Cardiology Update 2013
Meet the Expert Sessions / Live in-a-Box
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Lipid management Case 2

***Experts**:* J. Chapman, Paris, J. Kastelein, Amsterdam and J. Perk, Kalmar
***Cases**:* D. Schmid, Zurich and I. Sudano, Zurich

Mrs S.B., 1942

- **71 years old patient, married, has one doughter (36) and is retired.**
- **She is doing yoga every day (1-2 hour)**
- **She was referred to our outpatient clinic from the general practitioners for a cardiologic evaluation because of high cholesterol and intima-media thickness (1.1-1.2 mm) in both carotid artery.**

Mrs S.B., 1942 Family History

- **Father died at age of 86 y.o. for not precised heart disease, before this age the patient said „he was an healthy smoker“**
- **Mother, with arterial hypertension, died at age of 77 for a colon cancer**
- **An older sister 74 y.o., and a doughter, 36 y.o. with normal lipid profil and normal blood pressure**

Mrs S.B., 1942

Patient was smoking 15-20 cigarette/day till she was 50 y.o.

She is physical active (1 hour - 3 times/week)

Patient drink regularly alcohol (1 Glas Wine for dinner).

Patient refers no symptoms; she feels well.

Mrs S.B., 1942

- **167cm, 64 kg,**
- **BMI 23 Kg/m^2 Waist circumference: 86 cm**

- **BP sitting 138/84 mmHg (right), 136/84 mmHg (left), HR 62/min**

  BP standing 134/82 mmHg (right), HR 68/min
- **Physical examination: ndn**

Mrs S.B., 1942

Creatinine	**58 mmol/l - 0.7 mg/dl**
GFR (MDRD)	**76 ml/min**
Sodium	**142 mEq/L**
Potassium	**3.7 mEq/L**
Fasting Glucose	**5.1 mmol/l- 92 mg/L**
Total Chol.	**6.8 mmol/l – 263 mg/L**
HDL	**1.04 mmol/l- 40 mg/L**
LDL	**5.5 mmol/l- 213 mg/L**
TG	**0.63 mmol/l- 56 mg/L**
TC/HDL	**6.5**

Mrs S.B., 1942

- **ECG, echocardiography were normal**
- **The ergometric test was maximal (120% Soll) and normal**

Summary

Old patient (71), female, with no family history for CVD.

She has normal weight, ex-smoker, makes regular physical activity normal blood pressure but high total and LDL cholesterol.

What to do?

