 200 mg/dL).
	Low to moderate risk: LDL-C <3.0 (115 mg/dL).
	Non-HDL-C secondary targets are <2. 3.8 mmol/L (100, 130 and 145 mg/dL) fo high- and moderate-risk subjects, respe
	HDL-C: no target, but >1.0 mmol/L (40 >1.2 mmol/L (48 mg/dL) in women indic
	TG: no target but <1.7 mmol/L (150 mg lower risk and higher levels indicate a n other risk factors.
Diabetes	HbA1c: <7% (<53 mmol/mol).

Table 11 Recommendations for treatment goals for low-density lipoprotein-cholesterol

Recommendations	Class[a]	Level[b]	Ref[c]
In patients at VERY HIGH CV risk[d], an LDL-C goal of <1.8 mmol/L (70 mg/dL) or a reduction of at least 50% if the baseline LDL-C[e] is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL) is recommended.	I	B	61, 62, 65, 68, 69, 128
In patients at HIGH CV risk[d], an LDL-C goal of <2.6 mmol/L (100 mg/dL), or a reduction of at least 50% if the baseline LDL-C[e] is between 2.6 and 5.2 mmol/L (100 and 200 mg/dL) is recommended.	I	B	65, 129
In subjects at LOW or MODERATE risk[d] an LDL-C goal of <3.0 mmol/L (<115 mg/dL) should be considered.	IIa	C	-

Table 16 Recommendations for the pharmacological treatment of hypercholesterolaemia

Recommendations	Class [a]	Level [b]	Ref [c]
Prescribe statin up to the highest recommended dose or highest tolerable dose to reach the goal.	I	A	62, 64, 68
In the case of statin intolerance, ezetimibe or bile acid sequestrants, or these combined, should be considered.	IIa	C	239, 256, 257
If the goal is not reached, statin combination with a cholesterol absorption inhibitor should be considered.	IIa	B	63
If the goal is not reached, statin combination with a bile acid sequestrant may be considered.	IIb	C	
In patients at very high-risk, with persistent high LDL-C despite treatment with maximal tolerated statin dose, in combination with ezetimibe or in patients with statin intolerance, a PCSK9 inhibitor may be considered.	IIb	C	115, 116

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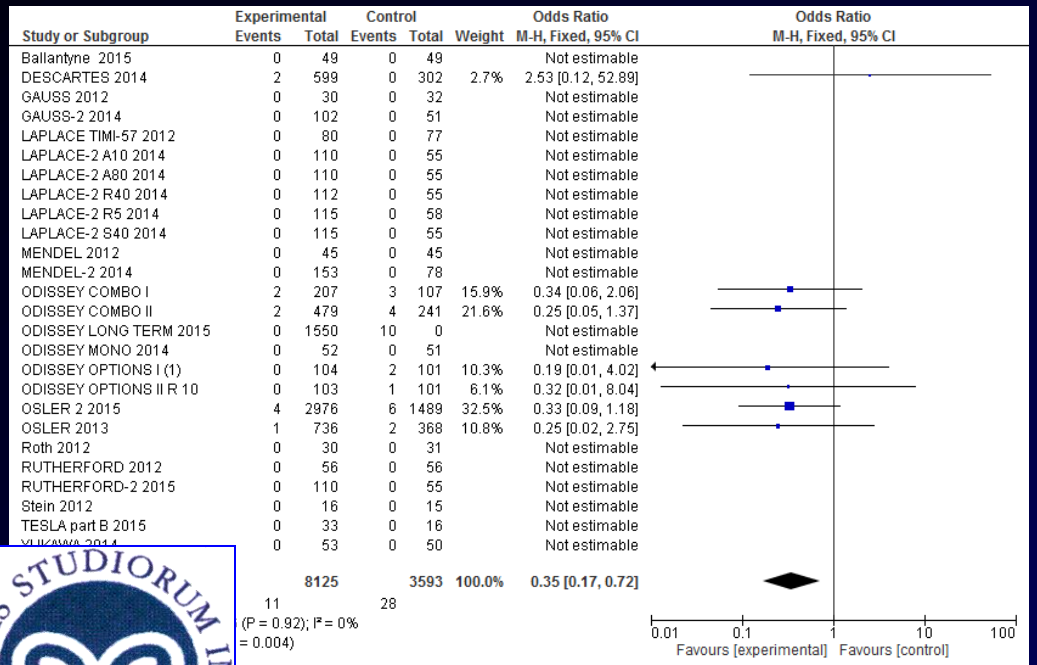
N= 26 studies – till January 2016

