



Cardiovascular diseases (CVDs)

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Key facts

- CVDs are the number 1 cause of death globally: more people die annually from CVDs than from any other cause.
 - An estimated 17.9 million people died from CVDs in 2016, representing 31% of all global deaths. Of these deaths, 85% are due to heart attack and stroke.
 - Over three quarters of CVD deaths take place in low- and middle-income countries.
 - Out of the 17 million premature deaths (under the age of 70) due to noncommunicable diseases in 2015, 82% are in low- and middle-income countries, and 37% are caused by CVDs.
 - Most cardiovascular diseases can be prevented by addressing behavioural risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol using population-wide strategies.
 - People with cardiovascular disease or who are at high cardiovascular risk (due to the presence of one or more risk factors such as hypertension, diabetes, hyperlipidaemia or already established disease) need early detection and management using counselling and medicines, as appropriate.
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What are cardiovascular diseases?

Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels and they include:

- **coronary heart disease** – disease of the blood vessels supplying the heart muscle;
- **cerebrovascular disease** – disease of the blood vessels supplying the brain;

- **peripheral arterial disease** – disease of blood vessels supplying the arms and legs;
- **rheumatic heart disease** – damage to the heart muscle and heart valves from rheumatic fever, caused by streptococcal bacteria;
- **congenital heart disease** – malformations of heart structure existing at birth;
- **deep vein thrombosis and pulmonary embolism** – blood clots in the leg veins, which can dislodge and move to the heart and lungs.

Heart attacks and strokes are usually acute events and are mainly caused by a blockage that prevents blood from flowing to the heart or brain. The most common reason for this is a build-up of fatty deposits on the inner walls of the blood vessels that supply the heart or brain.

Strokes can also be caused by bleeding from a blood vessel in the brain or from blood clots.

The cause of heart attacks and strokes are usually the presence of a combination of risk factors, such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol, hypertension, diabetes and hyperlipidaemia.

What are the risk factors for cardiovascular disease?

The most important behavioural risk factors of heart disease and stroke are unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol. The effects of behavioural risk factors may show up in individuals as raised blood pressure, raised blood glucose, raised blood lipids, and overweight and obesity. These “intermediate risks factors” can be measured in primary care facilities and indicate an increased risk of developing a heart attack, stroke, heart failure and other complications.

Cessation of tobacco use, reduction of salt in the diet, consuming fruits and vegetables, regular physical activity and avoiding harmful use of alcohol have been shown to reduce the risk of cardiovascular disease. In addition, drug treatment of diabetes, hypertension and high blood lipids may be necessary to reduce cardiovascular risk and prevent heart attacks and strokes. Health policies that create conducive environments for making healthy choices affordable and available are essential for motivating people to adopt and sustain healthy behaviour.

There are also a number of underlying determinants of CVDs or "the causes of the causes". These are a reflection of the major forces driving social, economic and cultural change – globalization, urbanization and population ageing. Other determinants of CVDs include poverty, stress and hereditary factors.

What are common symptoms of cardiovascular diseases?

Symptoms of heart attacks and strokes

Often, there are no symptoms of the underlying disease of the blood vessels. A heart attack or stroke may be the first warning of underlying disease. Symptoms of a heart attack include:

- **pain or discomfort in the centre of the chest;**
- **pain or discomfort in the arms, the left shoulder, elbows, jaw, or back.**

In addition the person may experience difficulty in breathing or shortness of breath; feeling sick or vomiting; feeling light-headed or faint; breaking into a cold sweat; and becoming pale. Women are more likely to have shortness of breath, nausea, vomiting, and back or jaw pain.

The most common symptom of a stroke is sudden weakness of the face, arm, or leg, most often on one side of the body. Other symptoms include sudden onset of:

- **numbness of the face, arm, or leg, especially on one side of the body;**
- **confusion, difficulty speaking or understanding speech;**
- **difficulty seeing with one or both eyes;**
- **difficulty walking, dizziness, loss of balance or coordination;**
- **severe headache with no known cause; and**
- **fainting or unconsciousness.**

People experiencing these symptoms should seek medical care immediately.

What is rheumatic heart disease?

Rheumatic heart disease is caused by damage to the heart valves and heart muscle from the inflammation and scarring caused by rheumatic fever. Rheumatic fever is caused by an abnormal response of the body to infection with streptococcal bacteria, which usually begins as a sore throat or tonsillitis in children.

Rheumatic fever mostly affects children in developing countries, especially where poverty is widespread. Globally, about 2% of deaths from cardiovascular diseases is related to rheumatic heart disease.

Symptoms of rheumatic heart disease

- **Symptoms of rheumatic heart disease include: shortness of breath, fatigue, irregular heart beats, chest pain and fainting.**
- **Symptoms of rheumatic fever include: fever, pain and swelling of the joints, nausea, stomach cramps and vomiting.**

Why are cardiovascular diseases a development issue in low- and middle-income countries?