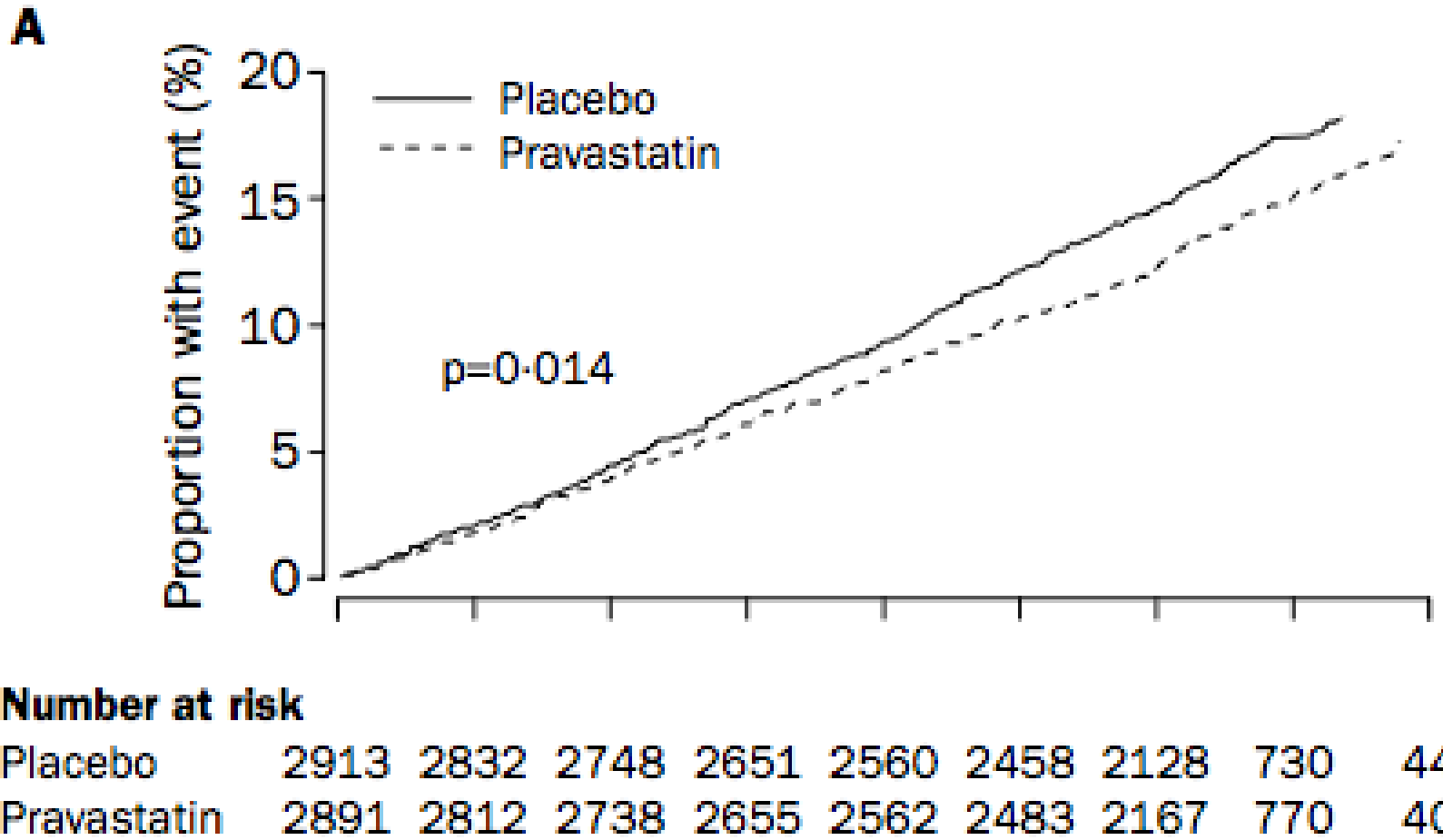
1 Suggest the patient to loose weight and reduce cholesterol in diet and control lipids after 3-6 months

2 Start statin

3 Start statin and aspirin

4 other suggestions?

