EUROASPIRE I - III

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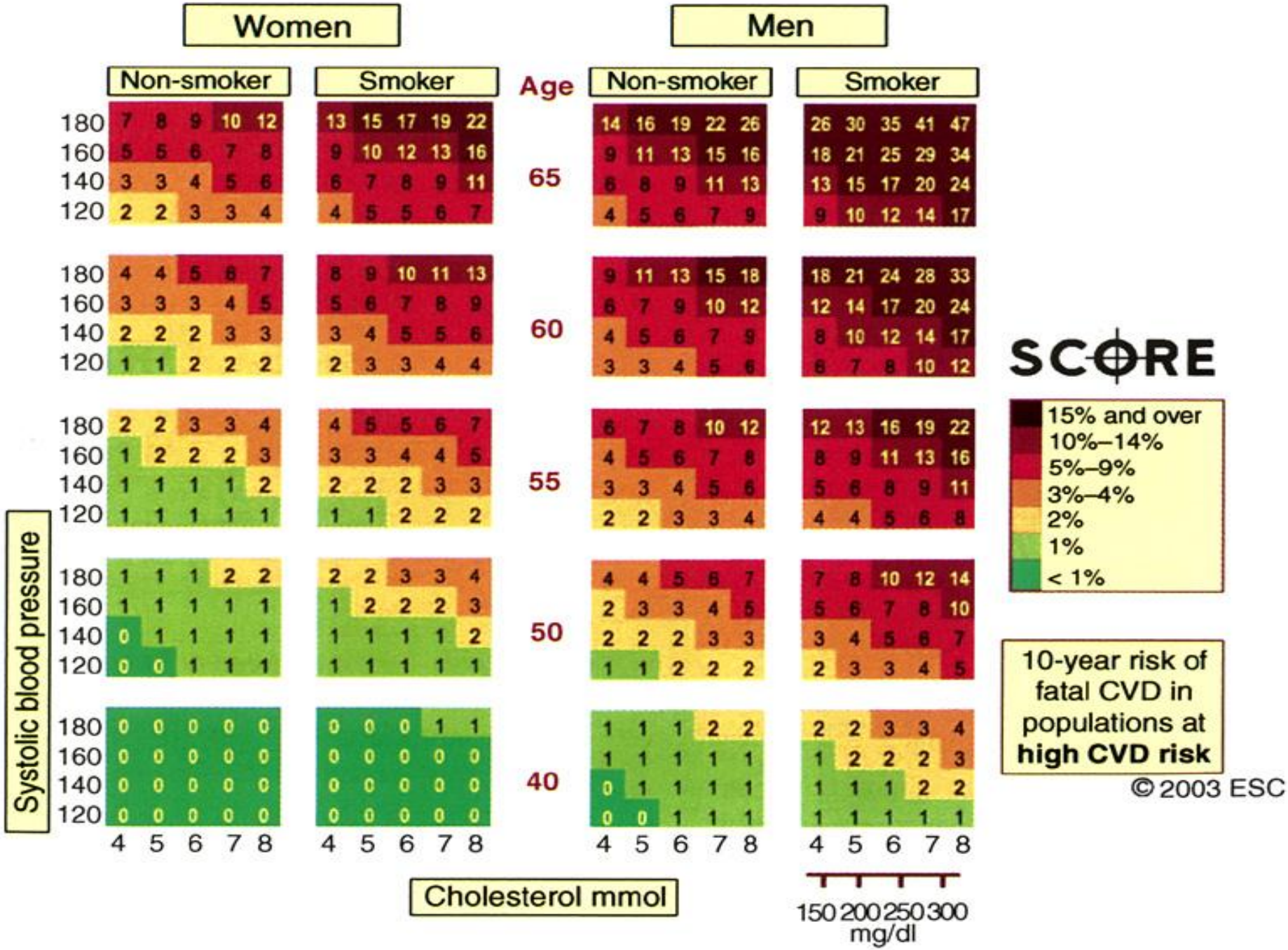
What are the PRIORITIES for CVD prevention in clinical practice?

1. **Patients with established atherosclerotic CVD**

2. **Asymptomatic individuals who are at increased risk of CVD because of**
   - **2.1 Multiple risk factors resulting in raised total CVD risk (≥5% 10-year risk of CVD death)**
   - **2.2 Diabetes type 2 and type 1 with microalbuminuria**
   - **2.3 Markedly increased single risk factors especially if associated with end-organ damage**

3 **Close relatives of subjects with premature atherosclerotic CVD or of those at particularly high risk**


Women
Men
Non-smoker
Smoker
Non-smoker
Smoker
Age
65
60
55
50
40
Systolic blood pressure
180 160 140 120
4 5 6 7 8
Cholesterol mmol
150 200 250 300
mg/dl
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
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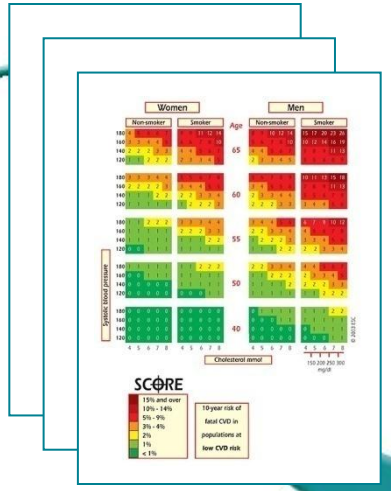
From SCORE to HeartScore®



- Same risk factors
- Same end-points
- Same colours

The electronic interactive version of SCORE:

HeartScore®

developed by the Research Centre for Prevention and Health, Glostrup University, Denmark

What are the OBJECTIVES of CVD prevention?

2. To achieve more rigorous risk factor control in **high risk** subjects, especially those with established CVD or diabetes through a healthy lifestyle and effective management of all risk factors:

    3.1 Blood pressure under 130/80 mmHg if feasible

    3.2 Total cholesterol <4.5 mmol/L (~175 mg/dL) with an option of <4 mmol/L (~155 mg/dL) if feasible

    3.3 LDL cholesterol <2.5 mmol/L (~100 mg/dL) with an option of <2mmol/L (~80 mg/dL) if feasible

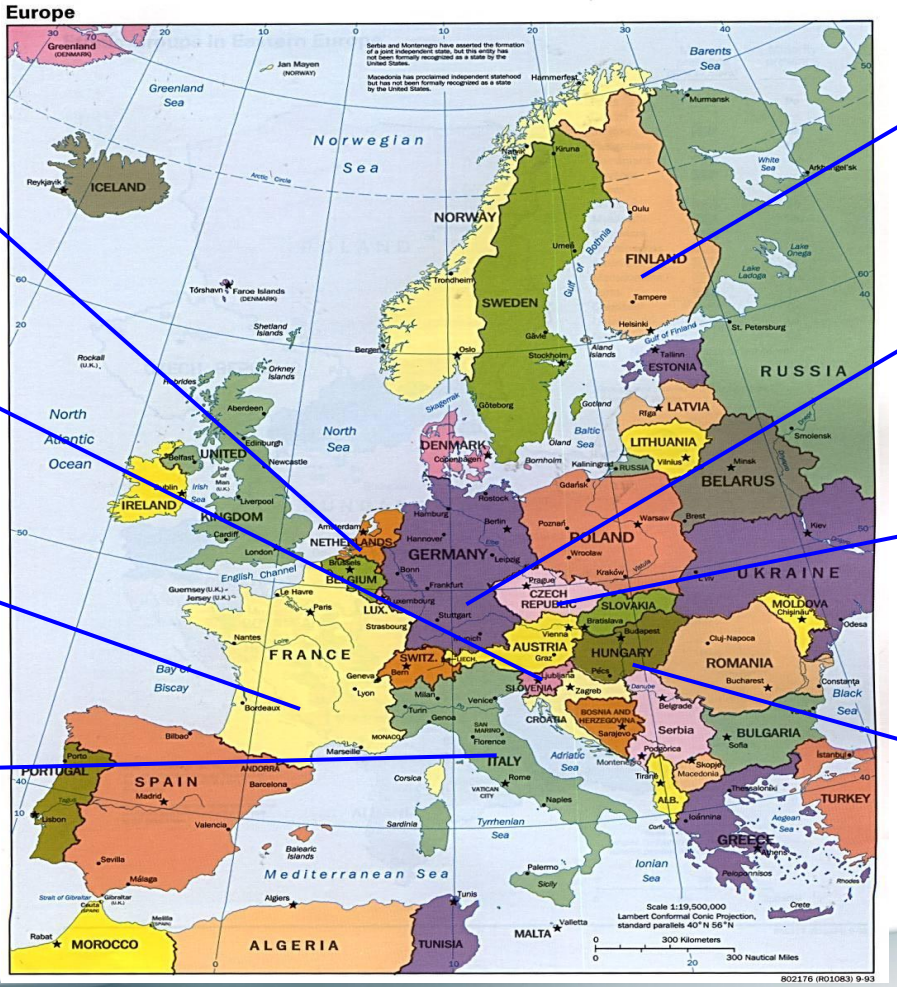
    3.4 Fasting blood glucose <6 mmol/L (~110 mg/dL) and HbA1c <6.5% if feasible

3. To consider cardioprotective drug therapy in these high risk subjects especially those with established atherosclerotic CVD

Strategies for prevention of cardiovascular disease

Secondary prevention and rehabilitation strategy for patients with vascular disease

EUROASPIRE I, II and III



Netherlands

Slovenia

France

Italy

Finland

Germany

Czech Republic

Hungary

www.escardio.org

K Kotseva, et al Lancet 2009; 373; 929-940

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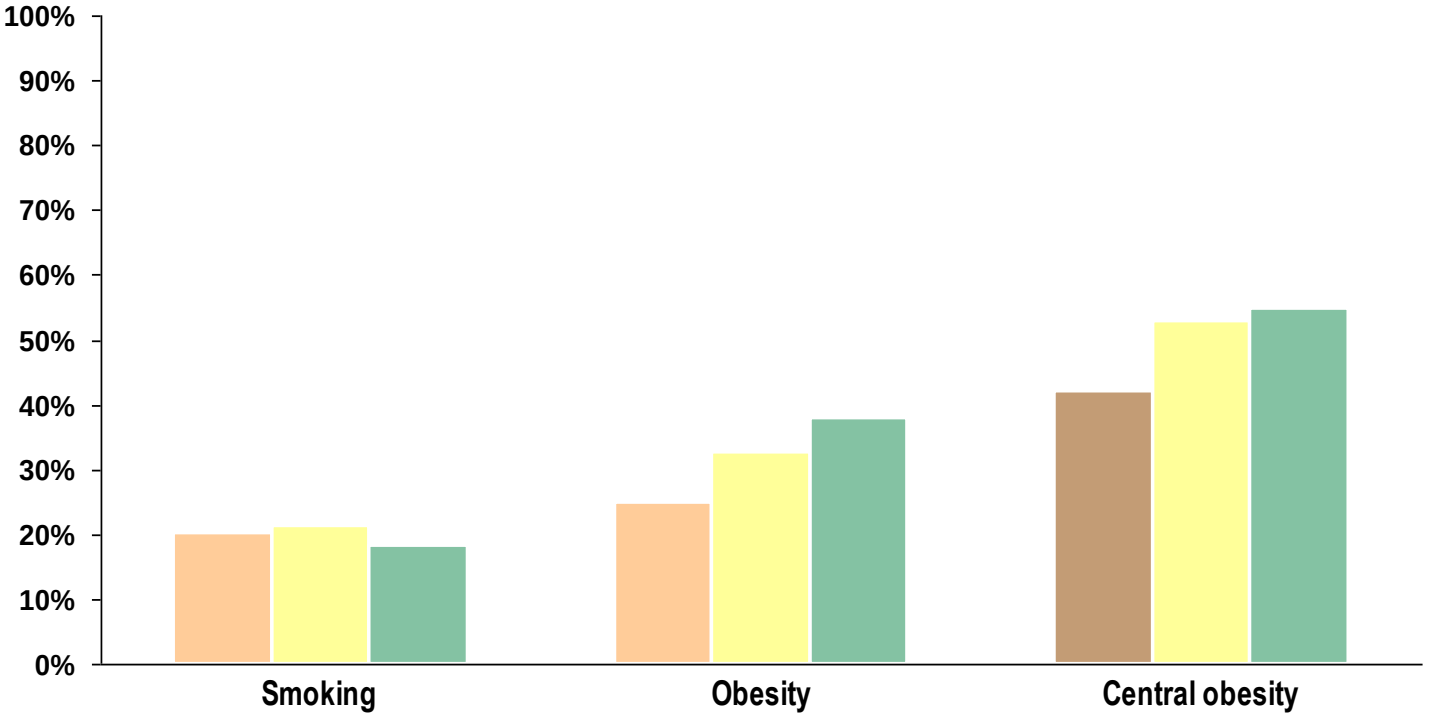
Prevalence of smoking, obesity* and central obesity**

