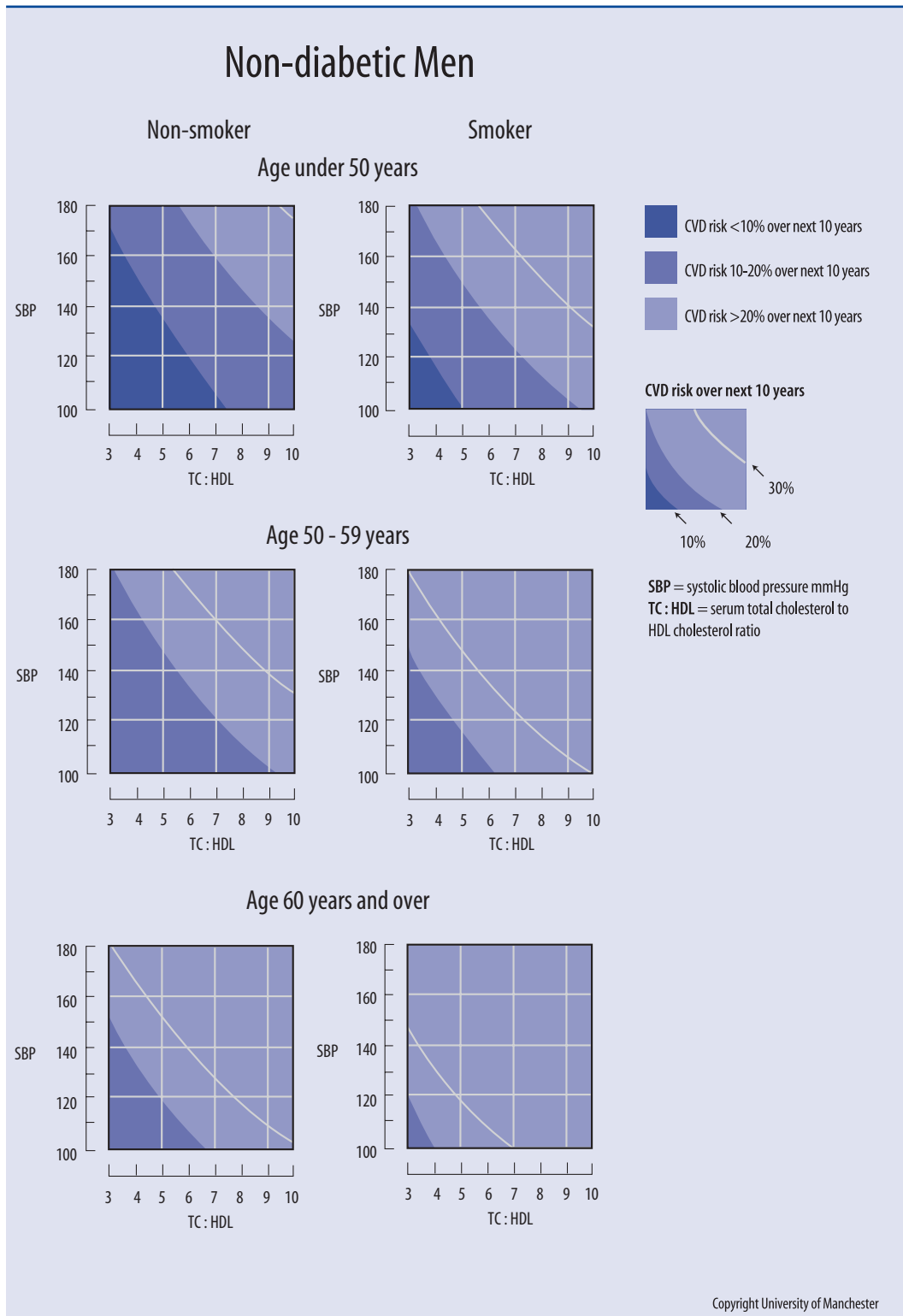


Cardiovascular disease risk prediction charts

The following cardiovascular disease risk prediction charts were produced by the Joint British Societies.¹