Importance of dyslipidemia in elderly patients

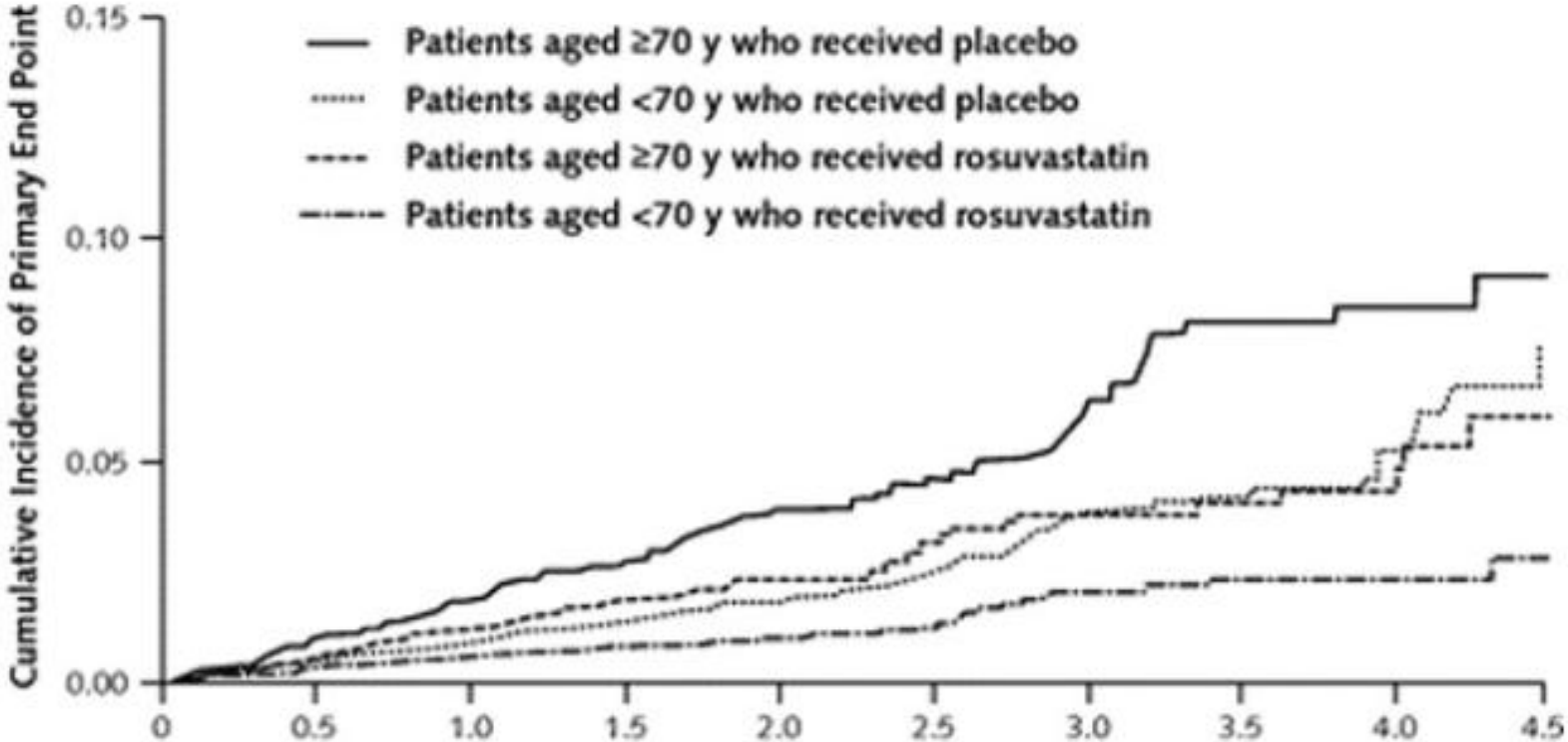


Number at risk

Placebo	2913	2832	2748	2651	2560	2458	2128	730	44
Pravastatin	2891	2812	2738	2655	2562	2483	2167	770	40

