

EuroPRevent 2010

Risk assessment models: what is to come?

Risk Assessment Models: Applications in Clinical Practice

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Astra-Zeneca, Solvay

Risk assessment models: what is to come?

Risk Assessment Models: Applications in Clinical Practice

Why is the assessment of total CV risk so important?

How to interpret an estimate of total CV risk in clinical practice?

Risk Assessment Models

Total CV risk estimation is of fundamental importance because:

- CVD are multifactorial in origin
- Risk factors interact synergistically

Recommendations of the 1st Joint TF of ESC, EAS and ESH, 1994

Total cardiovascular risk as a guide to preventive strategies

Cost-efficient application of limited resources.

Preventive actions should be guided in accordance to the total CVD risk level.

Those at highest total risk should be identified and targeted for intensive lifestyle interventions and, when appropriate, for drug therapies

Risk Assessment Models

Preventive actions should be guided in accordance to the total CV risk level.

But

Not in a dichotomous way

And

Total CV risk NOW should be complemented by Lifetime risk or by reduced Survival in good health

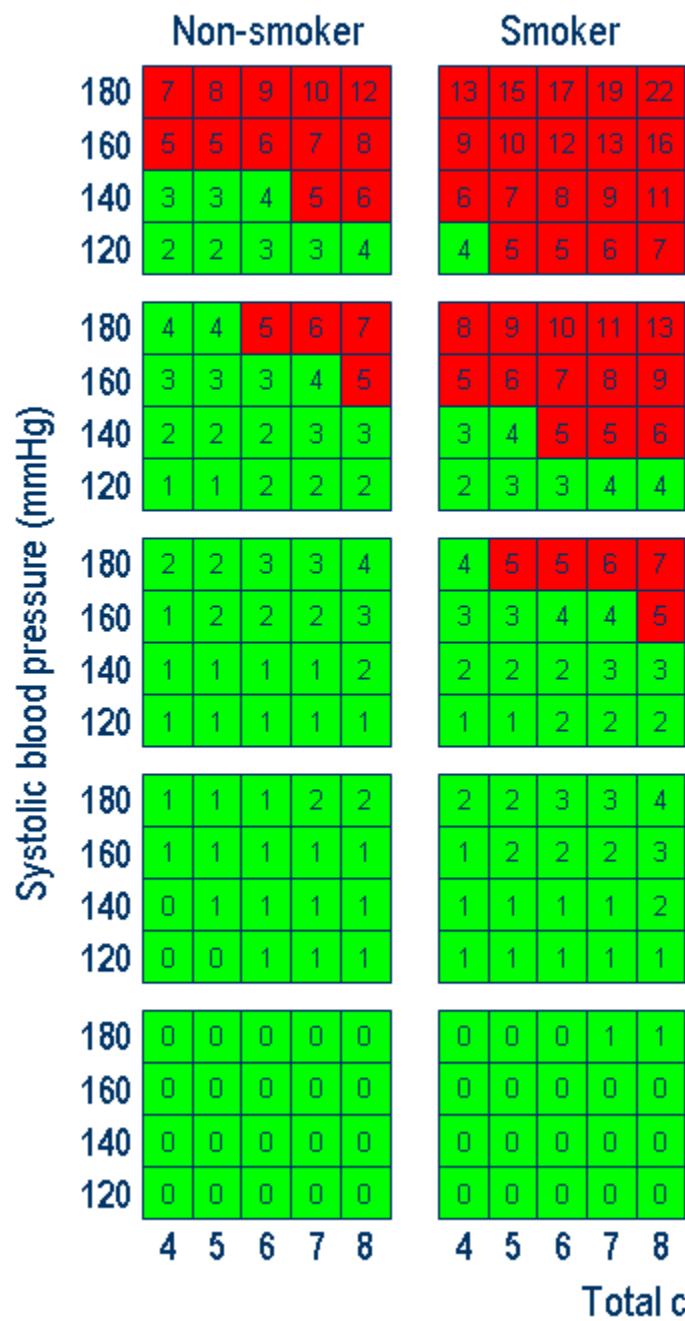
The Importance of Total CV Risk Assessment

- Historically, CV risk factors have been managed in isolation
- Cardiovascular disease (CVD) is multifactorial; single risk factors interact¹
- Interventions should be based on an assessment of an individual's total CV risk^{1,2}
- Total CV risk is a more accurate assessment of risk for the patient¹

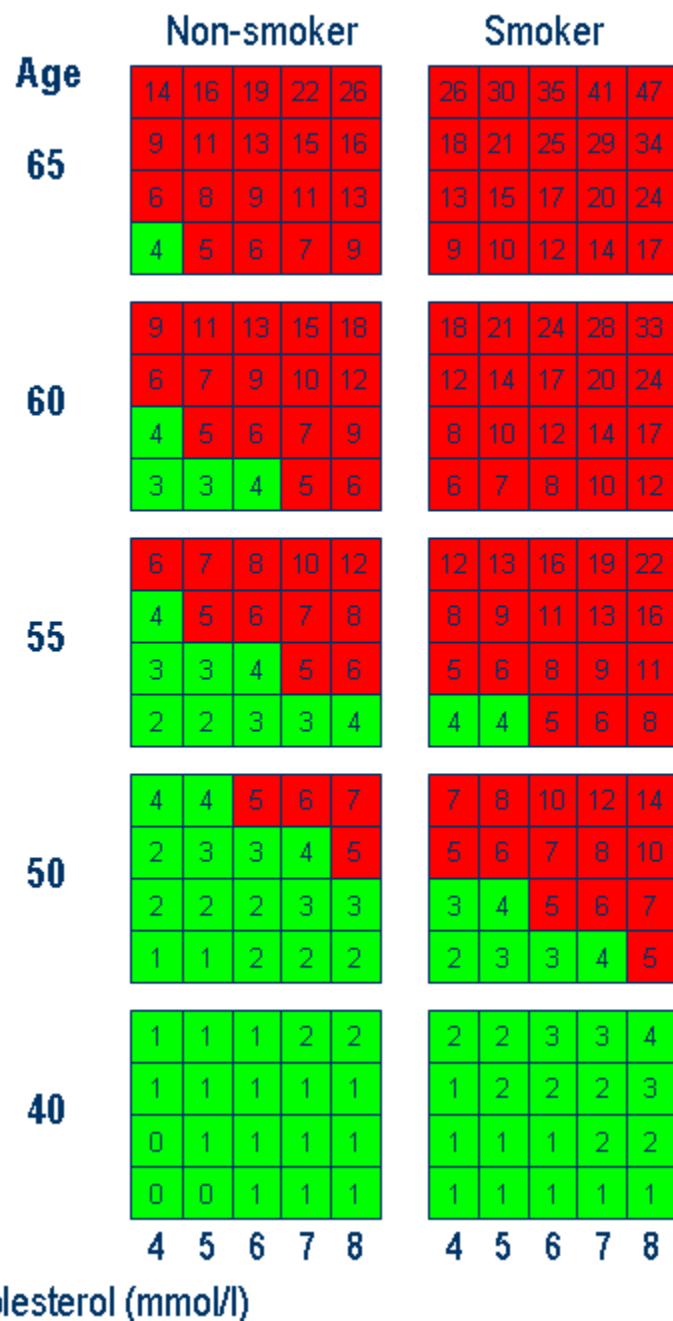
1. De Backer G et al. *Eur Heart J*. 2003;24:1601-1610.

2. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. *JAMA*. 2001;285:2486-2497.

Women



Men



Dichotomous approach in medicine

Hypertension **versus** Normotension

Hypercholesterolemia **versus**

Normal Cholesterol

Diabetes **versus** No Diabetes

High Total CV risk **versus**

Low Total CV risk

DEFINITIONS

NCEP- ATP III: 3 or more of:

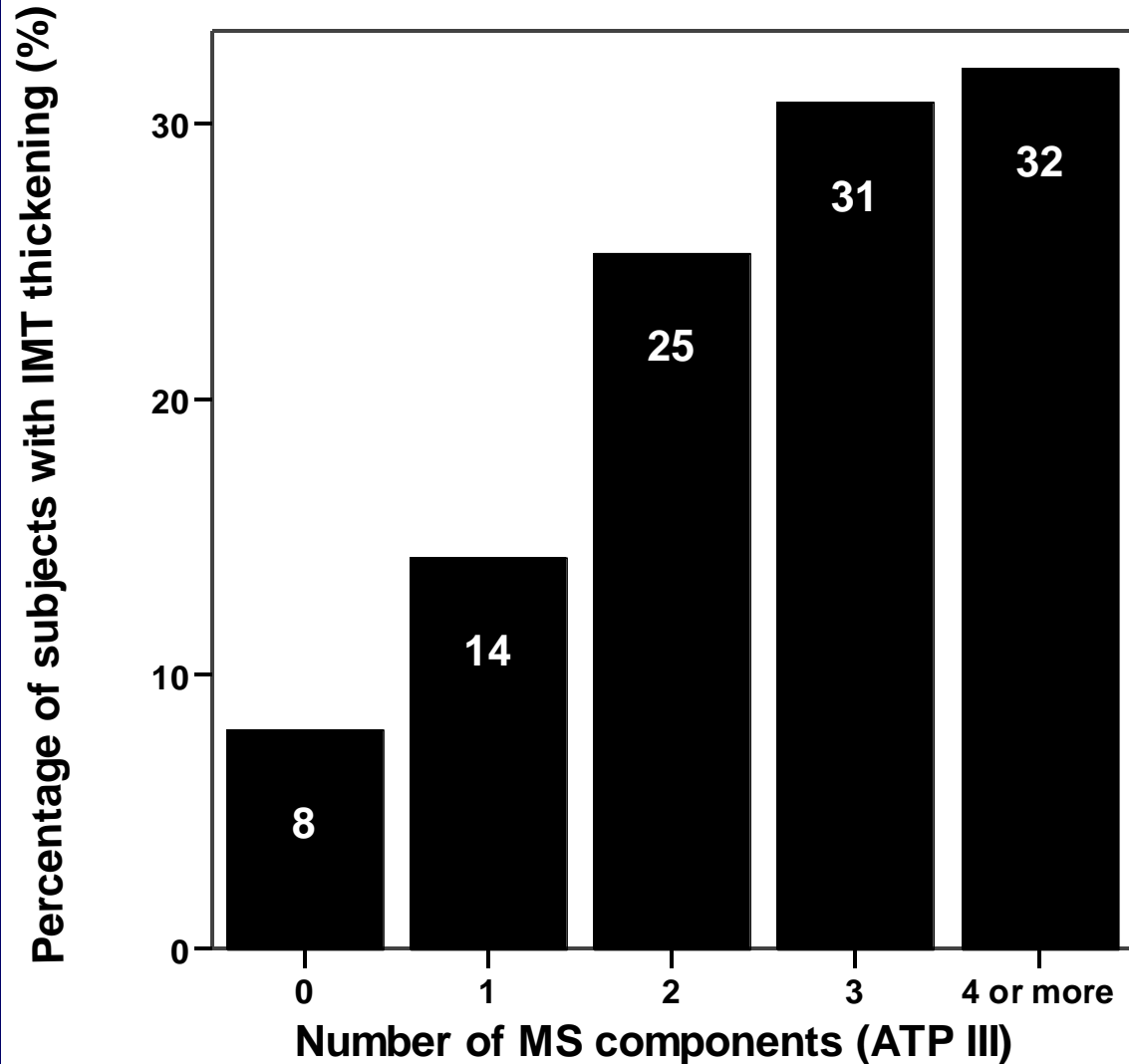
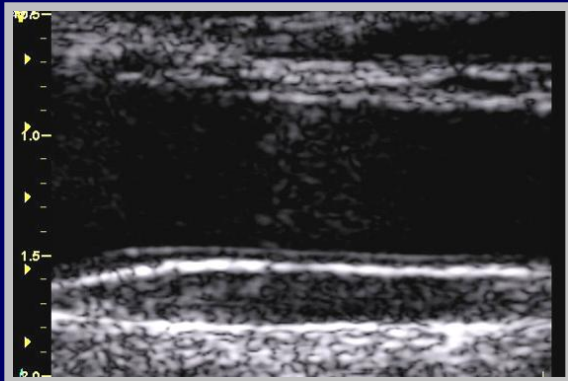
1. Abdominal obesity
 - *Men > 102 cm*
 - *Women > 88 cm*
2. Triglycerides ≥ 150 mg/dl
3. HDL-cholesterol
 - *Men < 40 mg/dl*
 - *Women < 50 mg/dl*
4. Blood pressure
 - *$\geq 130/85$ mmHg or R/*
5. Glycemia ≥ 110 mg/dl

