

Risk factors

"The gods are just, and of our pleasant vices
Make instruments to plague us."
King Lear, V.iii.193 William Shakespeare
(1564–1616)

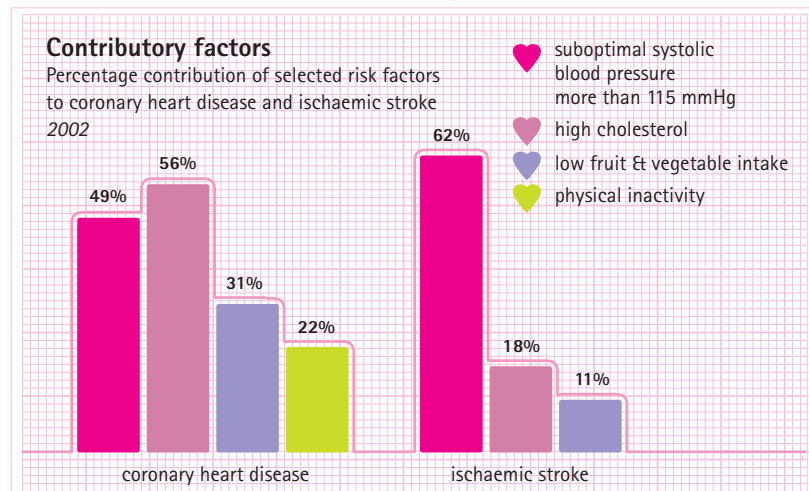
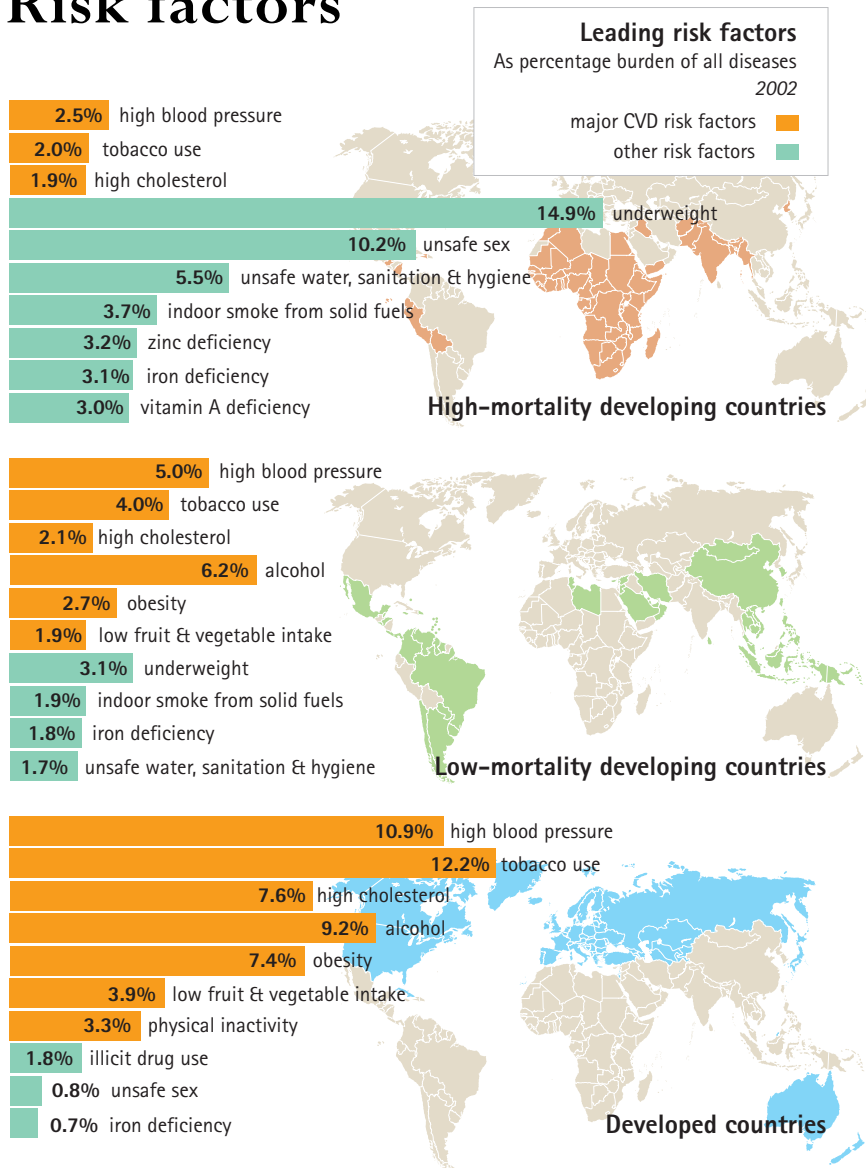
Over 300 risk factors have been associated with coronary heart disease and stroke. The major established risk factors meet three criteria: a high prevalence in many populations; a significant independent impact on the risk of coronary heart disease or stroke; and their treatment and control result in reduced risk.