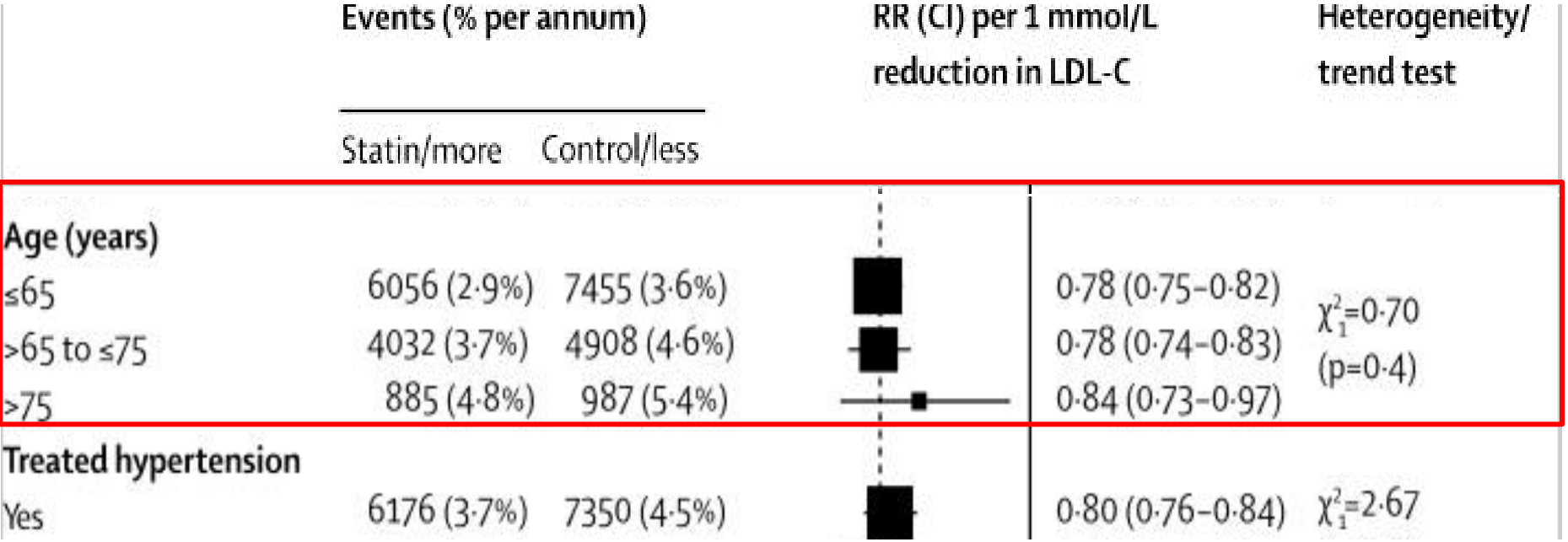
Men and women aged 70–82 years were recruited if they had either pre-existing vascular disease (coronary, cerebral, or peripheral) or raised risk of such disease because of smoking, hypertension, or diabetes. Their plasma total cholesterol was required to be 4·0–9·0 mmol/L and their triglyceride concentrations less than 6·0 mmol/L.

Prosper Study Lancet 2002



Patients at risk, *n*										
Aged ≥70 y										
Rosuvastatin	2878	2779	2694	2187	1413	695	474	351	198	59
Placebo	2817	2692	2588	2113	1342	705	476	332	196	67
Aged <70 y										
Rosuvastatin	6023	5852	5718	4353	2480	1263	879	632	340	98
Placebo	6084	5929	5765	4395	2530	1258	857	623	335	107

JUPITER Study Ann Int Med 2010



Lancet 2010;376:1670–1681.

According to published data, elderly individuals are a high risk group who could benefit significantly from lipid-lowering therapy to reduce cardiovascular morbidity and mortality.

Evidence for treatment above the age of 80–85 years is very limited, and clinical judgement should guide decisions in the very old.

ESH/ESC Guidelines 2011

Primary prevention measures in the elderly should not differ from those undertaken in younger subjects.

ESC guidelines 2011

Mrs S.B., 1942

- **The patient stops the therapy with statin afetr 5 months because of muscle pain during and afte physical activity**

- **She was scaring about what you may read in internet about statins**

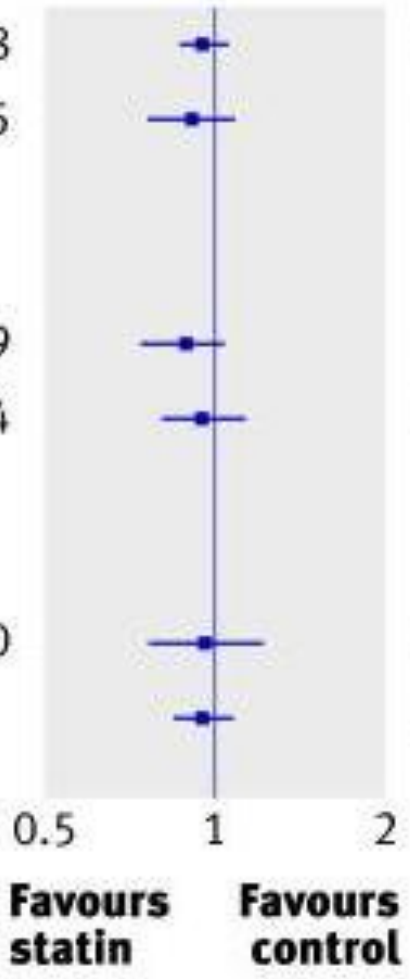
Table 3 Risk factors for statin-induced myopathy