PROJECT

ASKLEPIOS PRIMARY GOAL

- Provide a robust population-based testing ground for a broad cluster of questions on the interplay between:
 - Haemodynamics
 - Cardiovascular disease (atherosclerosis, heart failure)
 - Ageing
- 2524 apparently healthy 35-55 year old subjects free from symptomatic atherosclerosis/-thrombosis at study onset.
- CVD risk factors measured with standardised methods
- Intima/Media Thickness measured by a single trained observer
 - Increased IMT : ≥ 0.9 mm in the common carotid or femoral arteries

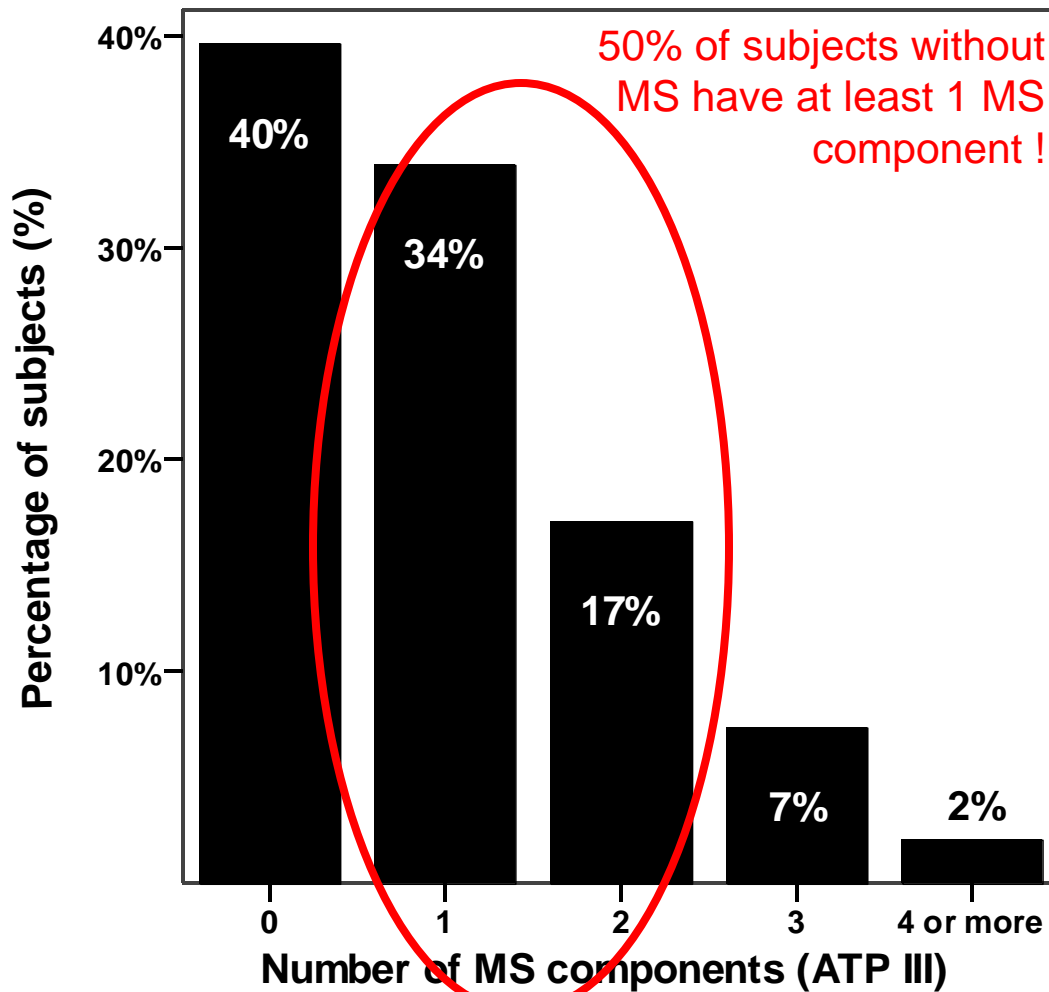
INTIMA-MEDIA THICKENING



F = 32.6; p < 0.0001 After correction for age, gender, height, smoking habits, LDL-chol, use of antihypertensive and/ or lipid-lowering drugs: F = 7.0; p < 0.0001