Death for any cause 12-72 weeks

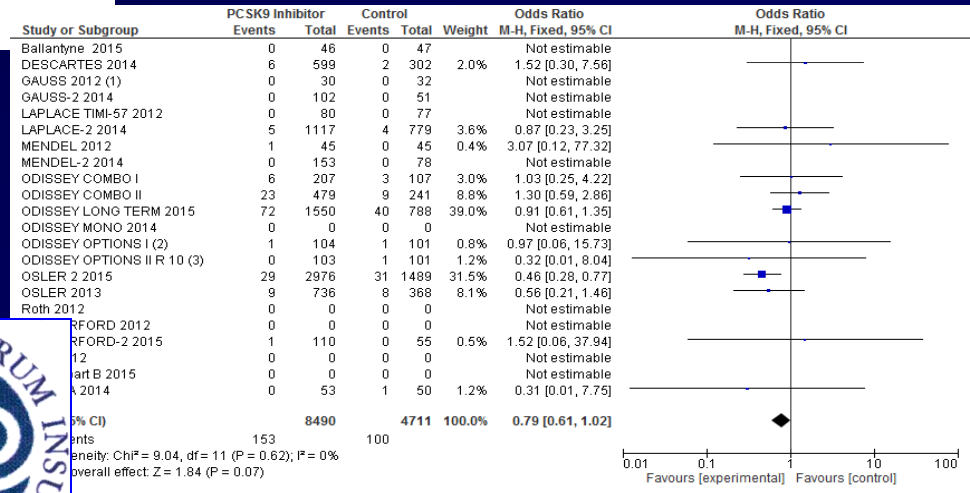


Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Ballantyne 2015	0	49	0	49		Not estimable
DESCARTES 2014	2	599	0	302	2.7%	2.53 [0.12, 52.89]
GAUSS 2012	0	30	0	32		Not estimable
GAUSS-2 2014	0	102	0	51		Not estimable
LAPLACE TIMI-57 2012	0	80	0	77		Not estimable
LAPLACE-2 A10 2014	0	110	0	55		Not estimable
LAPLACE-2 A80 2014	0	110	0	55		Not estimable
LAPLACE-2 R40 2014	0	112	0	55		Not estimable
LAPLACE-2 R5 2014	0	115	0	58		Not estimable
LAPLACE-2 S40 2014	0	115	0	55		Not estimable
MENDEL 2012	0	45	0	45		Not estimable
MENDEL-2 2014	0	153	0	78		Not estimable
ODISSEY COMBO I	2	207	3	107	15.9%	0.34 [0.06, 2.06]
ODISSEY COMBO II	2	479	4	241	21.6%	0.25 [0.05, 1.37]
ODISSEY LONG TERM 2015	0	1550	10	0		Not estimable
ODISSEY MONO 2014	0	52	0	51		Not estimable
ODISSEY OPTIONS I (1)	0	104	2	101	10.3%	0.19 [0.01, 4.02]
ODISSEY OPTIONS II R 10	0	103	1	101	6.1%	0.32 [0.01, 8.04]
OSLER 2 2015	4	2976	6	1489	32.5%	0.33 [0.09, 1.18]
OSLER 2013	1	736	2	368	10.8%	0.25 [0.02, 2.75]
Roth 2012	0	30	0	31		Not estimable
RUTHERFORD 2012	0	56	0	56		Not estimable
RUTHERFORD-2 2015	0	110	0	55		Not estimable
Stein 2012	0	16	0	15		Not estimable
TESLA part B 2015	0	33	0	16		Not estimable
[illegible]	0	53	0	50		Not estimable
		8125		3593	100.0%	0.35 [0.17, 0.72]
	11		28			

(P = 0.92); I² = 0%
= 0.004)

0.01 0.1 1 10 100
Favours [experimental] Favours [control]