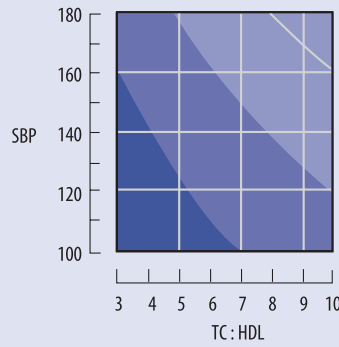
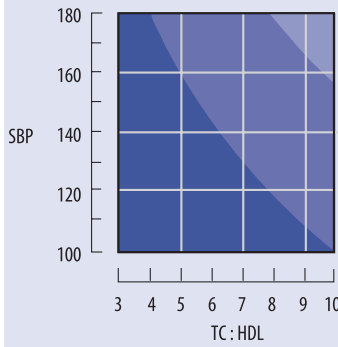


Non-diabetic Women

Non-smoker

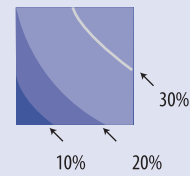
Smoker

Age under 50 years

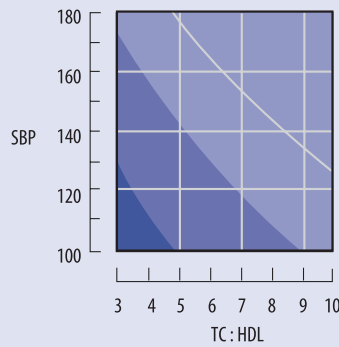
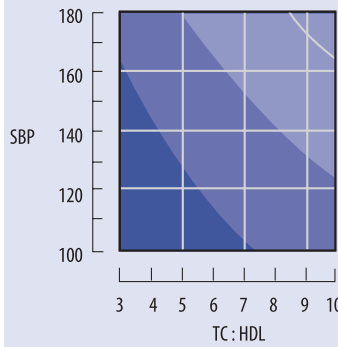


- CVD risk <10% over next 10 years
- CVD risk 10-20% over next 10 years
- CVD risk >20% over next 10 years

CVD risk over next 10 years

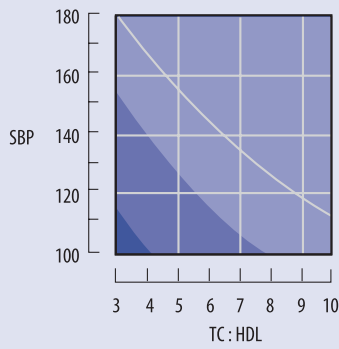
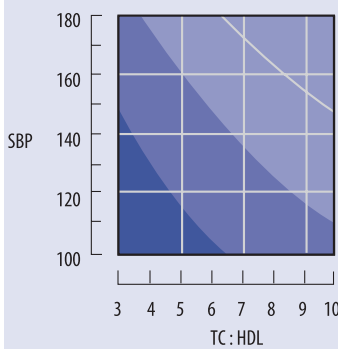


Age 50 - 59 years



SBP = systolic blood pressure mmHg
 TC : HDL = serum total cholesterol to HDL cholesterol ratio

Age 60 years and over



How to use the coronary risk prediction charts for primary prevention

These charts are for estimating CVD risk (nonfatal MI and stroke, coronary and stroke death and new angina pectoris) for individuals who have not already developed CHD or other major atherosclerotic disease. They are an aid to making clinical decisions about how intensively to intervene on lifestyle and whether to use antihypertensives, lipid-lowering medication and aspirin.

The use of these charts is not appropriate for the following patient groups. Those with:

- CHD or other major atherosclerotic disease;
- familial hypercholesterolaemia or other inherited dyslipidaemias;
- chronic renal dysfunction;
- type 1 and 2 diabetes mellitus.