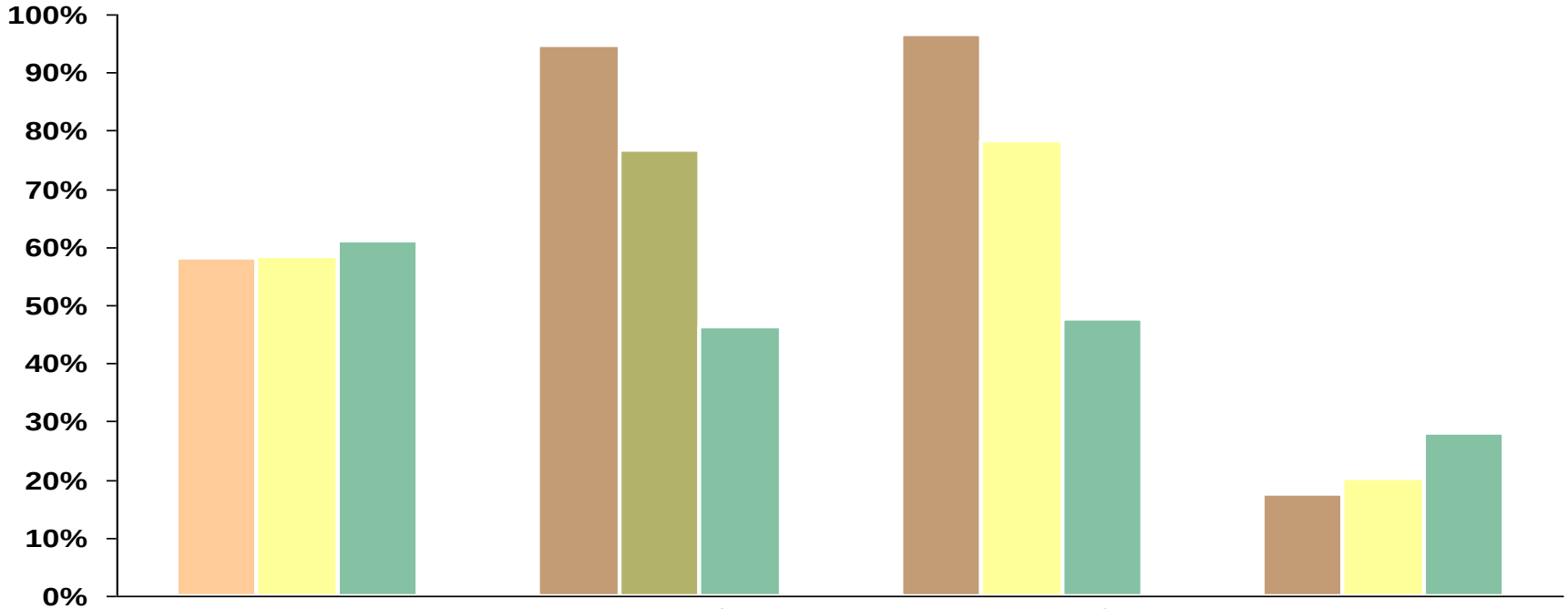
*Body mass index ≥ 30 kg/m²
**Waist circumference ≥ 88 cm for women and ≥ 102 cm for men



	Smoking	Obesity	Central obesity
Survey 1	20.3%	25.0%	42.2%
Survey 2	21.2%	32.6%	53.0%
Survey 3	18.2%	38.0%	54.9%

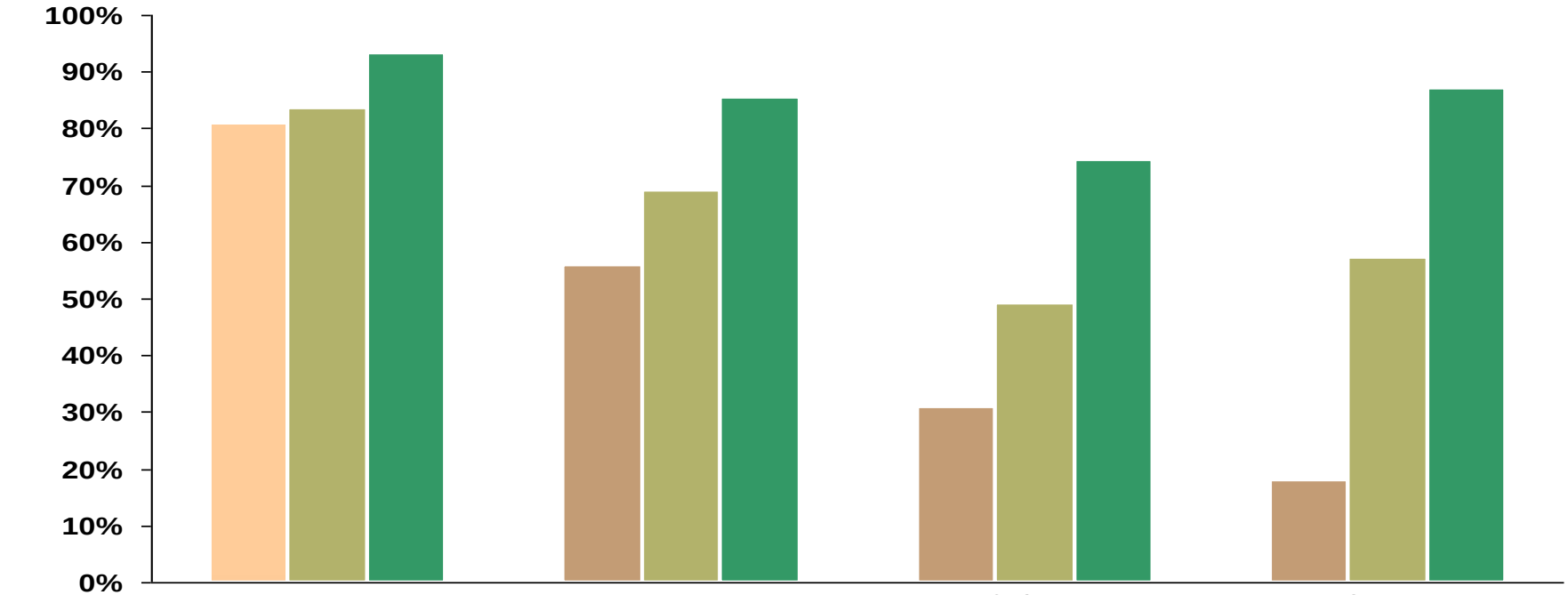
Prevalence of raised blood pressure*, elevated TC** and LDL-C***, and self-reported diabetes mellitus

*SBP/DBP ≥ 140/90 mmHg for non-diabetics or ≥ 130/80 mmHg diabetics
** TC ≥4.5 mmol/l; *** LDL-C ≥4.5 mmol/l



	Raised BP	Elevated TC	Elevated LDL-C	Diabetes
Survey 1	58.1%	94.5%	96.4%	17.4%
Survey 2	58.3%	76.7%	78.1%	20.1%
Survey 3	60.9%	46.2%	47.5%	28.0%

Cardiovascular Protective Drug Therapies



	Antiplatelets	Beta-blockers	ACE/ARB's	Statins
Survey 1	80.8%	56.0%	31.0%	18.1%
Survey 2	83.6%	69.0%	49.2%	57.3%
Survey 3	93.2%	85.5%	74.5%	87.0%

Cardiac rehabilitation for patients with CHD

Clinical outcomes	Treatment n/N	Control n/N	Statistical method	Effect size
Total mortality	326/4295	381/4137	OR (95%CI)	0.80 (0.68,0.93)
Cardiac mortality	211/2706	267/2665	OR (95%CI)	0.74 (0.61,0.90)