- Advanced age (particularly ages above 80 years)
- Female
- Small body frame and fragility (low body mass index)
- Multisystem disease (especially chronic renal insufficiency and diabetes)
- Untreated hypothyroidism
- Vigorous exercise
- Perioperative period (especially after major surgeries)
- Polypharmacy with risk for drug–drug interaction, especially with drugs that interfere with cytochrome P450 pathway
- Excessive alcohol intake
- Diet with excessive cranberry or grapefruit juice
- Genetic factors, ie, polymorphisms associated with cytochrome P450 isoenzymes, drug transporters, and myocyte metabolism

Clinical Intervention in Aging 2013

All cause mortality

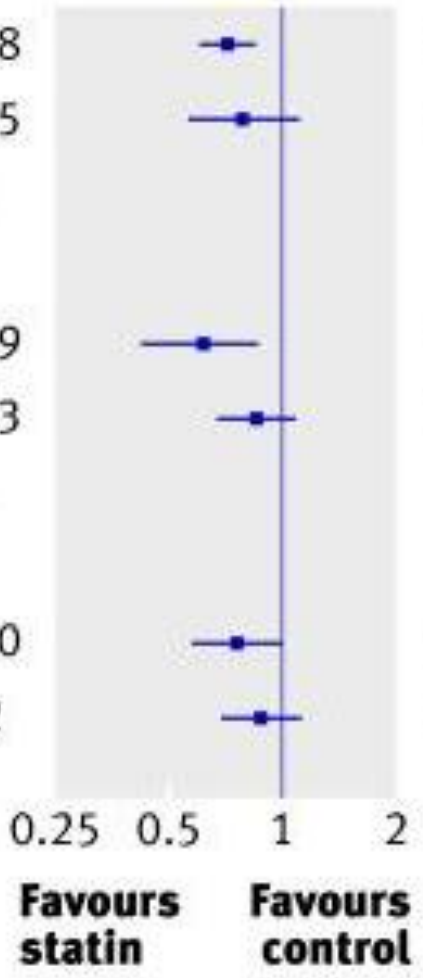
Subgroup	No of patients: Statin group	No of patients: Control group	Odds ratio (95% CI)	Odds ratio (95% CI)
Sex				
Men	13 413	13 508		0.95 (0.86 to 1.06)
Women	10 372	10 445		0.91 (0.76 to 1.08)
P for heterogeneity = 0.62				
Age				
‹65	12 889	13 129		0.89 (0.74 to 1.04)
›65	10 896	10 824		0.95 (0.80 to 1.12)
P for heterogeneity = 0.57				
Diabetes mellitus				
No	16 672	16 890		0.96 (0.76 to 1.21)
Yes	3809	3762		0.95 (0.84 to 1.07)
P for heterogeneity = 0.94				



Brugts JJ et al, BMJ 2009

Major coronary events

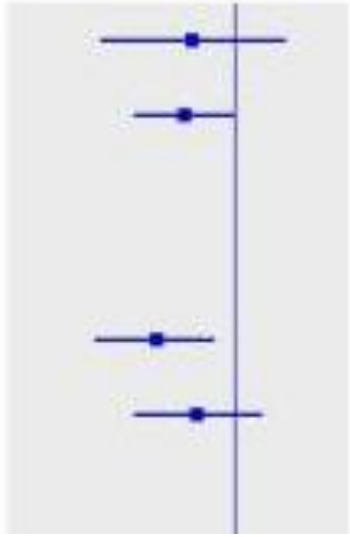
Subgroup	No of patients: Statin group	No of patients: Control group	Odds ratio (95% CI)	Odds ratio (95% CI)
Sex				
Men	13 413	13 508		0.72 (0.61 to 0.86)
Women	10 372	10 445		0.79 (0.56 to 1.13)
P for heterogeneity = 0.65				
Age				
‹65	10 300	10 529		0.62 (0.42 to 0.87)
›65	10 181	10 123		0.86 (0.67 to 1.09)
P for heterogeneity = 0.11				
Diabetes mellitus				
No	16 672	16 890		0.76 (0.57 to 1.01)
Yes	3809	3762		0.88 (0.69 to 1.13)
P for heterogeneity = 0.45				