CV events 12-72 weeks



Study or Subgroup	PCSK9 Inhibitor Events	PCSK9 Inhibitor Total	Control Events	Control Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Ballantyne 2015	0	46	0	47		Not estimable
DESCARTES 2014	6	599	2	302	2.0%	1.52 [0.30, 7.56]
GAUSS 2012 (1)	0	30	0	32		Not estimable
GAUSS-2 2014	0	102	0	51		Not estimable
LAPLACE TIMI-57 2012	0	80	0	77		Not estimable
LAPLACE-2 2014	5	1117	4	779	3.6%	0.87 [0.23, 3.25]
MENDEL 2012	1	45	0	45	0.4%	3.07 [0.12, 77.32]
MENDEL-2 2014	0	153	0	78		Not estimable
ODISSEY COMBO I	6	207	3	107	3.0%	1.03 [0.25, 4.22]
ODISSEY COMBO II	23	479	9	241	8.8%	1.30 [0.59, 2.86]
ODISSEY LONG TERM 2015	72	1550	40	788	39.0%	0.91 [0.61, 1.35]
ODISSEY MONO 2014	0	0	0	0		Not estimable
ODISSEY OPTIONS I (2)	1	104	1	101	0.8%	0.97 [0.06, 15.73]
ODISSEY OPTIONS II R 10 (3)	0	103	1	101	1.2%	0.32 [0.01, 8.04]
OSLER 2 2015	29	2976	31	1489	31.5%	0.46 [0.28, 0.77]
OSLER 2013	9	736	8	368	8.1%	0.56 [0.21, 1.46]
Roth 2012	0	0	0	0		Not estimable
RFORD 2012	0	0	0	0		Not estimable
RFORD-2 2015	1	110	0	55	0.5%	1.52 [0.06, 37.94]
12	0	0	0	0		Not estimable
art B 2015	0	0	0	0		Not estimable
A 2014	0	53	1	50	1.2%	0.31 [0.01, 7.75]
% CI)		8490		4711	100.0%	0.79 [0.61, 1.02]
ents	153		100			

eneity: Chi² = 9.04, df = 11 (P = 0.62); I² = 0%
overall effect: Z = 1.84 (P = 0.07)

es
STEMI in AMG145 420mg only (no ezitimibe)
egated data
egated data

0.01 0.1 1 10 100
Favours [experimental] Favours [control]

The NEW ENGLAND JOURNAL of MEDICINE 2017

ORIGINAL ARTICLE

Evolocumab and Clinical Outcomes in Patients with Cardiovascular Disease

Marc S. Sabatine, M.D., M.P.H., Robert P. Giugliano, M.D., Anthony C. Keech, M.D., Narimon Honarpour, M.D., Ph.D., Stephen D. Wiviott, M.D., Sabina A. Murphy, M.P.H., Julia F. Kuder, M.A., Huei Wang, Ph.D., Thomas Liu, Ph.D., Scott M. Wasserman, M.D., Peter S. Sever, Ph.D., F.R.C.P., and Terje R. Pedersen, M.D., for the FOURIER Steering Committee and Investigators*