Taylor R et al, Am J Med 2004; 116:682-692

EUROASPIRE III

Participating countries

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Netherlands

Ireland

UK

Germany

Czech Republic

France

Belgium

Croatia

Slovenia

Spain

Italy

Finland

Russia

Latvia

Lithuania

Poland

Hungary

Romania

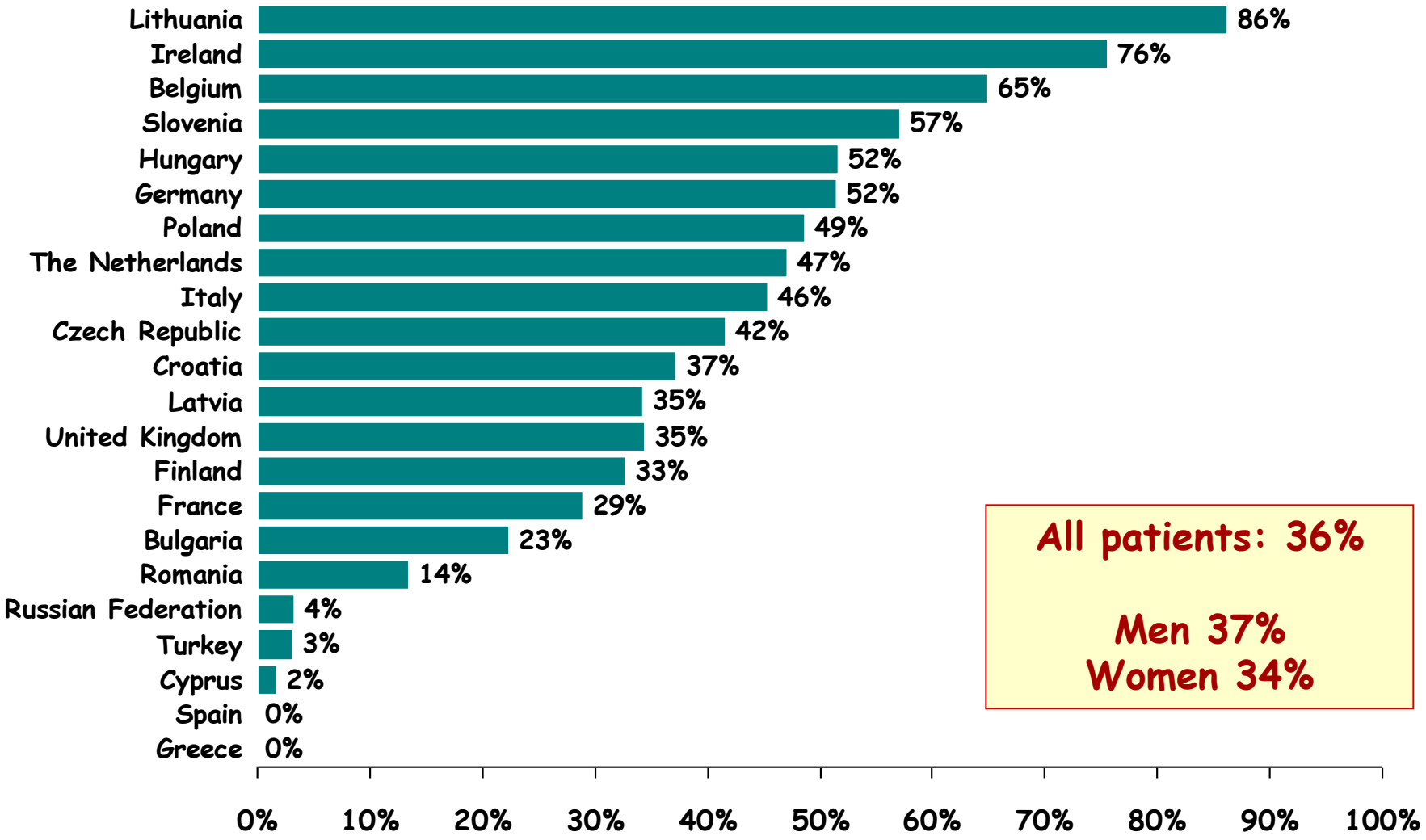
Bulgaria

Greece

Turkey

Cyprus

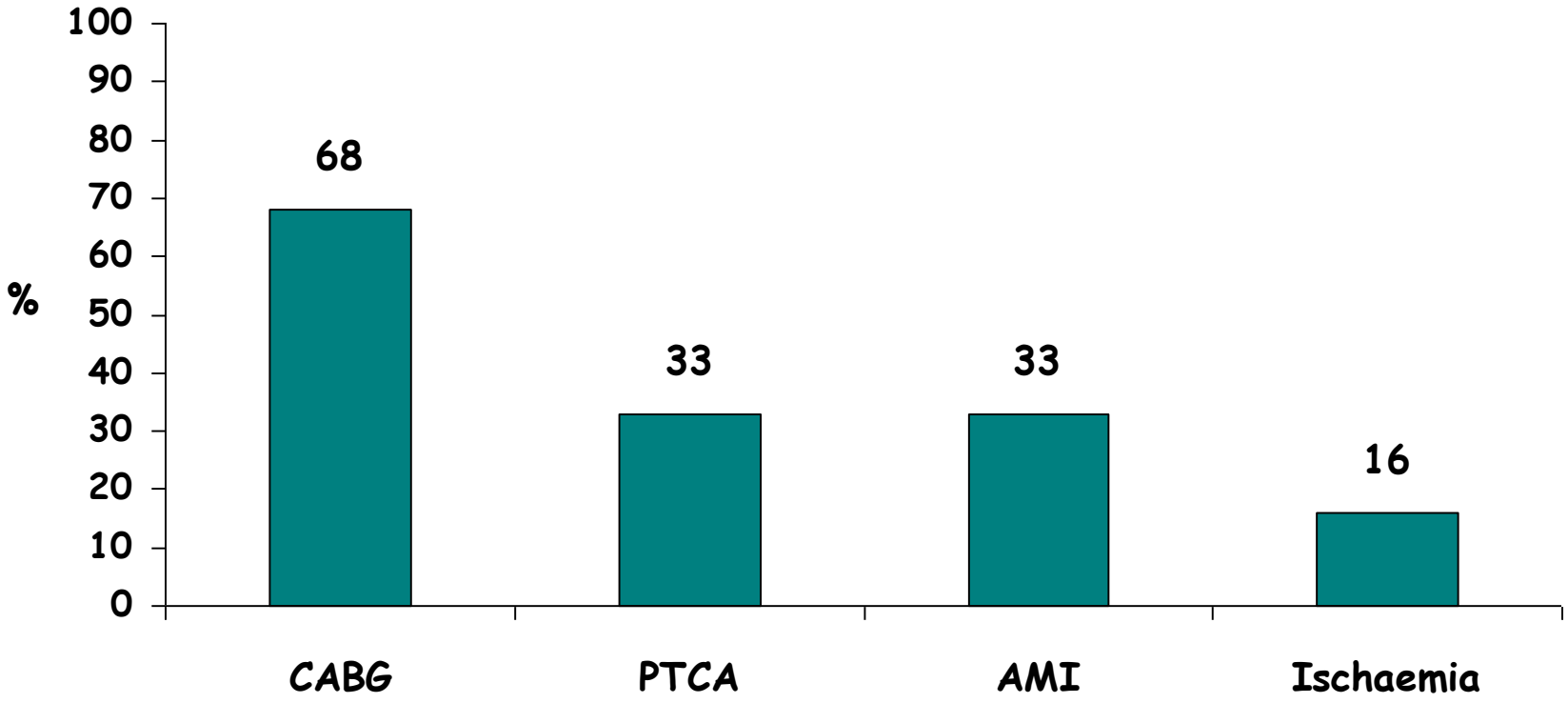
Attendance to a CPR programme among all patients* by country