Brugts JJ et al, BMJ 2009

Major cerebrovascular events

Subgroup	No of patients: Statin group	No of patients: Control group	Odds ratio (95% CI)	Odds ratio (95% CI)
Sex				
Men	7949	8060		0.77 (0.44 to 1.36)
Women	7362	7407		0.74 (0.54 to 1.00)
P for heterogeneity = 0.90				
Age				
‹65	7989	8192		0.62 (0.42 to 0.89)
›65	7322	7275		0.79 (0.53 to 1.18)
P for heterogeneity = 0.37				

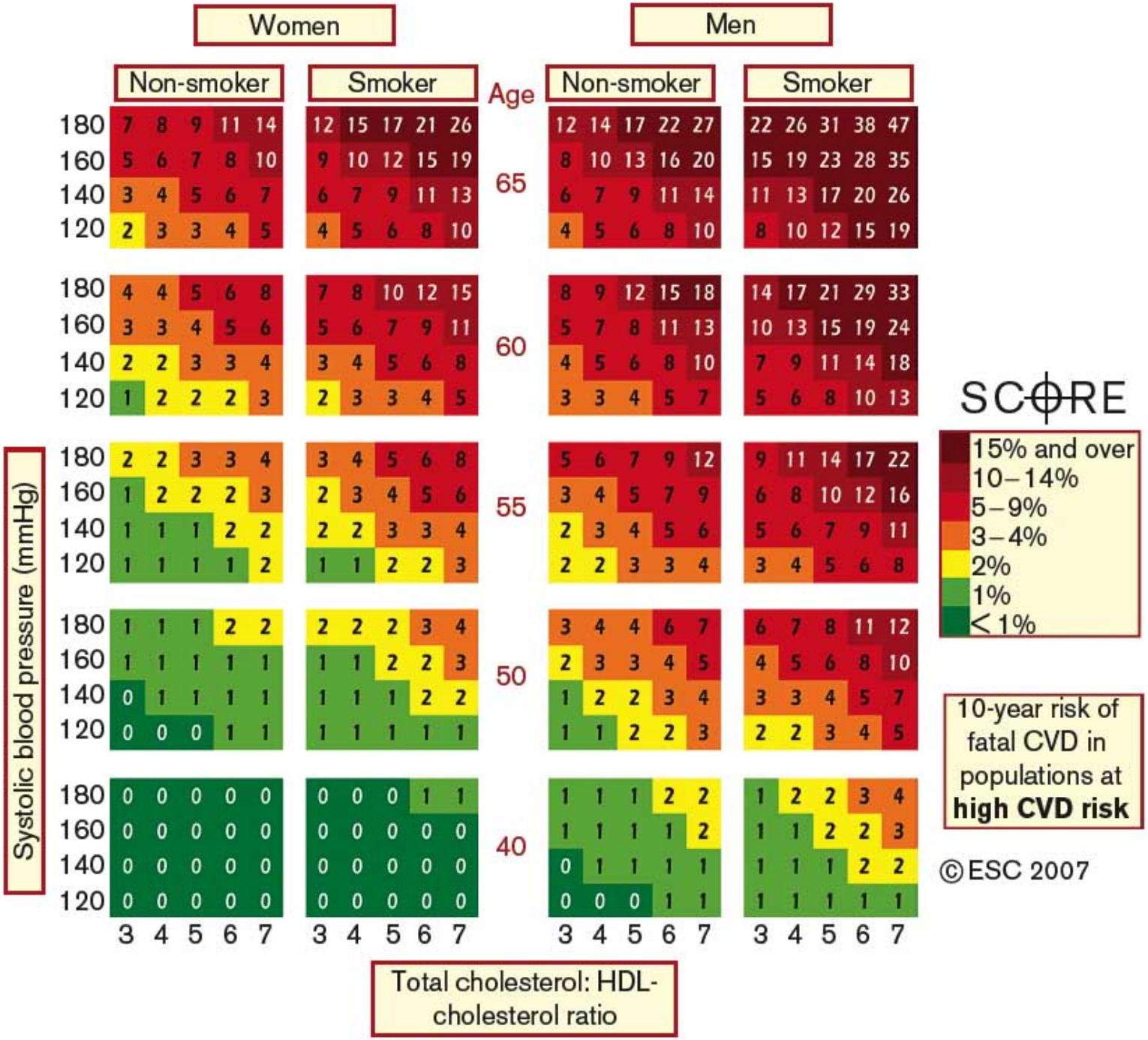


Brugts JJ et al, BMJ 2009

Table 3 Intervention strategies as a function of total CV risk and LDL-C level

Total CV risk (SCORE) %	LDL-C levels				
	<70 mg/dL <1.8 mmol/L	70 to <100 mg/dL 1.8 to <2.5 mmol/L	100 to <155 mg/dL 2.5 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	No lipid intervention	No lipid intervention	Lifestyle intervention	Lifestyle intervention	Lifestyle intervention, consider drug if uncontrolled
Class[a]/Level[b]	I/C	I/C	I/C	I/C	IIa/A
≥1 to <5	Lifestyle intervention	Lifestyle intervention	Lifestyle intervention, consider drug if uncontrolled	Lifestyle intervention, consider drug if uncontrolled	Lifestyle intervention, consider drug if uncontrolled
Class[a]/Level[b]	I/C	I/C	IIa/A	IIa/A	I/A
>5 to <10, or high risk	Lifestyle intervention, consider drug*	Lifestyle intervention, consider drug*	Lifestyle intervention and immediate drug intervention	Lifestyle intervention and immediate drug intervention	Lifestyle intervention and immediate drug intervention
Class[a]/Level[b]	IIa/A	IIa/A	IIa/A	I/A	I/A