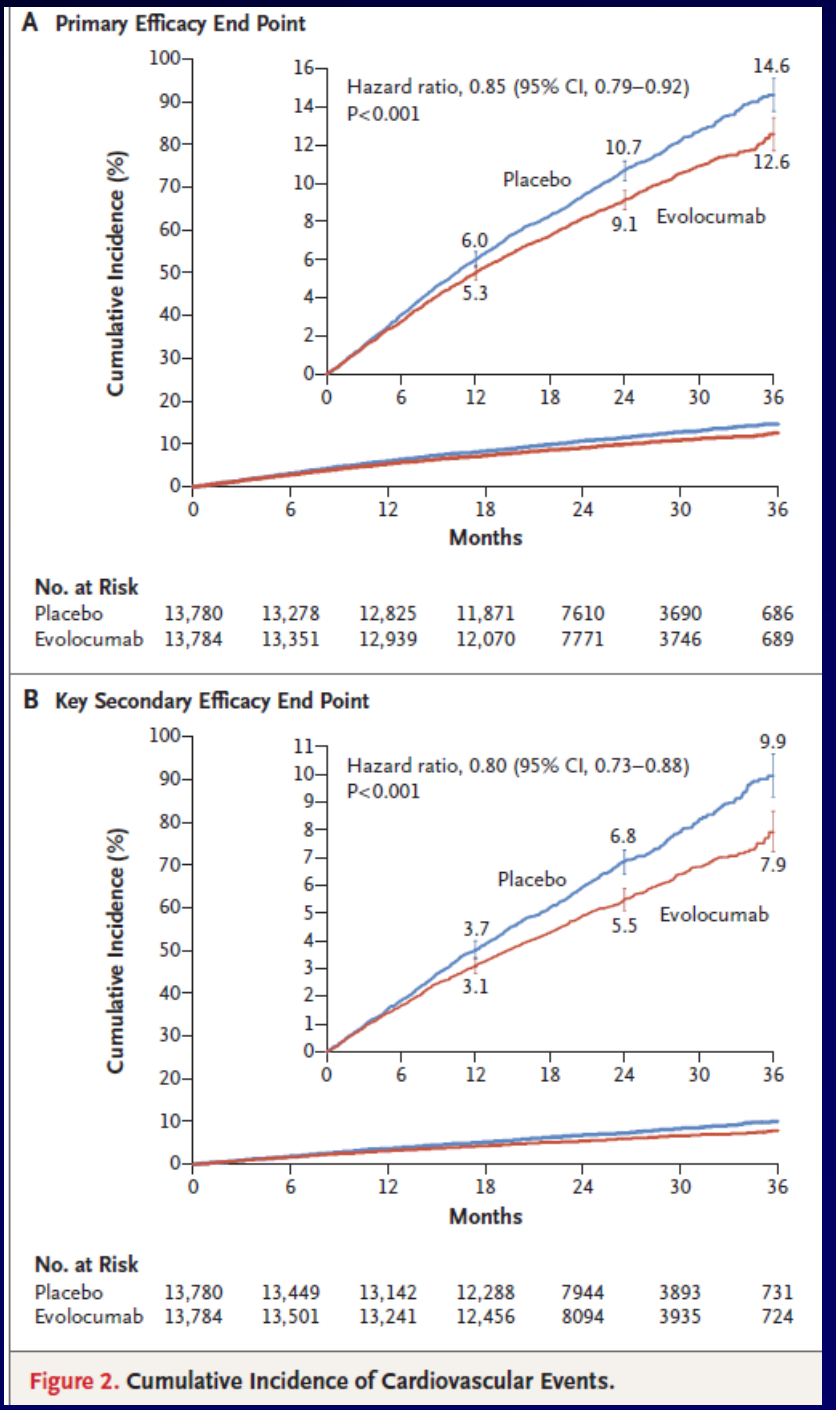
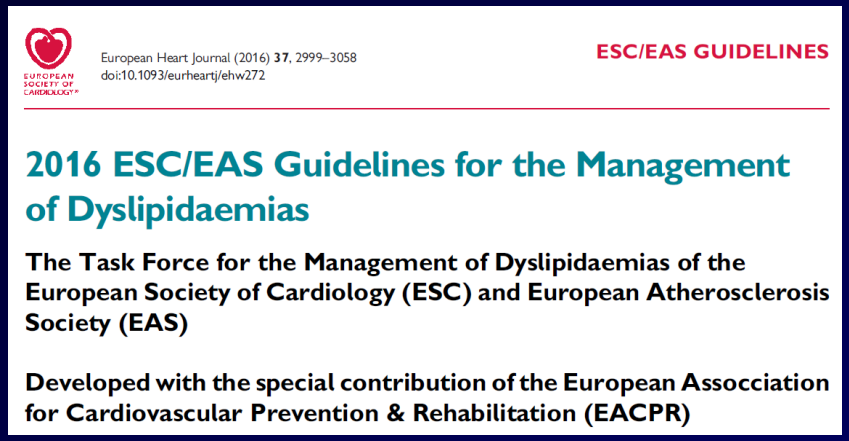


Figure 2. Cumulative Incidence of Cardiovascular Events.