* Attending at least one session

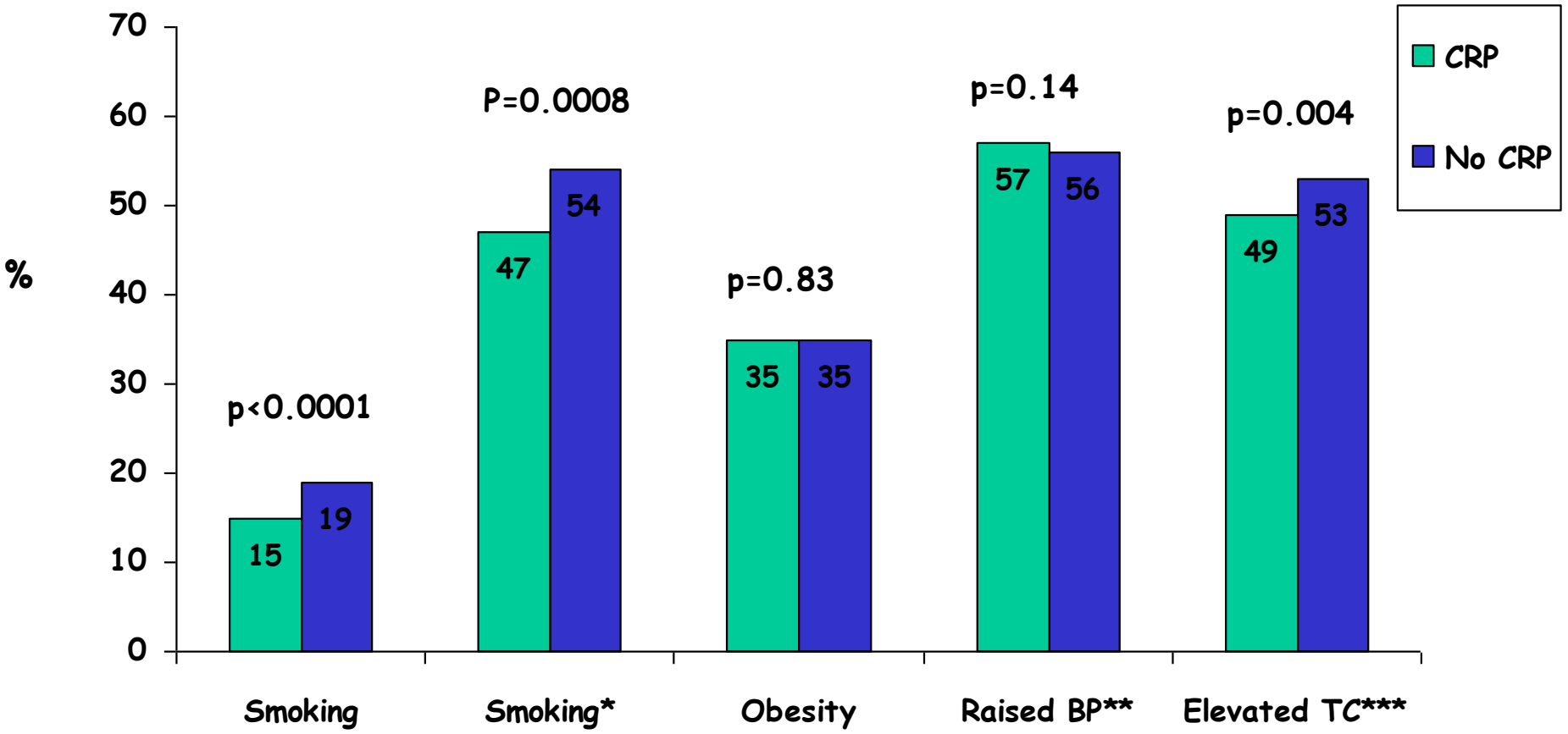
CPR attendance rate if advised to follow = 81%

Proportion of patients attended a CRP by diagnotic category*



* Attending at least one session

Prevalence of CVD risk factors according to participation in a CRP



- *Among patients smoking prior to the index vent
- **BP ≥ 140/90 mmHg, (≥ 130/80 mmHg in patients with diabetes);*** TC ≥ 4.5 mmol/L

Cardiac rehabilitation for patients with CHD

Modifiable risk factors	Statistical method	Effect size
Total cholesterol	WMD (95%CI)	-0.37 (-0.63, -0.11)
LDL cholesterol	WMD (95%CI)	-0.20 (-0.53, 0.12)
HDL cholesterol	WMD (95%CI)	0.05 (-0.03, 0.14)
Triglycerides	WMD (95%CI)	-0.23 (-0.39, -0.07)
SBP	WMD (95%CI)	-3.19 (-5.44, -0.95)
DBP	WMD (95%CI)	-1.18 (-2.68, 0.32)
Smoking prevalence	OR (95%CI)	0.64 (0.50, 0.83)

Taylor R et al, Am J Med 2004; 116:682-692

Modern Preventive Cardiology programme

- **Lifestyle (smoking cessation, diet, physical activity) intervention**
- **Psycho-social factors**
- **Managing other risk factors (blood pressure, lipids and glucose) to target**
- **Adherence with cardioprotective drug therapies for life.**

Impact of diet and exercise on early cardiovascular events after ACS

	Risk of Death/MI/Stroke	
Category	OR (95% CI)	*P*
No diet/exercise	Reference	
Diet only	0.91 (0.77–1.07)	0.2605
Exercise only	0.69 (0.54–0.89)	0.0037
Both diet and exercise	0.46 (0.38–0.57)	<0.0001

Chow C K, et al Circulation 2010; 121: 750-758

THE LANCET

Volume 373 · Number 9667 · Pages 867–978 · March 14–20, 2009 www.thelancet.com

"To salvage the acutely ischaemic myocardium without addressing the underlying causes of the disease is futile; we need to invest in prevention."

See Articles page 929

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Founded 1823 · Published weekly