≥10 or very high risk	Lifestyle intervention, consider drug*	Lifestyle intervention and immediate drug intervention	Lifestyle intervention and immediate drug intervention	Lifestyle intervention and immediate drug intervention	Lifestyle intervention and immediate drug intervention
Class[a]/Level[b]	IIa/A	IIa/A	I/A	I/A	I/A

Cardiovascular risk calculation in elderly patients


Women
Men
Non-smoker
Smoker
Non-smoker
Smoker
Age
65
180 7 8 9 11 14
160 5 6 7 8 10
140 3 4 5 6 7
120 2 3 3 4 5
12 15 17 21 26
9 10 12 15 19
6 7 9 11 13
4 5 6 8 10
12 14 17 22 27
8 10 13 16 20
6 7 9 11 14
4 5 6 8 10
22 26 31 38 47
15 19 23 28 35
11 13 17 20 26
8 10 12 15 19
60
180 4 4 5 6 8
160 3 3 4 5 6
140 2 2 3 3 4
120 1 2 2 2 3
7 8 10 12 15
5 6 7 9 11
3 4 5 6 8
2 3 3 4 5
8 9 12 15 18
5 7 8 11 13
4 5 6 8 10
3 3 4 5 7
14 17 21 29 33
10 13 15 19 24
7 9 11 14 18
5 6 8 10 13
55
180 2 2 3 3 4
160 1 2 2 2 3
140 1 1 1 2 2
120 1 1 1 1 2
3 4 5 6 8
2 3 4 5 6
2 2 3 3 4
1 1 2 2 3
5 6 7 9 12
3 4 5 7 9
2 3 4 5 6
2 2 3 3 4
9 11 14 17 22
6 8 10 12 16
5 6 7 9 11
3 4 5 6 8
50
180 1 1 1 2 2
160 1 1 1 1 1
140 0 1 1 1 1
120 0 0 0 1 1
2 2 2 3 4
1 1 2 2 3
1 1 1 2 2
1 1 1 1 1
3 4 4 6 7
2 3 3 4 5
1 2 2 3 4
1 1 2 2 3
6 7 8 11 12
4 5 6 8 10
3 3 4 5 7
2 2 3 4 5
40
180 0 0 0 0 0
160 0 0 0 0 0
140 0 0 0 0 0
120 0 0 0 0 0
0 0 0 1 1
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
1 1 1 2 2
1 1 1 1 2
0 1 1 1 1
0 0 0 1 1
1 2 2 3 4
1 1 2 2 3
1 1 1 2 2
1 1 1 1 1
3 4 5 6 7
3 4 5 6 7
3 4 5 6 7
3 4 5 6 7
Systolic blood pressure (mmHg)
Total cholesterol: HDL-cholesterol ratio
SCORE
15% and over
10–14%
5–9%
3–4%
2%
1%
< 1%
10-year risk of fatal CVD in populations at high CVD risk
© ESC 2007