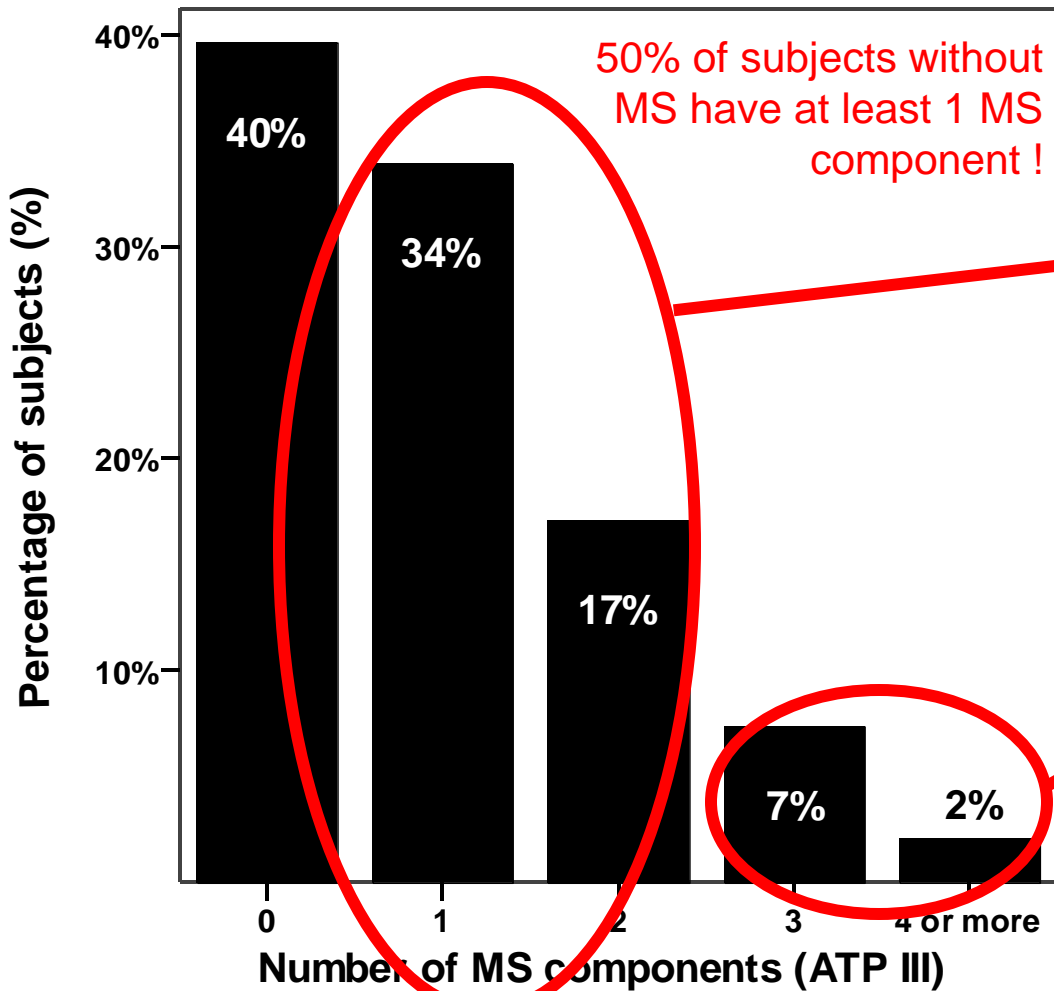
METABOLIC SYNDROME:

Population distribution



METABOLIC SYNDROME:

Population distribution



Proportion of increased IMT attributable to:

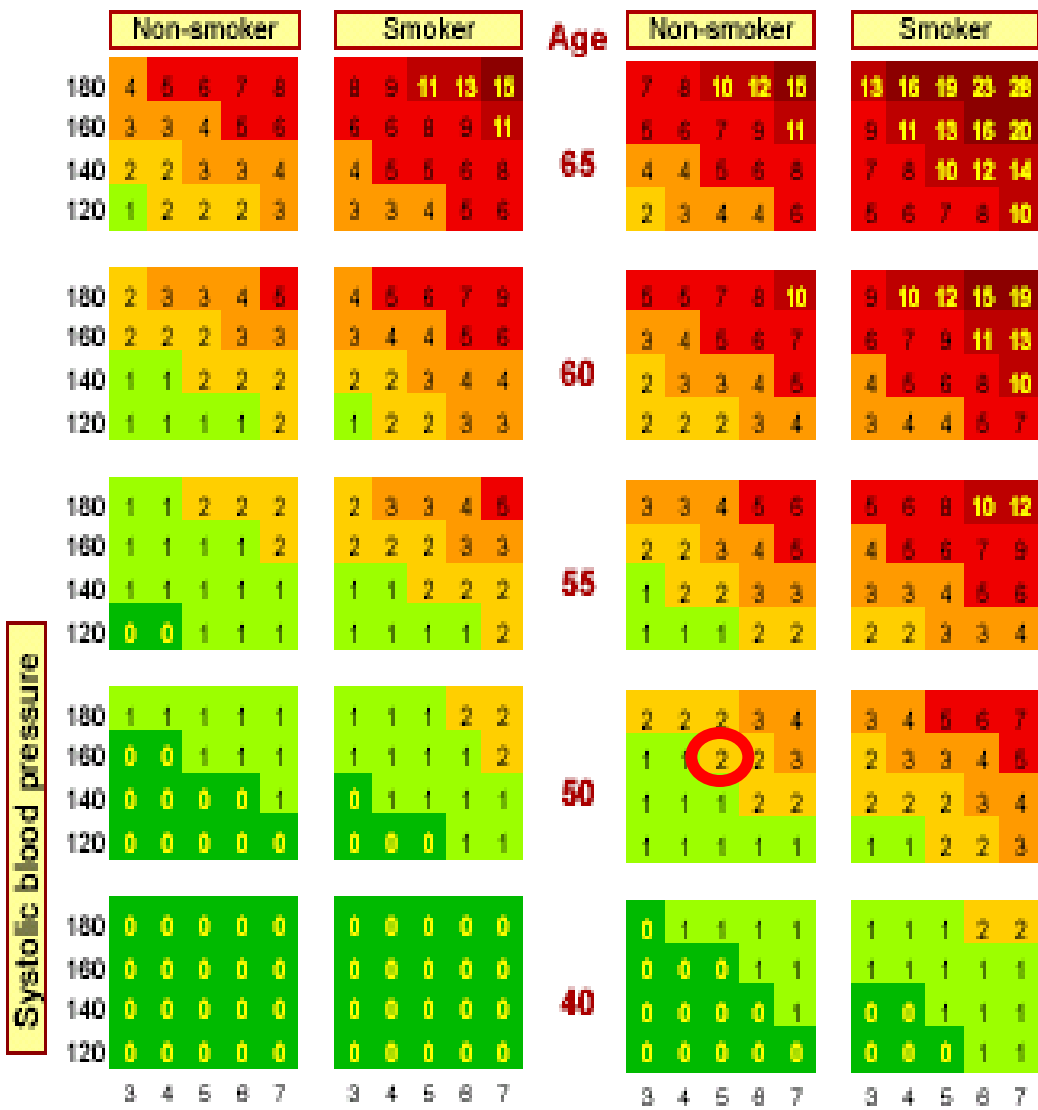
one or two components of MS: 46 %

MS: 28 %

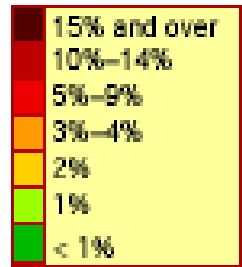


Women

Men

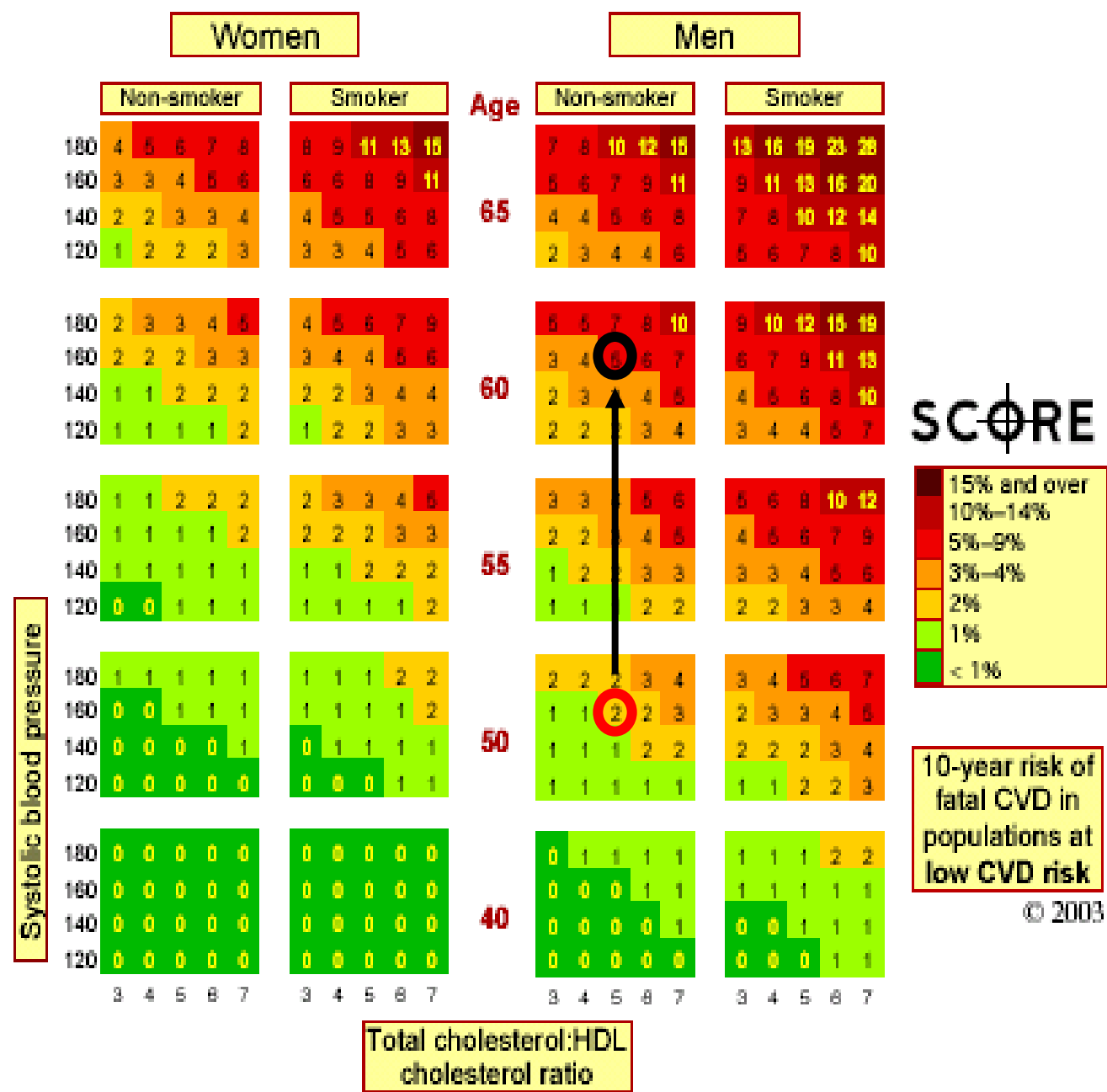


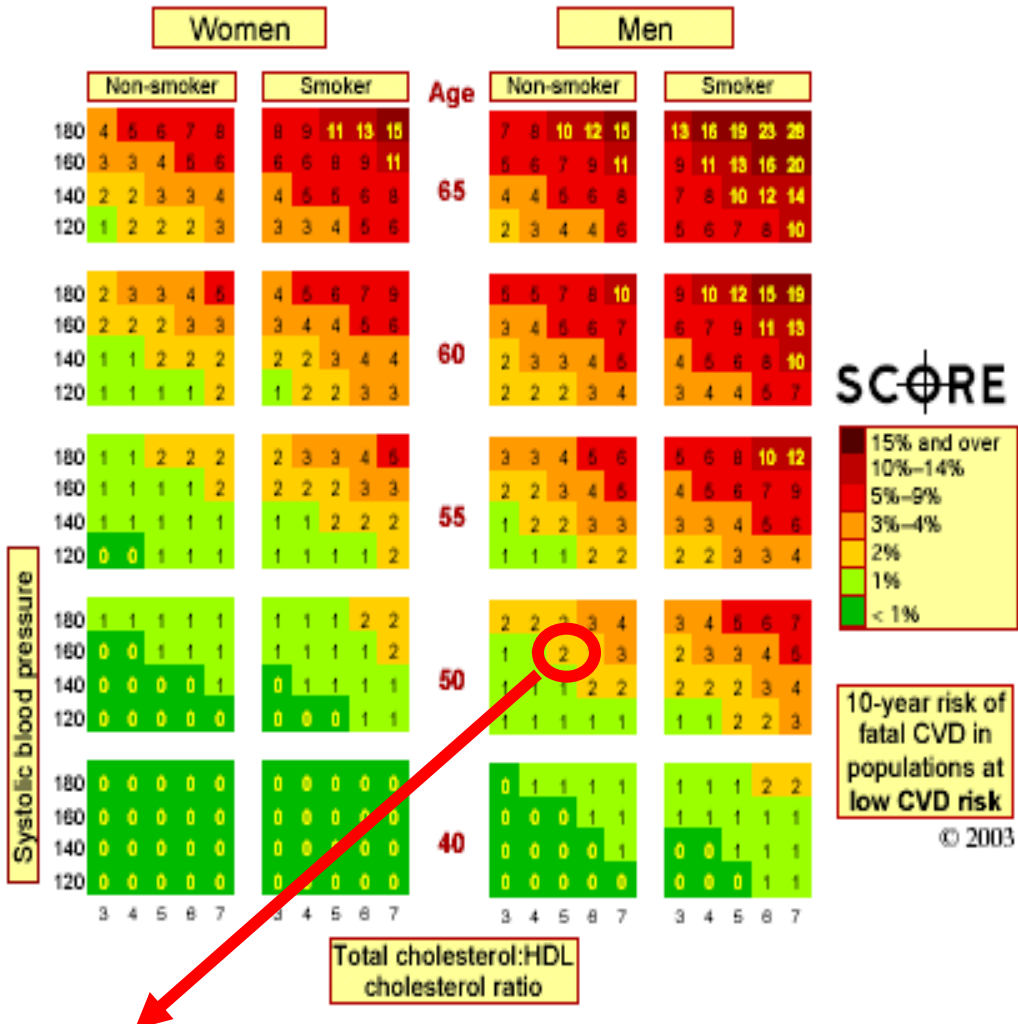
SCORE



10-year risk of fatal CVD in populations at low CVD risk

Total cholesterol:HDL cholesterol ratio





-Lifetime risk for CVD: 70%

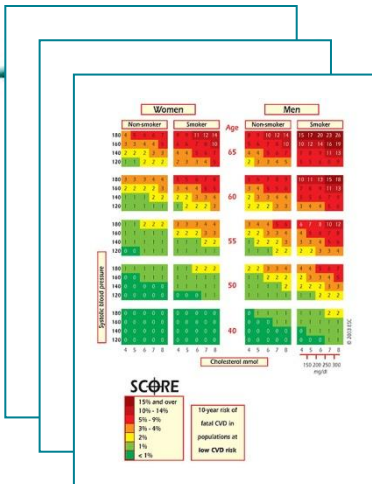
-Survival in comparison with optimal RF profile: 11 yrs shorter

Risk Assessment Models

Preventive actions should be guided in accordance to the total CVD risk level

- **Highest Risk:** intensive lifestyle intervention + drug therapy in a majority