Strategies for prevention of cardiovascular disease

Primary prevention strategy for asymptomatic high risk individuals

Traditional medical paradigm

- Hypertension
- Hyperlipidaemia
- Hyperglycaemia

New medical paradigm

Total cardiovascular risk

Impact of combinations of risk factors on 10 year risk of CVD death

SEX	AGE	CHOL	BP	SMOKE	RISK %
F	60	8	120	NO	
F	60	7	140	YES	
M	60	6	160	NO	
M	60	5	180	YES	

Impact of combinations of risk factors on 10 year risk of CVD death

SEX	AGE	CHOL	BP	SMOKE	RISK %
F	60	8	120	NO	2
F	60	7	140	YES	5
M	60	6	160	NO	8
M	60	5	180	YES	21

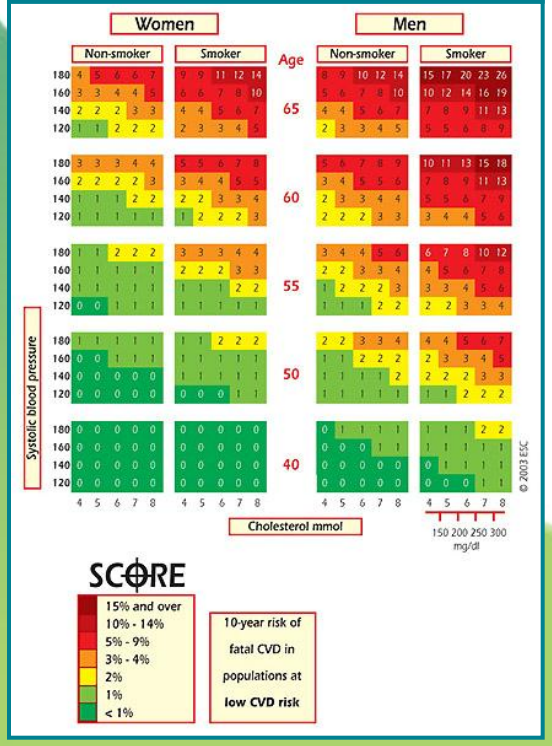
SCORE

- Gender
- Smoking status
- Age
- Systolic blood pressure
- Total cholesterol

10 year risk of fatal CVD

Belgium, France, Greece, Italy, Luxembourg, Spain, Switzerland, Portugal

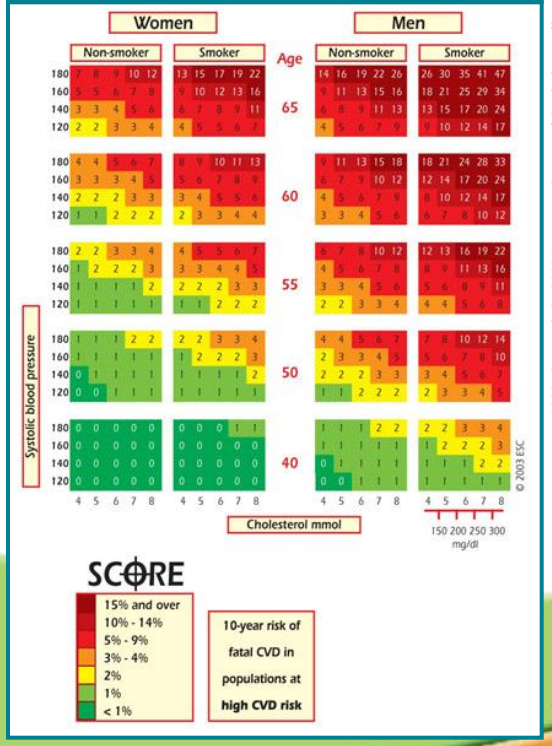
Low Risk Chart



Based on Conroy et al, Eur Heart J, 2003, 24:987-1003 Copyright©: 2003 European Society of Cardiology. All rights reserved.

The rest of Europe

High Risk Chart



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New medical paradigm

Reduce **total**
cardiovascular risk

Modern Preventive Cardiology programme

- **Lifestyle (smoking cessation, diet, physical activity) intervention**
- **Psycho-social factors**
- **Managing other risk factors (blood pressure, lipids and glucose) to target**
- **Adherence with cardioprotective drug therapies for life.**

Multiple risk factor interventions for primary prevention of CHD

Outcome title	No of studies	No of participants	Statistical method	Effect size
Total mortality	9	125167	OR (95%CI)	0.96 (0.92,1.01)
CHD mortality	9	125167	OR (95%CI)	0.96 (0.89,1.04)

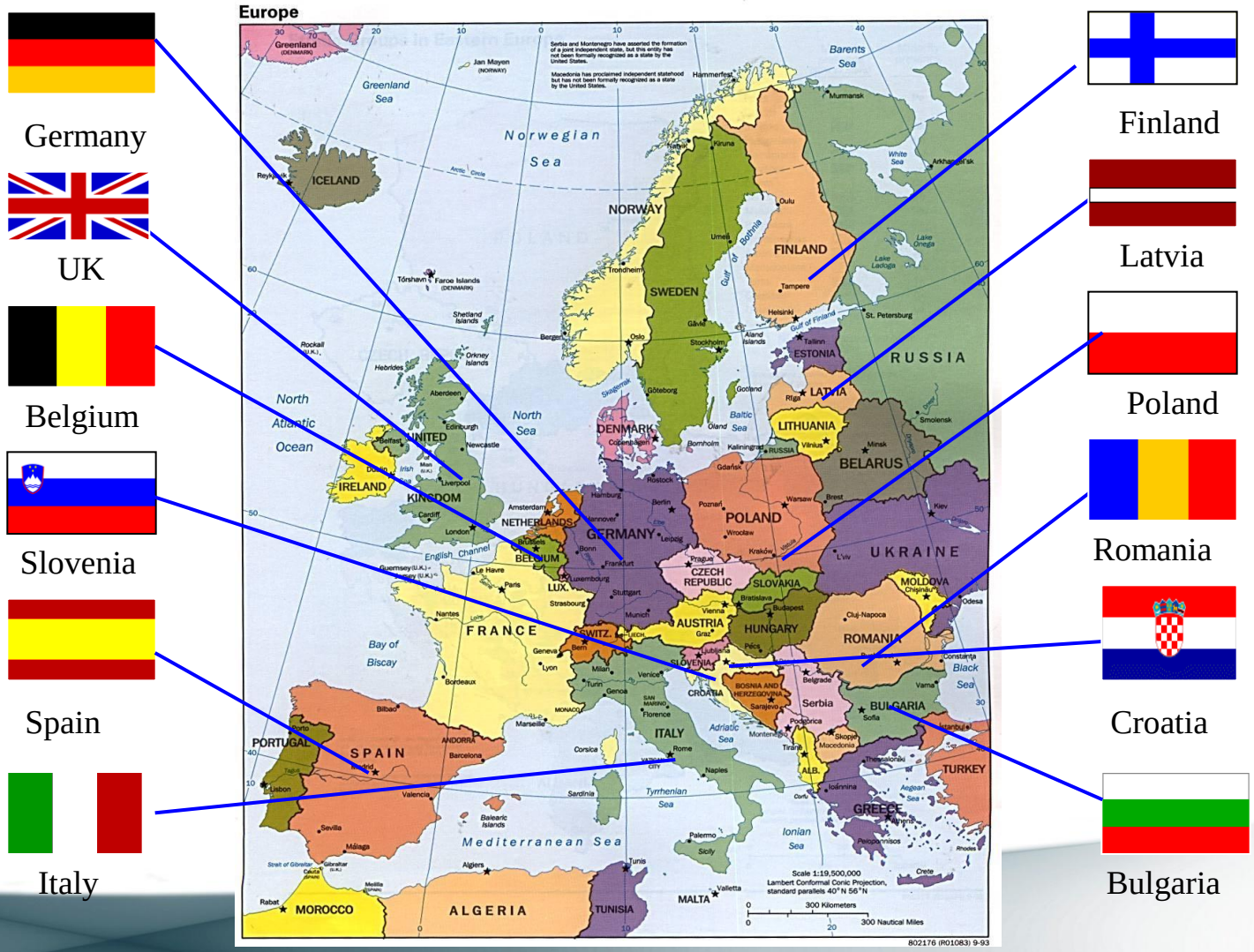
Ebrahim S et al, Cochrane Database of Systematic Reviews 2006

Multiple risk factor interventions for primary prevention of CHD

Outcome title	No of studies	No of participants	Statistical method	Effect size
SBP	38	53872	WMD (95%CI)	-3.62 (-3.93, -3.31)
DBP	39	64859	WMD (95%CI)	-2.76 (-2.93, -2.59)
Blood cholesterol	35	66106	WMD (95%CI)	-0.07 (-0.08, -0.06)
Smoking prevalence	15	48948	OR (95%CI) (random)	0.81 (0.70, 0.94)