- At least three quarters of the world's deaths from CVDs occur in low- and middle-income countries.
- People in low- and middle-income countries often do not have the benefit of integrated primary health care programmes for early detection and treatment of people with risk factors compared to people in high-income countries.
- People in low- and middle-income countries who suffer from CVDs and other noncommunicable diseases have less access to effective and equitable health care services which respond to their needs. As a result, many people in low- and middle-income countries are detected late in the course of the disease and die younger from CVDs and other noncommunicable diseases, often in their most productive years.
- The poorest people in low- and middle-income countries are affected most. At the household level, sufficient evidence is emerging to prove that CVDs and other noncommunicable diseases contribute to poverty due to catastrophic health spending and high out-of-pocket expenditure.
- At macro-economic level, CVDs place a heavy burden on the economies of low- and middle-income countries.

How can the burden of cardiovascular diseases be reduced?

“Best buys” or very cost effective interventions that are feasible to be implemented even in low-resource settings have been identified by WHO for prevention and control of cardiovascular diseases. They include two types of interventions: population-wide and individual, which are recommended to be used in combination to reduce the greatest cardiovascular disease burden.

Examples of population-wide interventions that can be implemented to reduce CVDs include:

- **comprehensive tobacco control policies**
- **taxation to reduce the intake of foods that are high in fat, sugar and salt**
- **building walking and cycle paths to increase physical activity**
- **strategies to reduce harmful use of alcohol**
- **providing healthy school meals to children.**

At the individual level, for prevention of first heart attacks and strokes, individual health-care interventions need to be targeted to those at high total cardiovascular risk or those with single risk factor levels above traditional thresholds, such as hypertension and hypercholesterolemia.

The former approach is more cost-effective than the latter and has the potential to substantially reduce cardiovascular events. This approach is feasible in primary care in low-resource settings, including by non-physician health workers.

For secondary prevention of cardiovascular disease in those with established disease, including diabetes, treatment with the following medications are necessary:

- **aspirin**
- **beta-blockers**
- **angiotensin-converting enzyme inhibitors**
- **statins.**

The benefits of these interventions are largely independent, but when used together with smoking cessation, nearly 75% of recurrent vascular events may be prevented. Currently there are major gaps in the implementation of these interventions particularly at the primary health care level.

In addition costly surgical operations are sometimes required to treat CVDs. They include:

- **coronary artery bypass**
- **balloon angioplasty (where a small balloon-like device is threaded through an artery to open the blockage)**
- **valve repair and replacement**
- **heart transplantation**
- **artificial heart operations**

Medical devices are required to treat some CVDs. Such devices include pacemakers, prosthetic valves, and patches for closing holes in the heart.

WHO response

Under the leadership of the WHO, all Member States (194 countries) agreed in 2013 on global mechanisms to reduce the avoidable NCD burden including a "Global action plan for the prevention and control of NCDs 2013-2020". This plan aims to reduce the number of premature deaths from NCDs by 25% by 2025 through nine voluntary global targets. Two of the global targets directly focus on preventing and controlling CVDs.

- **Global action plan for the prevention and control of NCDs 2013-2020**

The sixth target in the Global NCD action plan calls for 25% reduction in the global prevalence of raised blood pressure. Raised blood pressure is the leading risk factor for cardiovascular disease. The global prevalence of raised blood pressure (defined as systolic and/or diastolic blood pressure more than or equal to 140/90 mmHg) in adults aged 18 years and over was

around 24.1% in men and 20.1% in women in 2015. The number of adults with raised blood pressure increased from 594 million in 1975 to 1.13 billion in 2015, with the increase largely in low- and middle-income countries.

Reducing the incidence of hypertension by implementing population-wide policies to reduce behavioural risk factors, including harmful use of alcohol, physical inactivity, overweight, obesity and high salt intake, is essential to attaining this target. A total-risk approach needs to be adopted for early detection and cost-effective management of hypertension in order to prevent heart attacks, strokes and other complications.

The eighth target in the Global NCD action plan states at least 50% of eligible people should receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes. Prevention of heart attacks and strokes through a total cardiovascular risk approach is more cost-effective than treatment decisions based on individual risk factor thresholds only and should be part of the basic benefits package for pursuing universal health coverage. Achieving this target will require strengthening key health system components, including health-care financing to ensure access to basic health technologies and essential NCD medicines.

In 2015, countries will begin to set national targets and measure progress on the 2010 baselines reported in the "Global status report on noncommunicable diseases 2014". The UN General Assembly will convene a third high-level meeting on NCDs in 2018 to take stock of national progress in attaining the voluntary global targets by 2025.