Panel A shows the cumulative event rates for the primary efficacy end point (the composite of cardiovascular death, myocardial infarction, stroke, hospitalization for unstable angina, or coronary revascularization), and Panel B shows the rates for the key secondary efficacy end point (the composite of cardiovascular death, myocardial infarction, or stroke). I bars indicate 95% confidence intervals. The Kaplan–Meier rates for the primary end point in the evolocumab group versus the placebo group were as follows: at 1 year, 5.3% (95% confidence interval [CI], 4.9 to 5.7) versus 6.0% (95% CI, 5.6 to 6.4); at 2 years, 9.1% (95% CI, 8.6 to 9.6) versus 10.7% (95% CI, 10.1 to 11.2); and at 3 years, 12.6% (95% CI, 11.7 to 13.5) versus 14.6% (95% CI, 13.8 to 15.5). The Kaplan–Meier rates for the key secondary end point in the evolocumab group versus the placebo group were as follows: at 1 year, 3.1% (95% CI, 2.8 to 3.4) versus 3.7% (95% CI, 3.4 to 4.0); at 2 years, 5.5% (95% CI, 5.1 to 5.9) versus 6.8% (95% CI, 6.4 to 7.3); and at 3 years, 7.9% (95% CI, 7.2 to 8.7) versus 9.9% (95% CI, 9.2 to 10.7). P values were calculated with the use of log-rank tests. The insets show the same data on an enlarged y axis.



Guideline focus on

previously published ESC "statements/consensus panels"

- Lp(a)
- FH / Dutch Criteria
- Myalgia /statin intolerance
- Blood sampling (fasting vs non-fasting)

Table 23 Genetic disorders of lipoprotein metabolism

Disorder	Prevalence	Gene(s)	Effect on lipoproteins
HeFH	1 in 200–250	*LDLR* *APO B* *PCSK9*	↑LDL-C
HoFH	1 in 160 000–320 000	*LDLR* *APO B* *PCSK9*	↑↑LDL-C
FCH	1 in 100/200	*USF1 + modifying genes*	↑LDL-C ↑VLDL-C ↑apoB
Familial dysbetalipoproteinaemia	1 in 5000	*APO E*	↑↑ IDL and chylomicron remnants (βVLDL)
Familial lipoprotein lipase deficiency	1 in 10^6	*LPL* *APO C2*	↑↑ chylomicrons and VLDL-C
Tangier disease (analphalipoproteinaemia)	1 in 10^6	*ABCA1*	↓↓HDL-C
Familial LCAT deficiency	1 in 10^6	*LCAT*	↓HDL-C

apo = apolipoprotein; FCH = familial combined hyperlipidaemia; HeFH = heterozygous familial hypercholesterolaemia; HoFH = homozygous familial hypercholesterolaemia; HDL-C = high-density lipoprotein-cholesterol; IDL = intermediate-density lipoprotein; LCAT = lecithin cholesterol acyltransferase; LDL-C = low-density lipoproteincholesterol; VLDL = very low-density lipoprotein-cholesterol.

Table 21 Dutch Lipid Clinic Network diagnostic criteria for familial hypercholesterolaemia[301]

Criteria	Points
1) Family history	
First-degree relative with known premature (men: <55 years; women: <60 years) coronary or vascular disease, or	
First-degree relative with known LDL-C above the 95th percentile	1
First-degree relative with tendinous xanthomata and/or arcus cornealis, or	
children <18 years of age with LDL-C above the 95th percentile (see 9.1.2.3)	2
2) Clinical history	
Patient with premature (men: <55 years; women: <60 years) coronary artery disease	2
Patient with premature (men: <55 years; women: <60 years) cerebral or peripheral vascular disease	1
3) Physical examination	
Tendinous xanthomata	6
Arcus cornealis before age 45 years	4
4) LDL-C levels	
LDL-C ≥ 8.5 mmol/L (325 mg/dL)	8
LDL-C 6.5–8.4 mmol/L (251–325 mg/dL)	5
LDL-C 5.0–6.4 mmol/L (191–250 mg/dL)	3
LDL-C 4.0–4.9 mmol/L (155–190 mg/dL)	1
5) DNA analysis	
Functional mutation in the LDLR, apoB or PCSK9 gene	8
Choose only one score per group, the highest applicable Diagnosis (diagnosis is based on the total number of points obtained)	
A 'definite' FH diagnosis requires >8 points	
A 'probable' FH diagnosis requires 6–8 points	
A 'possible' FH diagnosis requires 3–5 points	