Ebrahim S et al, Cochrane Database of Systematic Reviews 2006

EUROASPIRE III PRIMARY CARE
Participating countries



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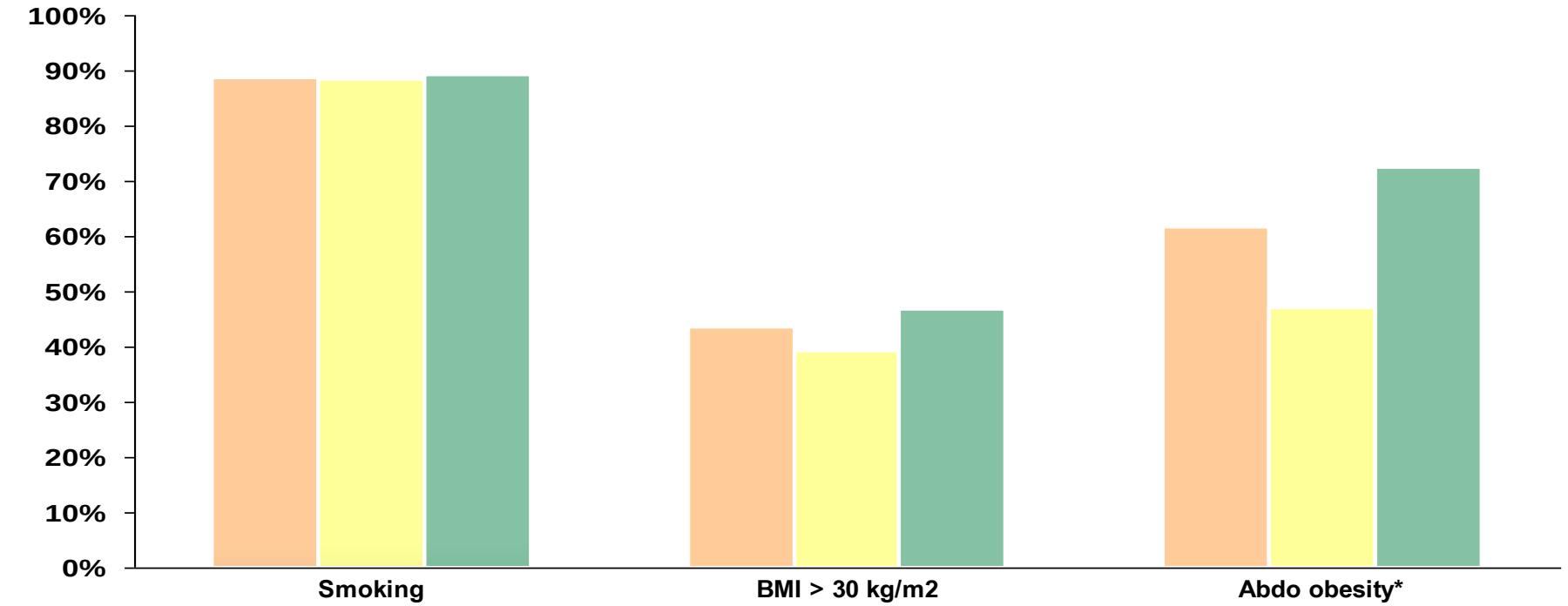
EUROASPIRE III PRIMARY CARE

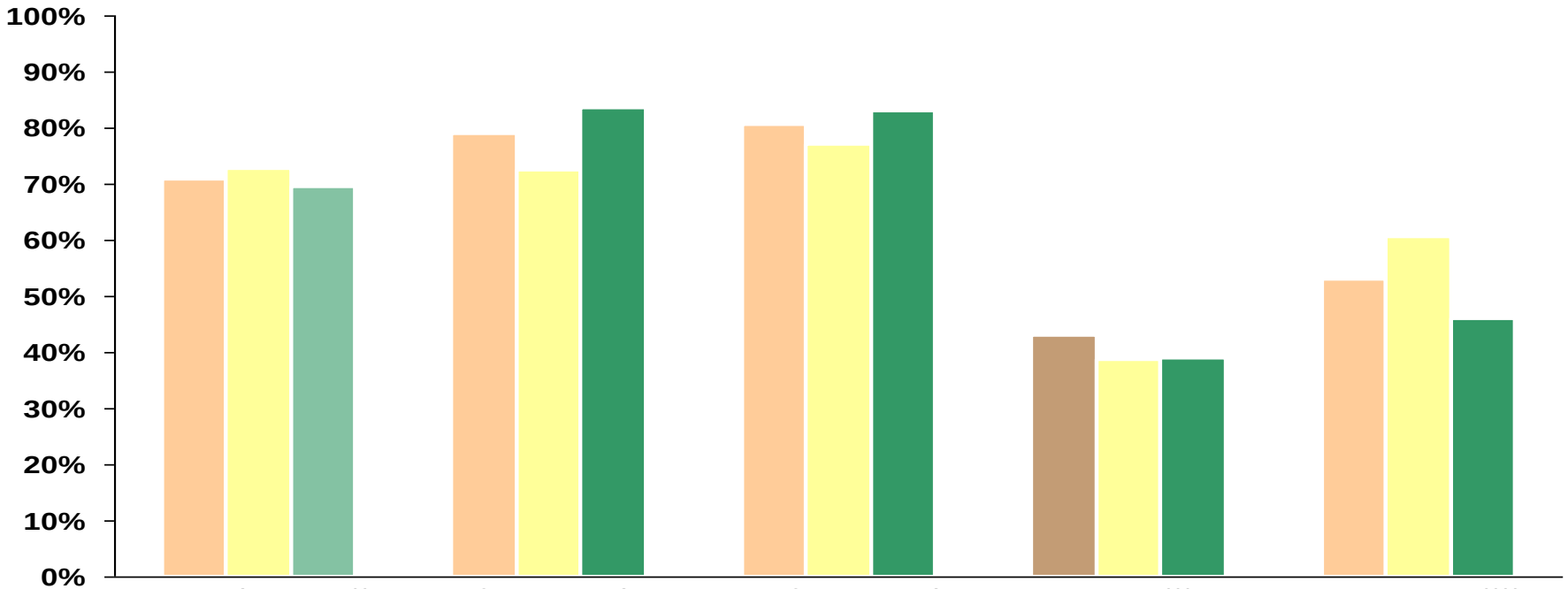
* WC > 94 cm (men); > 84 cm (women)



	Smoking	BMI > 30 kg/m2	Abdo obesity*
ALL	88.6%	43.5%	61.6%
MEN	88.3%	39.2%	46.9%
WOMEN	89.2%	46.7%	72.4%

EUROASPIRE III PRIMARY CARE

**SBP/DBP ≥ 140/90 mmHg for non-diabetics or ≥ 130/80 mmHg for diabetes
****Self-reported and/or glucose ≥ 7.0 mmol/l; **** in patients with self reported diabetes



	BP>140/90mmHg**	TC>4.5 mmol/l	LDL-C>2.5 mmol/l	Diabetes***	HbA1c<6.5% ****
ALL	70.8%	78.9%	81%	43%	53%
MEN	72.6%	72.5%	77%	39%	61%
WOMEN	69.5%	83.6%	83%	39%	46%

