



Reminder: Cardiovascular Risk Assessment

The risk assessment tool contained within the NZ evidence-based best practice guideline *The assessment and management of cardiovascular risk*¹ requires more than simply consulting the coloured risk tables or the associated computer tool.

To use this risk assessment tool correctly a number of factors need to be considered in addition to the numerical output of the tables or the computer program. In some cases there is no need to actually use the tables or program to determine the cardiovascular risk.

The guidelines provide three groups of factors that must be used to modify the results that the tables, or computer program, provide. These factors are outlined below as: clinical factors that result in a very high risk assessment; isolated elevated single risk factors; and additional risk factor modifiers.

Correct use of the CVS risk assessment tool requires more than simply using the table or computer program to derive a number.

Very high risk factors

There are a number of *clinical factors that result in a very high risk assessment* (five-year risk >20%). If any of these factors is present then there is no apply the tables or computer program. The people at very high risk are defined as:

1. People who have had a previous cardiovascular event (angina, myocardial infarction, angioplasty, coronary artery bypass grafts, transient ischaemic attack, ischaemic stroke, or peripheral vascular disease);
2. People with genetic lipid disorders (familial hypercholesterolaemia, familial defective ApoB, and familial combined Dyslipidaemia);
3. People with diabetes and overt nephropathy (albumin:creatinine ratio > 30 mg/mmol) or diabetes and other renal disease.

Isolated elevated single risk factors

There are also a number of *isolated elevated single risk factors* that result in a five-year risk of >15%

whatever the tables or program provides. These isolated elevated single risk factors are:

1. Total Cholesterol >8.0 mmol/L;
2. Total Cholesterol – HDL ratio >8.0;
3. Blood pressure consistently >170/100 mmHg.

The guidelines also advise that “For age greater than 75 years the 5-year cardiovascular risk is greater than 15% in nearly all individuals”.

Additional risk factor modifiers

If any of the *additional risk factor modifiers* are present then 5% is added to the value calculated using the tables or the computer program. The 5% is added only once per assessment, irrespective of how many additional risk factor modifiers are present. The additional risk factor modifiers are:

1. People with a family history of premature coronary heart disease or ischaemic stroke in a first-degree male relative before the age of 55 years or a first-degree female relative before the age of 65 years;
2. Maori;
3. Pacific peoples or people from the Indian subcontinent;
4. People with both diabetes and microalbuminuria;
5. People who have had type 2 diabetes for more than 10 years or who have an HbA1c consistently greater than 8%;
6. People with the metabolic syndrome.

Numbers and categories

Another difficulty experienced with the risk assessment tables in the guidelines is determining which rows and columns to use. Each column or row of the table is used for a range of values:

Age

Category	Range
Age 40	< 45 years of age
Age 50	≥45 & < 55 years of age
Age 60	≥55 & < 65 years of age
Age 70	≥ 65 years of age

TC:HDL ratio

Category	Range
4	< 4.5
5	≥ 4.5 & < 5.5
6	≥ 5.5 & < 6.5
7	≥ 6.5 & < 7.5
8	≥ 7.5 TC:HDL ratio

¹ The assessment and management of cardiovascular risk: Evidence-based best practice guideline. New Zealand Guidelines Group (ISBN: 0-476-00091-2), 08 December 2003. Available from the [NZGG website](http://www.nzgg.org.nz).

Blood pressure

Category	Range
180/105	Systolic BP \geq 170; or Diastolic BP \geq 100
160/95	170 > Systolic BP \geq 150; or 100 > Diastolic BP \geq 90
140/85	150 > Systolic BP \geq 130; or 90 > Diastolic BP \geq 80
120/75	130 > Systolic BP; or 80 > Diastolic BP

CVS risk assessment examples

These examples use the tables from the guidelines.

Example 1. Male, 45 years old, non-diabetic, non-smoker, with BP 135/75 mmHg, Total cholesterol 5.9 mmol/L, HDL cholesterol 1.1 mmol/L, TC-HDL ratio 5.4, and no other elevated risk factors.