Relevant focus on FH
Dutch criteria should be routinely used

Table 22 Recommendations for the detection and treatment of patients with heterozygous familial hypercholesterolaemia

Recommendations	Class [a]	Level [b]
FH is recommended to be suspected in patients with CHD before the age of 55 years for men and 60 years for women, in subjects with relatives with premature fatal or non-fatal CVD, in subjects with relatives having tendon xanthomas, and in subjects with severely elevated LDL-C [in adults >5 mmol/L (190 mg/dL), in children >4 mmol/L (150 mg/dL)].	I	C
Diagnosis is recommended to be confirmed with clinical criteria and, when available, with DNA analysis.	I	C
Family cascade screening is recommended to be performed when an index case of FH is diagnosed.	I	C
FH patients are recommended to be treated with intense-dose statin, often in combination with ezetimibe.	I	C
Treatment should be considered to aim at reaching an LDL-C <2.6 mmol/L (100 mg/dL) or in the presence of CVD <1.8 mmol/L (70 mg/dL). If targets cannot be reached, maximal reduction of LDL-C should be considered using appropriate drug combinations.	IIa	C
Treatment with a PCSK9 antibody should be considered in FH patients with CVD or with other factors putting them at very high-risk for CHD, such as other CV risk factors, family history, high Lp(a) or statin intolerance.	IIa	C
In children, testing is recommended from age 5 years, or earlier if homozygous FH is suspected.	I	C
Children with FH should be educated to adopt a proper diet and treated with statin from 8–10 years of age. Targets for treatment should be LDL-C <3.5 mmol/L (135 mg/dL) at >10 years of age.	IIa	C

DYSLIPIDEMIAS

- What's new in the last year guidelines of the ESC

- What's *NOT* new in the last year guidelines of the ESC

- What's new *AGAIN* in the last year guidelines of the ESC

UNIVERSITAS STUDIORUM INSUBRIAE

DYSLIPIDEMIAS

- What's new in the last year guidelines of the ESC

Use of iPCSK9, therapeutic goal <115mg/dl to be considered in the whole pop, focus on communication and adherence, risk categories/ risk modifyers

- What's *NOT* new in the last year guidelines of the ESC

Elaboration of previously pub ESC reports

- What's new *AGAIN* in the last year guidelines of the ESC

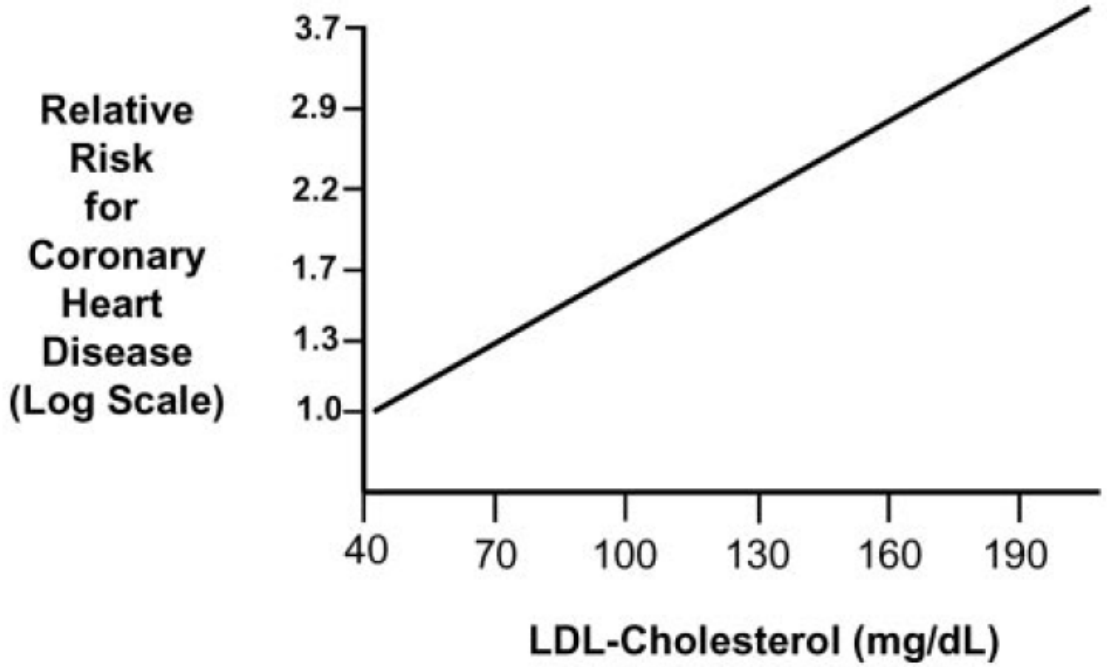
Therapeutic Goals <70mg/dl; <100mg/dl
(particularly relevant after possible use of new potent drugs)