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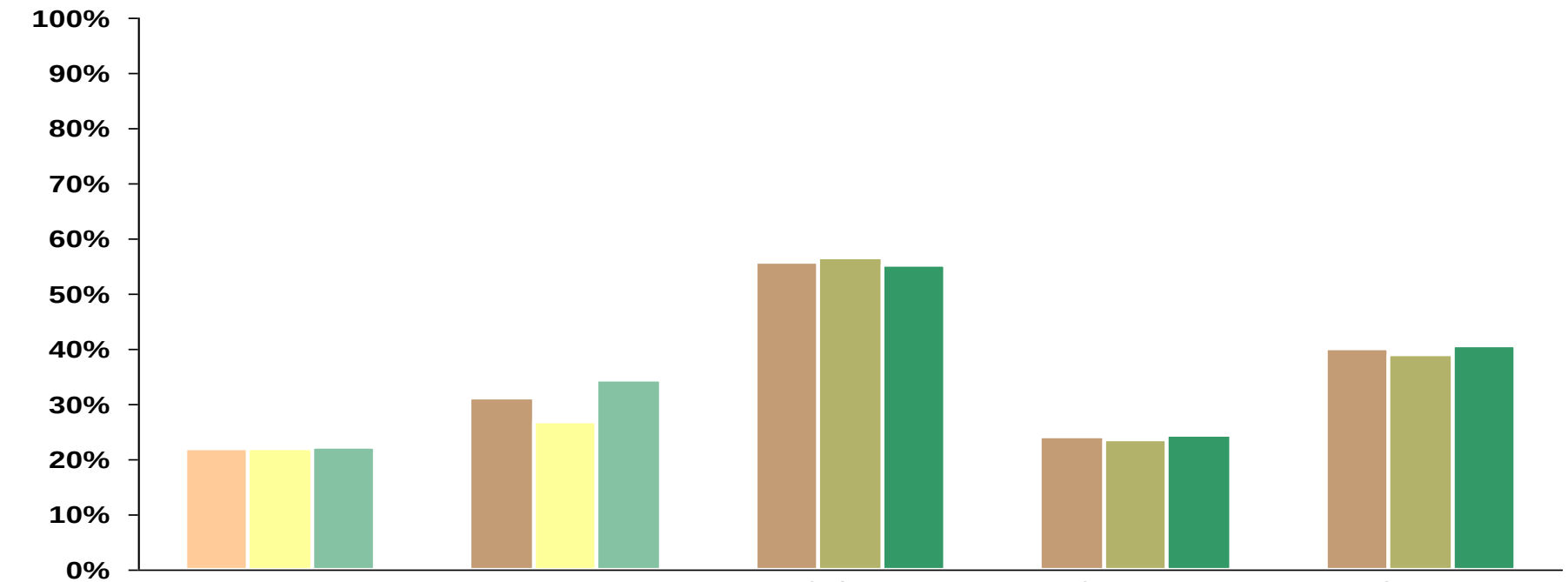
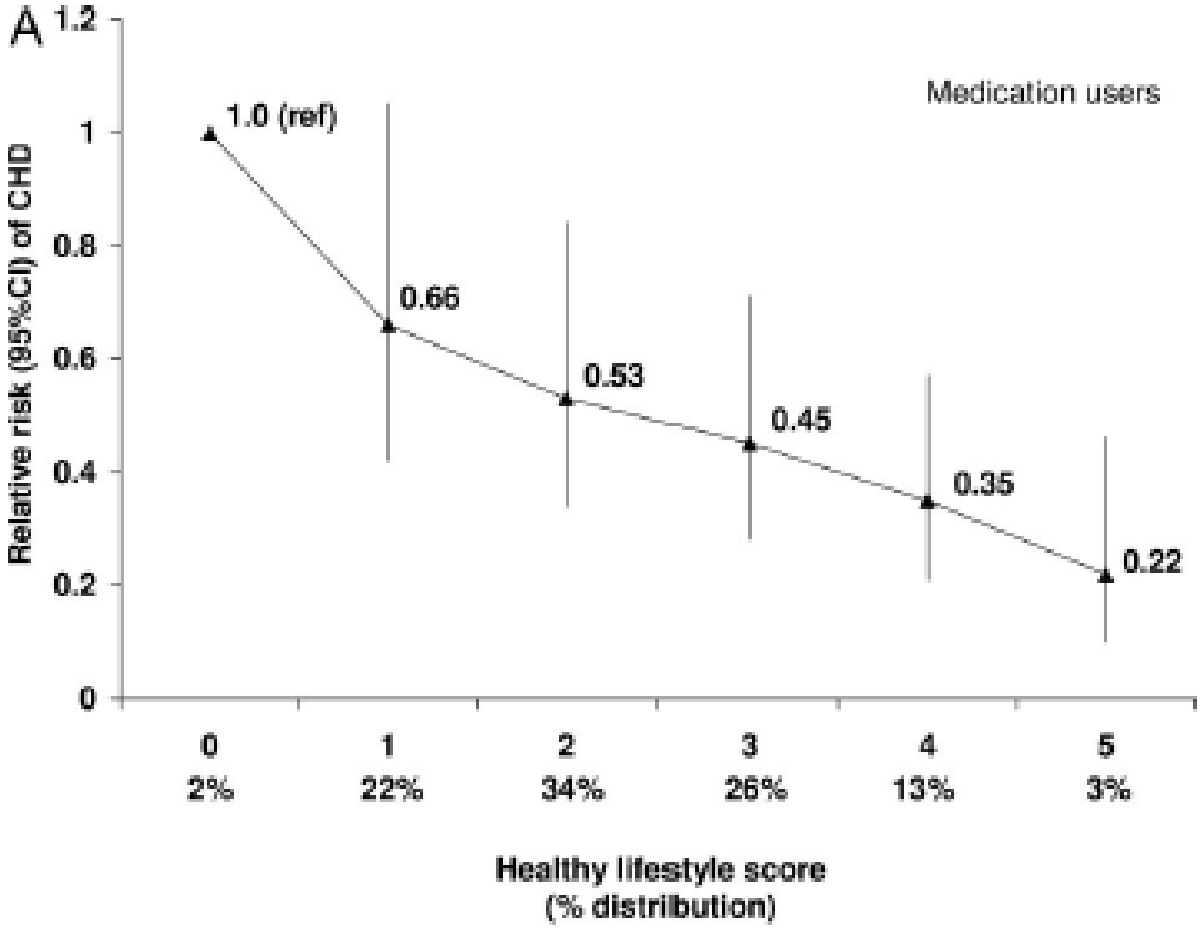
EUROASPIRE III PRIMARY CARE

Cardioprotective drug therapies



	Anti-platelets	B-blockers	ACE/ARB's	Ca antags	Statins
ALL	22.0%	31.1%	56%	24%	40%
MEN	22.0%	26.8%	57%	24%	39%
WOMEN	22.1%	34.4%	55%	24%	41%

Healthy lifestyle score in medication users and risk of CHD



Chiuve S E Circulation 2006; 114: 160-167

Strategies for prevention of cardiovascular disease

Can we do better in preventive cardiology?

Cardiovascular Disease Prevention

European Society of Cardiology

www.escardio.org/prevention

Cardiovascular Disease Prevention

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EUROACTION demonstration project in preventive cardiology