Five-year CVS risk = 5 – 10%.

Method: No clinical factors that result in a very high risk assessment => use risk assessment tables; Male => select risk table for men; non diabetic => select “no diabetes” sub-table; non-smoker => select “Non-smoker” column; Age 45 => select “Age 50” row (\geq 45 & <55); TC-HDL ratio 5.4 => select “TC:HDL ratio” 5 sub-column (\geq 4.5 & < 5.5); Blood pressure 135/75 mmHg => select “Blood Pressure mm Hg” sub-row 140/85 (Systolic BP \geq 130 & <150, or Diastolic BP \geq 80 & <90). Calculated risk level 5 – 10%. No *isolated elevated single risk factors* or *additional risk factor modifiers* => Use calculated risk level.

Example 2. Male, 45 years old, non-diabetic, non-smoker, with BP 135/75 mmHg, Total cholesterol 8.1 mmol/L, HDL cholesterol 1.3 mmol/L, TC-HDL ratio 6.2, and no other elevated risk factors.

Five-year CVS risk = >15%.

Method: No clinical factors that result in a very high risk assessment => use risk assessment tables; Male => select risk table for men; non diabetic => select “no diabetes” sub-table; non-smoker => select “Non-smoker” column; Age 45 => select “Age 50” row (\geq 45 & <55); TC-HDL ratio 6.2 => select “TC:HDL ratio” 6 sub-column (\geq 6.5 & <6.5); Blood pressure 135/75 mmHg => select “Blood Pressure mm Hg” sub-row 140/85 (Systolic BP \geq 130 & <150, or Diastolic BP \geq 80 & <90). Calculated risk level 5 – 10%. One *isolated elevated single risk factor* (TC >8.0 mmol/L) and

no *additional risk factor modifiers* => Use >15% five-year risk instead of calculated risk level.

Example 3. Male, 45 years old, non-diabetic, non-smoker, with BP 135/75 mmHg, Total cholesterol 5.9 mmol/L, HDL cholesterol 1.1 mmol/L, TC-HDL ratio 5.4, Mother died at age 55 due to heart attack, and no other elevated risk factors.

Five-year CVS risk = 10 – 15%.

Method: No clinical factors that result in a very high risk assessment => use risk assessment tables; Male => select risk table for men; non diabetic => select “no diabetes” sub-table; non-smoker => select “Non-smoker” column; Age 45 => select “Age 50” row (\geq 45 & <55); TC-HDL ratio 5.4 => select “TC:HDL ratio” 5 sub-column (\geq 4.5 & < 5.5); Blood pressure 135/75 mmHg => select “Blood Pressure mm Hg” sub-row 140/85 (Systolic BP \geq 130 & <150, or Diastolic BP \geq 80 & <90). Calculated risk level 5 – 10%. No *isolated elevated single risk factors*. One *additional risk factor modifier* (family history of coronary heart disease in first-degree female relative before the age of 65 years) => Add 5% to calculated risk level.

Example 4. Male, 45 years old, non-diabetic, non-smoker, with BP 135/75 mmHg, Total cholesterol 5.9 mmol/L, HDL cholesterol 1.1 mmol/L, TC-HDL ratio 5.4, TIA two years ago and no other elevated risk factors.

Five-year CVS risk = >20%.

Method: One clinical factors that result in a very high risk assessment (previous TIA) => five-year risk >20%, do not use risk assessment tables.

Future CVS risk assessment tool

Most of the limitations and short-comings of the current CVS risk assessment tables are well recognised. A project is presently underway to replace this tool with a more user-friendly and reliable instrument ... that also allows clinical data to be gathered.

For further information you may wish to check-out some websites concerning the *Enigma* PREDICT tool².

A Merry Christmas and happy new year to all.

² [Online Management of Cardiovascular Risk in New Zealand with PREDICT](#)
[PREDICT resource centre](#)
[PREDICT example vignettes](#)

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