Editorial

A Summary of Implications of Recent Clinical Trials for the National Cholesterol Education Program Adult Treatment Panel III Guidelines

Scott M. Grundy, James I. Cleeman, C. Noel Bairey Merz, H. Bryan Brewer, Jr, Luther T. Clark, Donald B. Hunninghake,* Richard C. Pasternak, Sidney C. Smith, Jr, Neil J. Stone, for the Coordinating Committee of the National Cholesterol Education Program

ATVB 2004



Log-linear relationship between LDL-cholesterol levels and relative risk for coronary heart disease (CHD). This relationship is consistent with a large body of epidemiological data and with data available from clinical trials of LDL-lowering therapy. These data suggest that for every 30 mg/dL change in LDL-C, the relative risk for CHD is changed in proportion by ≈30%. The relative risk is set at 1.0 for LDL-C=40 mg/dL

European Heart Journal (2016) 37, 2999–3058
doi:10.1093/eurheartj/ehw272

ESC/EAS GUIDELINES

2016 ESC/EAS Guidelines for the Management of Dyslipidaemias

The Task Force for the Management of Dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS)

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

Box 7 Individuals who should be considered for lipoprotein(a) screening

Individuals with:
• Premature CVD
• Familial hypercholesterolaemia
• A family history of premature CVD and/or elevated Lp(a)
• Recurrent CVD despite optimal lipid-lowering treatment
• ≥5% 10-year risk of fatal CVD according to SCORE

12. To do and not to do messages from the Guidelines

Recommendations	Class [a]	Level [b]
Recommendations for risk estimation		
Total risk estimation using a risk estimation system such as SCORE is recommended for asymptomatic adults >40 years of age without evidence of CVD, diabetes, CKD or familial hypercholesterolaemia.	I	C
High and very high-risk individuals can be detected on the basis of documented CVD, diabetes mellitus, moderate to severe renal disease, very high levels of individual risk factors , familial hypercholesterolaemia or a high SCORE risk and are a high priority for intensive advice with regard to all risk factors.	I	C
Recommendations for lipid analyses in cardiovascular disease risk estimation		
TC is to be used for the estimation of total CV risk by means of the SCORE system.	I	C
LDL-C is recommended to be used as the primary lipid analysis for screening, risk estimation, diagnosis and management. HDL-C is a strong independent risk factor and is recommended to be used in the HeartScore algorithm.	I	C
Non-HDL-C is a strong independent risk factor and should be considered as a risk marker, especially in subjects with high TG.	I	C
Recommendations for lipid analyses for characterization of dyslipidaemias before treatment		
LDL-C has to be used as the primary lipid analysis.	I	C
It is recommended to analyse HDL-C before treatment.	I	C
TG adds information about risk, and is indicated for diagnosis and choice of treatment.	I	C
Non-HDL-C is recommended to be calculated, especially in subjects with high TG.	I	C
Recommendations for lipid analyses as treatment targets in the prevention of cardiovascular disease		
LDL-C is recommended as the primary target for treatment.	I	A
HDL-C is not recommended as a target for treatment.	III	A
The ratios apoB/apoAI and non-HDL-C/HDL-C are not recommended as targets for treatment.	III	B
Recommendations for treatment goals for low-density lipoprotein-cholesterol		
In patients at VERY HIGH CV risk[c], an LDL-C goal of <1.8 mmol/L (70 mg/dL), or a reduction of at least 50% if the baseline LDL-C[d] is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL) is recommended.	I	B
In patients at HIGH CV risk[c], an LDL-C goal of <2.6 mmol/L (100 mg/dL), or a reduction of at least 50% if the baseline LDL-C[d] is between 2.6 and 5.2 mmol/L (100 and 200 mg/dL) is recommended.	I	B