- **High Risk:** intensive lifestyle intervention + drug therapy when appropriate
- **Modest Risk:** lifestyle intervention targeting at optimal risk profile
- **Low Risk:** keep it as low as possible for as long as possible

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 Hospital, Denmark



HeartScore⁺ Benefits

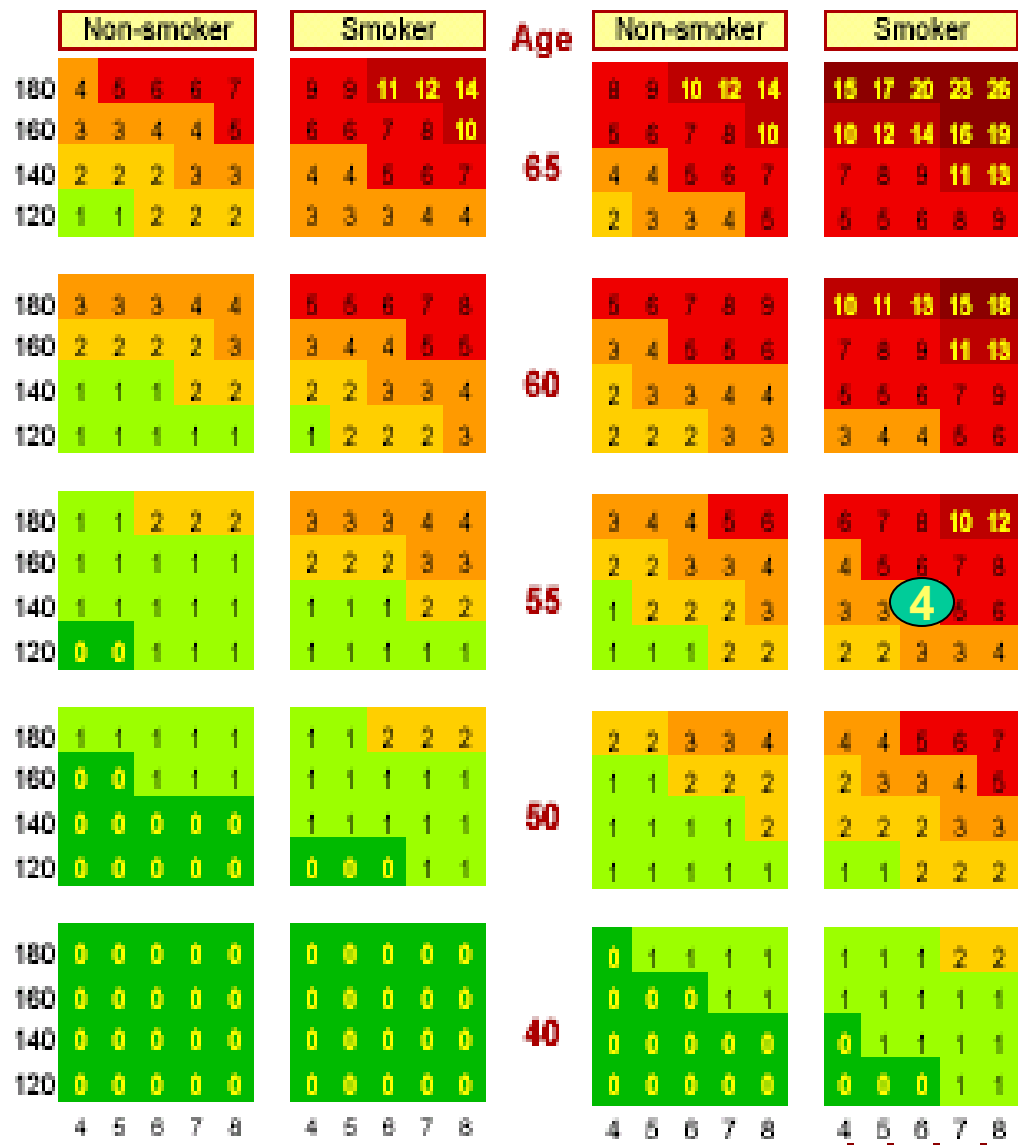
- 1 allows quick & easy risk estimation
- 2 graphical display of absolute CVD risk
- 3 identifies relative impact of modifiable risk factors
- 4 helps optimise potential benefits of intervention
- 5 leads physician to relevant information in electronic guidelines
- 6 prints tailored health advice based on patient's risk profile