Risk factors for cardiovascular disease are now significant in all populations. In the developed countries, at least one-third of all CVD is attributable to five risk factors: tobacco use, alcohol use, high blood pressure, high cholesterol and obesity.

In developing countries with low mortality, such as China, cardiovascular risk factors also figure high on the top 10 list. These populations face a double burden of risks, grappling with the problems of undernutrition and communicable diseases, while also contending with the same risks as developed nations.

Even in developing countries with high mortality, such as those in sub-Saharan Africa, high blood pressure, high cholesterol, tobacco and alcohol use, as well as low vegetable and fruit intake, already figure among the top risk factors.

Some major risks are modifiable in that they can be prevented, treated, and controlled. There are considerable health benefits at all ages, for both men and women, in stopping smoking, reducing cholesterol and blood pressure, eating a healthy diet and increasing physical activity.



Major modifiable risk factors

- **High blood pressure**
Major risk for heart attack and the most important risk factor for stroke.
- **Abnormal blood lipids**
High total cholesterol, LDL-cholesterol and triglyceride levels, and low levels of HDL-cholesterol increase risk of coronary heart disease and ischaemic stroke.
- **Tobacco use**
Increases risks of cardiovascular disease, especially in people who started young, and heavy smokers. Passive smoking an additional risk.
- **Physical inactivity**
Increases risk of heart disease and stroke by 50%.

- **Obesity**
Major risk for coronary heart disease and diabetes.
- **Unhealthy diets**
Low fruit and vegetable intake is estimated to cause about 31% of coronary heart disease and 11% of stroke worldwide; high saturated fat intake increases the risk of heart disease and stroke through its effect on blood lipids and thrombosis.
- **Diabetes mellitus**
Major risk for coronary heart disease and stroke.

Approximately 75% of cardiovascular disease can be attributed to conventional risk factors.

Other modifiable risk factors

- **Low socioeconomic status (SES)**
Consistent inverse relationship with risk of heart disease and stroke.
- **Mental ill-health**
Depression is associated with an increased risk of coronary heart disease.
- **Psychosocial stress**
Chronic life stress, social isolation and anxiety increase the risk of heart disease and stroke.
- **Alcohol use**
One to two drinks per day may lead to a 30% reduction in heart disease, but heavy drinking damages the heart muscle.
- **Use of certain medication**
Some oral contraceptives and hormone replacement therapy increase risk of heart disease.
- **Lipoprotein(a)**
Increases risk of heart attacks especially in presence of high LDL-cholesterol.
- **Left ventricular hypertrophy (LVH)**
A powerful marker of cardiovascular death.

Non-modifiable risk factors

- **Advancing age**
Most powerful independent risk factor for cardiovascular disease; risk of stroke doubles every decade after age 55.
- **Heredity or family history**
Increased risk if a first-degree blood relative has had coronary heart disease or stroke before the age of 55 years (for a male relative) or 65 years (for a female relative).
- **Gender**
Higher rates of coronary heart disease among men compared with women (premenopausal age); risk of stroke is similar for men and women.
- **Ethnicity or race**
Increased stroke noted for Blacks, some Hispanic Americans, Chinese, and Japanese populations. Increased cardiovascular disease deaths noted for South Asians and American Blacks in comparison with Whites.

"Novel" risk factors

- **Excess homocysteine in blood**
High levels may be associated with an increase in cardiovascular risk.
- **Inflammation**
Several inflammatory markers are associated with increased cardiovascular risk, e.g. elevated C-reactive protein (CRP).

- **Abnormal blood coagulation**
Elevated blood levels of fibrinogen and other markers of blood clotting increase the risk of cardiovascular complications.