NATIONAL CHOLESTEROL EDUCATION PROGRAM
Third Report of the Expert Panel on
Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III)

Information about your risk score:

Age:	71
Gender:	female
Total Cholesterol:	263 mg/dL
HDL Cholesterol:	40 mg/dL
Smoker:	No
Systolic Blood Pressure:	138 mm/Hg
On medication for HBP:	No

NATIONAL CHOLESTEROL EDUCATION PROGRAM
Third Report of the Expert Panel on
Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III)

Information about your risk score:

Age:	71
Gender:	female
Total Cholesterol:	200 mg/dL
HDL Cholesterol:	40 mg/dL
Smoker:	No
Systolic Blood Pressure:	138 mm/Hg
On medication for HBP:	No

Cardiovascular Risk Calculator For Primary Prevention

This calculator should not be used if patient has known CVD or diabetes (already known to be at high risk)

Age (30-74)	71	Smoking Status	Non Smoker
Sex	Female	Glucose	Normal
Systolic BP	138	LVH	No LVH
Diastolic BP	80	Central Obesity	No
Total Cholesterol	6.8	South Asian Origin	No
HDL Cholesterol	1.04	Family History of CVD (Men	No FH
Total /HDL Ratio	6.54	Calculate	Clear Fields
Serum TG mmol/L	0.63		

Using Systolic BP prediction, the 10-year risk of JBS CVD Risk is 19 %

The equivalent risk calculation with diastolic BP is 19 %

Cardiovascular Risk Calculator For Primary Prevention

This calculator should not be used if patient has known CVD or diabetes (already known to be at high risk)

Age (30-74)	71	Smoking Status	Non Smoker
Sex	Female	Glucose	Normal
Systolic BP	138	LVH	No LVH
Diastolic BP	80	Central Obesity	No
Total Cholesterol	5.4	South Asian Origin	No
HDL Cholesterol	1.04	Family History of CVD (Men	No FH
Total /HDL Ratio	5.19	Calculate	Clear Fields
Serum TG mmol/L	0.63		

Using Systolic BP prediction, the 10-year risk of JBS CVD Risk is 16 %

The equivalent risk calculation with diastolic BP is 16 %

Table 22 Management of dyslipidaemia in women

• Statin treatment is recommended for primary prevention of CAD in high risk women.[16]
• Statins are recommended for secondary prevention in women with the same indications and targets as in men.[15, 164]
• Lipid-lowering drugs should not be given when pregnancy is planned, during pregnancy or during the breast feeding period.

CAD = coronary artery disease.

Table 23 Recommendations for treatment of dyslipidaemia in the elderly

Recommendations	Class[a]	Level[b]	Ref[c]
Treatment with statins is recommended for elderly patients with established CVD in the same way as for younger patients.	I	B	15, 16
Since elderly people often have comorbidities and have altered pharmacokinetics, it is recommended to start lipid-lowering medication at a low dose and then titrate with caution to achieve target lipid levels which are the same as in the younger subjects.	I	C	-
Statin therapy may be considered in elderly subjects free of CVD, particularly in the presence of at least one other CV risk factor besides age.	IIb	B	20, 167

[a]Class of recommendation.
[b]Level of evidence.
[c]References.
CV = cardiovascular; CVD = cardiovascular disease.

ESC Guidelines 2011