encourages behavioural change and compliance to treatment

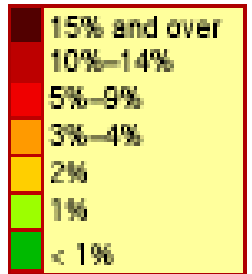


Women

Men



SCORE



10-year risk of fatal CVD in populations at low CVD risk

© 2003

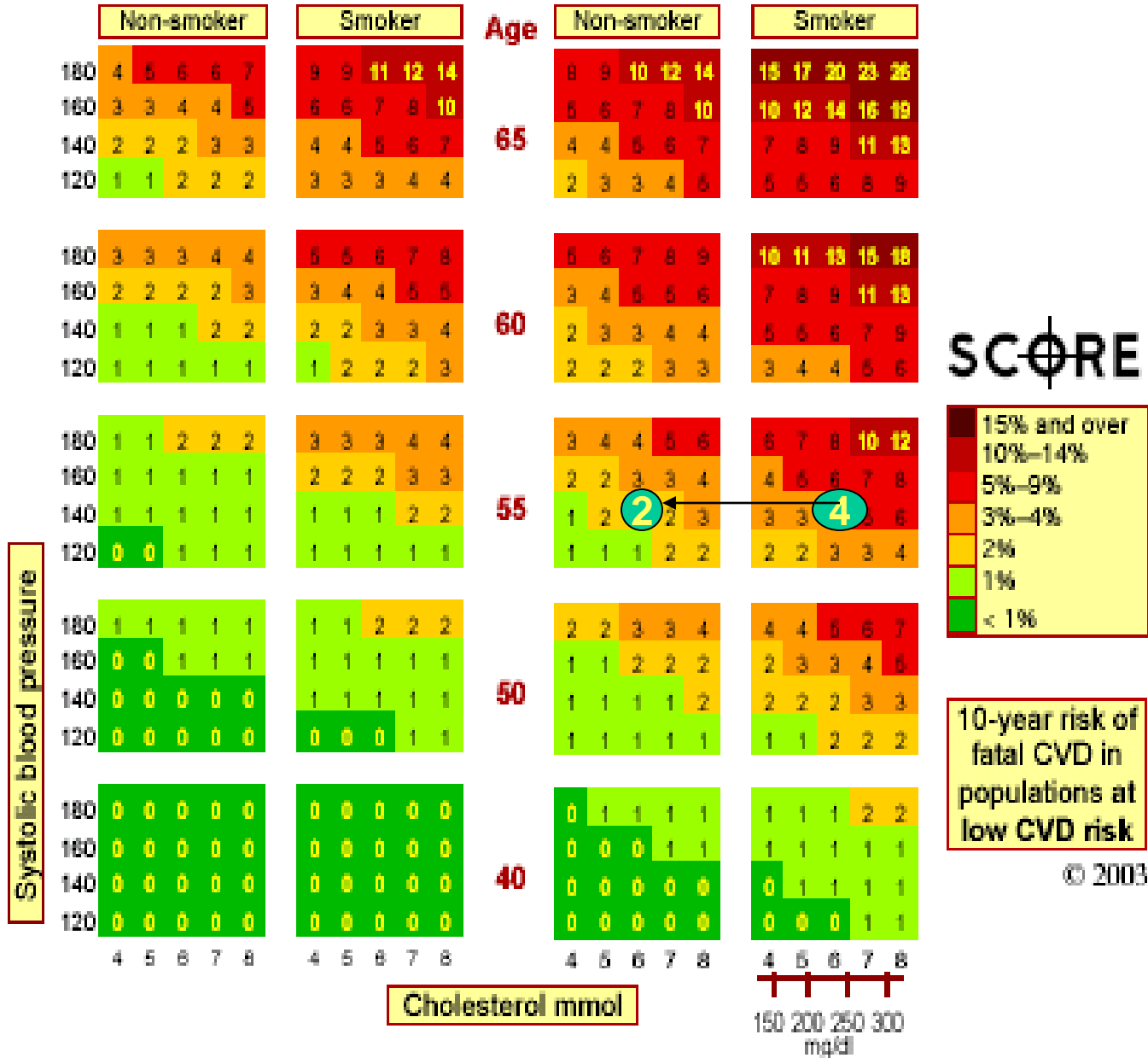
Cholesterol mmol





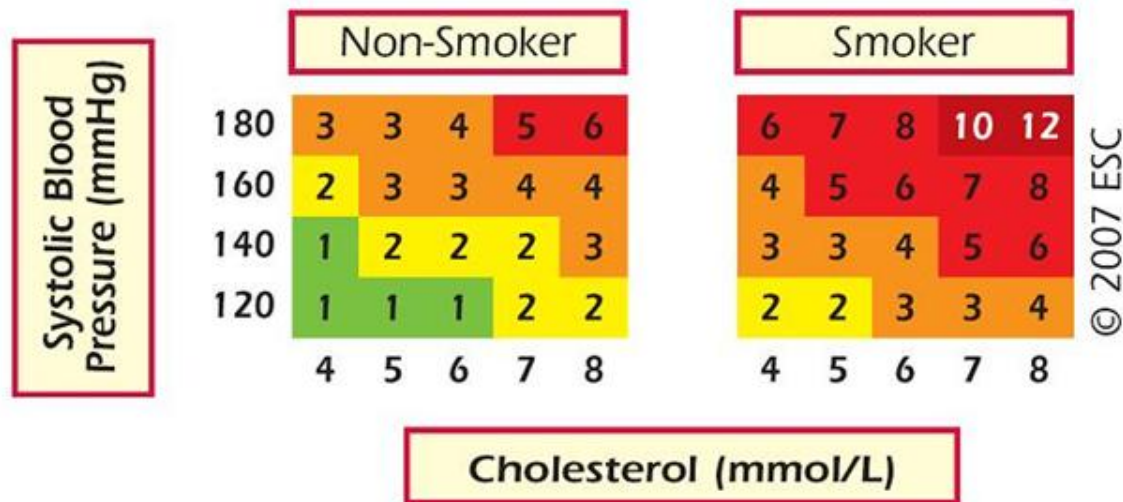
Women

Men

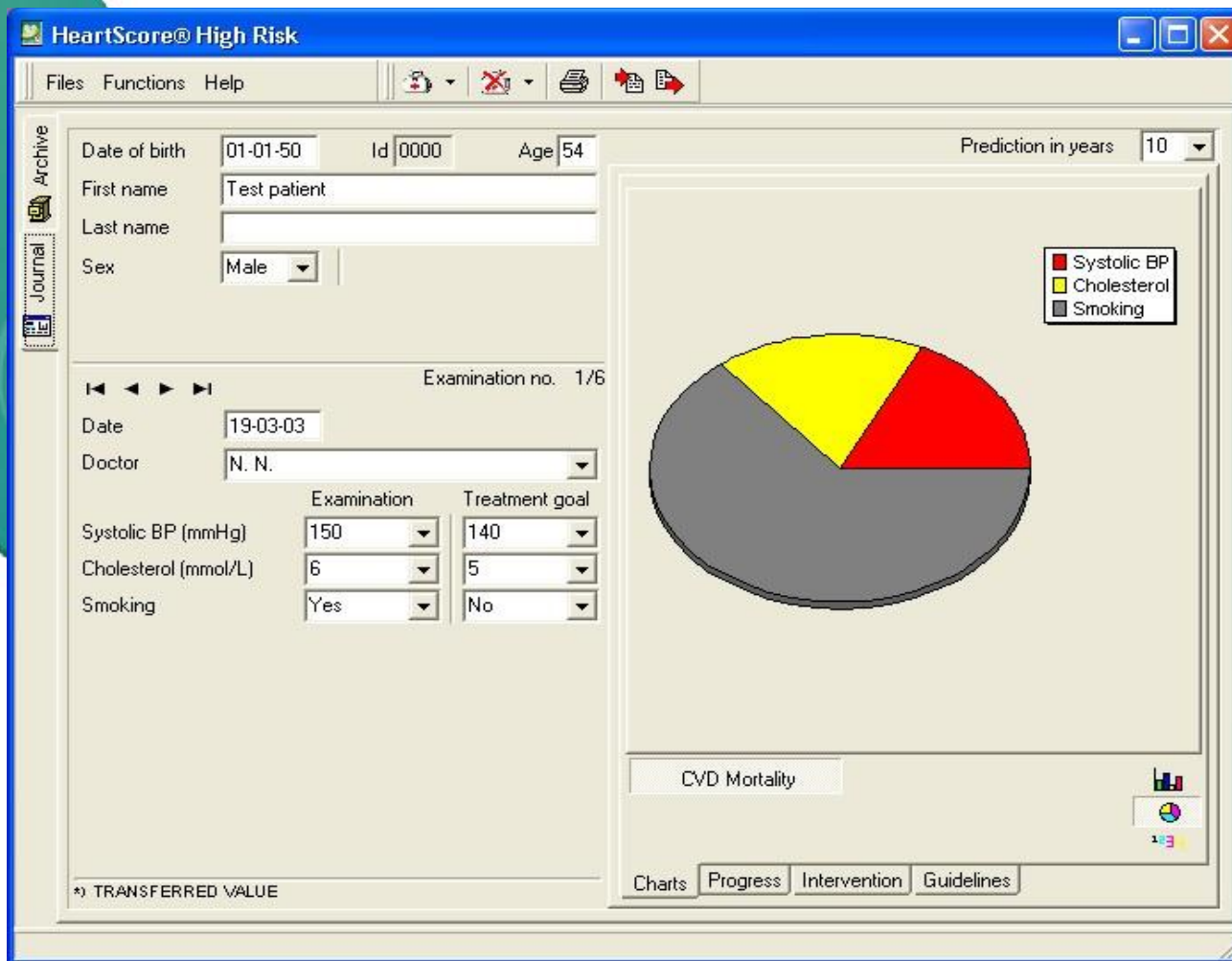


Relative Risk Chart

This chart may be used to show younger people at low absolute risk that, relative to others in their age group, their risk may be many times higher than necessary. This may help to motivate decisions about avoidance of smoking, healthy nutrition and exercise, as well as flagging those who may become candidates for medication



Distribution of modifiable risk factors



Graphical representation of patient's profile

Highlights intervention area

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CONCLUSIONS (1)

- Useful to guide the clinician in adapting the intensity of preventive actions in accordance to the total CV risk level
- Cost-efficient application of limited resources
- Encourage greater equity in the distribution of effective therapies
- Useful in risk management

Risk Assessment Models: Applications in Clinical Practice

CONCLUSIONS (2)

- A total CV risk estimate should not be interpreted in a dichotomous way
- Those at highest risk should be identified and targeted for intensive lifestyle interventions and when appropriate for drug therapies
- But the majority of the other - at mild or moderate total CV risk now - will become high risk across the lifespan and need appropriate attention now
- The problem with CVD prevention is not the need for a more personalized treatment but the failure to act in those who have the potential to benefit

**Thank you for
your attention**