Recommendations for the pharmacological treatment of hypercholesterolaemia		
Prescribe statin up to the highest recommended dose or highest tolerable dose to reach the goal.	I	A
Recommendations for the detection and treatment of patients with heterozygous familial hypercholesterolaemia		
FH is recommended to be suspected in patients with CHD before the age of 55 years for men and 60 years for women, in subjects with relatives with premature fatal or non-fatal CVD, in subjects with relatives having tendon xanthomas, and in subjects with severely elevated LDL-C [in adults >5 mmol/L (190 mg/dL), in children >4 mmol/L (150 mg/dL)].	I	C
Family cascade screening is recommended to be performed when an index case of FH is diagnosed.	I	C
FH patients are recommended to be treated with intense-dose statin, often in combination with ezetimibe.	I	C
In children, testing is recommended from age 5 years, or earlier if homozygous FH is suspected.	I	C
Recommendations for the treatment of dyslipidaemia in older adults		
Treatment with statins is recommended for older adults with established CVD in the same way as for younger patients.	I	A
Recommendations for the treatment of dyslipidaemia in diabetes		
In all patients with type I diabetes and in the presence of microalbuminuria and/or renal disease, LDL-C lowering (at least 50%) with statins as the first choice is recommended irrespective of the baseline LDL-C concentration.	I	C
In patients with type 2 diabetes and CVD or CKD, and in those without CVD who are >40 years of age with one or more other CVD risk factors or markers of target organ damage, the recommended goal for LDL-C is <1.8 mmol/L (< 70 mg/dL) and the secondary goal for non-HDL-C is <2.6 mmol/L (< 100 mg/dL) and for apoB is <80 mg/dL.	I	B
In all patients with type 2 diabetes and no additional risk factors and/or evidence of target organ damage, LDL-C <2.6 mmol/L (<100 mg/dL) is the primary goal. Non-HDL-C <3.4 mmol/L (<130 mg/dL) and apoB <100 mg/dL are the secondary goals.	I	B
Recommendation for lipid-lowering therapy in patients with acute coronary syndrome and patients undergoing percutaneous coronary intervention		
It is recommended to initiate or continue high dose statins early after admission in all ACS patients without contra-indication or history of intolerance, regardless of initial LDL-C values.	I	A

continued

To do or not to do lipid guidelines (continued)

Recommendations	Class [a]	Level [b]
Recommendations for the treatment of dyslipidaemia in heart failure or valvular disease		
Cholesterol lowering therapy with statins is not recommended (but is not harmful either) in patients with heart failure in the absence of other indications for their use.	III	A
Cholesterol-lowering treatment is not recommended in patients with aortic valvular stenosis without CAD in the absence of other indications for their use.	III	A
Recommendations for the treatment of dyslipidaemia in autoimmune diseases		
The universal use of lipid-lowering drugs is not recommended.	III	C
Recommendations for lipid management in patients with moderate to severe chronic kidney disease		
Patients with stage 3–5 CKD have to be considered at high or very high CV risk.	I	A
The use of statins or statin/ezetimibe combination is indicated in patients with non-dialysis-dependent CKD.	I	A
In patients with dialysis-dependent CKD and free of atherosclerotic CVD, statins should not be initiated.	III	A
Recommendations for lipid-lowering drugs in patients with peripheral arterial disease (including carotid artery disease)		
PAD is a very high-risk condition and lipid-lowering therapy (mostly statins) is recommended in these patients.	I	A
Recommendations for lipid-lowering drugs for primary and secondary prevention of stroke		
Statin therapy to reach established treatment goals is recommended in patients at high or very high CV risk for primary prevention of stroke.	I	A
Lipid-lowering therapy is recommended in patients with other manifestations of CVD for primary prevention of stroke.	I	A
Intensive statin therapy is recommended in patients with a history of non-cardioembolic ischaemic stroke or TIA for secondary prevention of stroke.	I	A

[a]Class of recommendation.
[b]Level of evidence.

Curing Atherosclerosis Should Be the Next Major Cardiovascular Prevention Goal

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