The charts should not be used to decide whether to introduce antihypertensive medication when BP is persistently at or above 160/100 or when TOD [target organ damage] due to hypertension is present. In both cases, antihypertensive medication is recommended regardless of CVD risk. Similarly, the charts should not be used to decide whether to introduce lipid-lowering medication when the ratio of serum total to HDL cholesterol exceeds 7. Such medication is generally then indicated, regardless of the estimated CVD risk.

To estimate an individual's absolute 10-year risk of developing CVD, choose the table for his or her gender, smoking status (smoker/non-smoker) and age. Within this square, define the level of risk according to the point where the coordinates for SBP and the ratio of the total cholesterol to HDL-cholesterol meet. If no HDL cholesterol result is available, then assume this is 1.00 mmol/l and the lipid scale can be used for total serum cholesterol alone.

Higher risk individuals (light blue areas) are defined as those whose 10-year CVD risk exceeds 20%, which is approximately equivalent to the CHD risk of >15% over the same period, indicated by the previous version of these charts. As a minimum, those at highest CVD risk (greater than 30% shown by the line within the light blue area) should be targeted and treated now. When resources allow, others with a CVD risk of >20% should be progressively targeted.

The chart also assists in the identification of individuals whose 10-year CVD risk is moderately increased in the range 10–20% (mid-blue area) and those in whom the risk is lower than 10% over 10 years (dark blue area).

Smoking status should reflect the lifetime exposure to tobacco and not simply tobacco use at the time of assessment. For example, those who have given up smoking within 5 years should be regarded as current smokers for the purposes of the charts.

The initial BP and the first random (nonfasting) total cholesterol and HDL cholesterol can be used to estimate an individual's risk. However, the decision on using drug therapy should generally be based on repeat risk factor measurements over a period of time.

Men and women do not reach the level of risk predicted by the charts for the three age bands until they reach the ages 49, 59 and 69 years, respectively. Everyone aged 70 years and over should be considered at higher risk. The charts will overestimate the current risk most in the under 40s. Clinical judgement must be exercised in deciding on treatment in younger patients. However, it should be recognised that BP and cholesterol tend to rise most and HDL cholesterol to decline most in younger people already possessing adverse levels. Thus untreated, their risk at the age 49 years is likely to be higher than the projected risk shown on the age-less-than 50 years chart.

These charts (and all other currently available methods of CVD risk prediction) are based on groups of people with untreated levels of BP, total cholesterol and HDL cholesterol. In patients already receiving antihypertensive therapy in whom the decision is to be made about whether to introduce lipid-lowering medication or vice versa, the charts can act as a guide, but unless recent

pre-treatment risk factor values are available it is generally safest to assume that CVD risk factor than that predicted by current levels of BP or lipids on treatment.

CVD risk is also higher than indicated in the charts for:

- those with a family history of premature CVD or stroke (male first-degree relatives aged <55 years and female first-degree relatives aged <65 years), which increases the risk by a factor of approximately 1.5;
- those with raised triglyceride levels;
- women with premature menopause;
- those who are not yet diabetic, but have impaired fasting glucose (6.1–6.9mmol/l).

In some ethnic minorities, the risk charts underestimate CVD risk, because they have not been validated in these populations. For example, in people originating from the Indian subcontinent, it is safest to assume that the CVD risk is higher than that predicted from the charts (1.5 times).

These charts may be used to illustrate the direction of impact of risk factor intervention on the estimated level of CVD risk. However, such estimates are crude and are not based on randomised trial evidence. Nevertheless, this approach may be helpful in motivating appropriate intervention. The charts are primarily to assist in directing intervention to those who typically stand to benefit the most.

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Reference

- 1 Williams B, Poulter NR, Brown MJ *et al.* 2004. Guidelines for management of hypertension: report of the fourth working party of the British Hypertension Society, 2004-BHS IV. *Journal of Human Hypertension*. 18: 139-185.