

Cardiovascular Disease

An introduction to cardiovascular disease – the no. 1 killer worldwide

Medical media backgrounder

What is cardiovascular disease?

- ▶ Cardiovascular disease (CVD) is the term given to a wide range of disorders affecting the heart and blood vessels including coronary heart disease (CHD), cerebrovascular disease, hypertension (high blood pressure) and peripheral vascular disease (PVD). The definition of CVD also includes other diseases such as rheumatic heart disease (damage to the heart caused by rheumatic fever) and congenital heart disease (malformations of the heart structure at birth). CVD is associated with conditions such as heart attack (myocardial infarction), angina and stroke.

The burden of cardiovascular disease

- ▶ CVD is responsible for a third of all deaths worldwide and is the number one cause of death.¹ To put the burden of CVD into context, it is responsible for more deaths around the world than those caused by cancer, chronic respiratory diseases and diabetes combined.²
- ▶ In addition to the impact on countries and populations as a result of death, CVD is also a major cause of disability and chronic illness placing a significant strain and burden on world healthcare systems and economies. By 2020 it is predicted that it will surpass infectious diseases to become the largest cause of disability worldwide.³
- ▶ CVD tends to affect people in middle age which can restrict their income and saving potential.¹ In 2003, the annual cost of CVD to the EU was estimated at €169 billion⁴ whilst in 2006 the annual cost in the USA was estimated at \$403 billion.⁵

A reduction in mortality and morbidity as a result of CVD would have a major effect on the escalating costs of healthcare provision and help improve the socioeconomic development of communities and nations.¹

The impact of cardiovascular disease

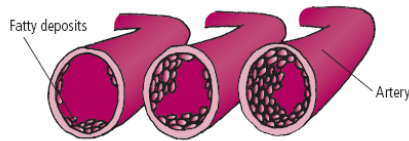
- ▶ An estimated 17 million people die every year from CVD.¹
- ▶ There is one death from CVD every two seconds, one heart attack every five seconds and one stroke every six seconds.¹
- ▶ Of the 17.5 million deaths from CVD that occurred in 2005, an estimated 7.6 million were due to coronary heart disease and 5.7 million were due to stroke.¹
- ▶ Of the estimated 10 million people worldwide who survive a stroke each year over 5 million are permanently disabled, placing a burden on family and community.⁶
- ▶ Global deaths due to CVD are predicted to reach approximately 25 million by 2020.⁷

Major causes of cardiovascular disease

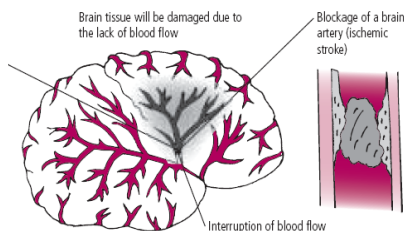
- ▶ Approximately 75% of CVD worldwide can be attributed to conventional risk factors including obesity, physical inactivity and tobacco use.⁶
- ▶ In developed countries at least one third of CVD is a result of five risk factors: tobacco, alcohol, high blood pressure, cholesterol and obesity.⁶

What causes cardiovascular disease?

- ▶ Acute events including heart attacks and strokes are predominantly caused by atherosclerosis, which is the gradual depositing of fatty material (i.e. cholesterol, platelets and cellular debris) on the artery wall of blood vessels that supply the heart or brain. The build-up of deposits causes the formation of lesions or *atheroma*. Over time, these lesions become larger and thicker which causes the artery to narrow thereby restricting the amount of blood that can flow through the vessel. The blood vessel may also become harder and less flexible.



- ▶ It is this reduction in blood flow associated with atherosclerosis that can cause cardiovascular problems such as angina because the heart and brain receive an insufficient supply of blood. Further restriction in blood flow can result in more serious cardiovascular events including heart attack and stroke.
- ▶ Blood clots can also develop as a result of ruptures in the swollen arteries, which may completely block a blood vessel causing a heart attack or stroke.



The signs and symptoms of cardiovascular disease

- ▶ Commonly, individuals with underlying CVD experience no symptoms and the first sign can be the occurrence of a heart attack or stroke.¹ This points to a strong need for individuals to be aware of the risk factors and take the necessary steps to reduce their risk of developing CVD. However, some individuals do experience some symptoms.

The different forms of cardiovascular disease

- ▶ Coronary heart disease (CHD), a disease of the blood vessels supplying the heart. The implications of CHD include:
 - myocardial infarction (MI, more commonly referred to as heart attack)
 - angina (chest pain)
 - some arrhythmias (abnormal heart rhythms).
 - ▶ Cerebrovascular disease, a disease of the blood vessels supplying the brain. The implications of cerebrovascular disease include:
 - stroke (damage to brain cells caused by insufficient blood supply)
 - transient ischaemic attacks (temporary impairment to vision, speech, sensation or movement)
 - ▶ Peripheral vascular disease (PVD), a disease of the blood vessels supplying the arms and legs which can result in intermittent aching or cramping pain, particularly in the leg muscles during exercise.
- ▶ The most common symptoms of a heart attack include pain or discomfort in the centre of the chest, arms, the left shoulder, elbows, jaw or back. Other symptoms include difficulty in breathing or shortness of breath; feeling sick or vomiting; feeling light-headed or faint; breaking into a cold sweat; and becoming pale.¹
 - ▶ 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.¹

Cardiovascular disease risk factors

- ▶ There are a number of well-recognised risk factors that can be divided into two main groups: modifiable (those that can be changed) and non-modifiable (those that cannot be changed or treated).
- ▶ The major modifiable risk factors are responsible for about 80% of coronary heart disease and cerebrovascular disease.¹

Modifiable risk factors	Non-modifiable risk factors
<ul style="list-style-type: none"> • Hypertension • Dyslipidaemia (abnormal cholesterol levels) • Diabetes/impaired glucose tolerance • Cigarette smoking • Obesity (BMI ≥30) • Physical inactivity • Microalbuminuria or GFR <60 mL/min (diabetic kidney disease) 	<ul style="list-style-type: none"> • Age (>55 years for men, >65 years for women) • Family history of premature CVD

Cardiovascular disease – a global concern

- ▶ According to the World Health Organization (WHO), there are 300 risk factors associated with CHD and stroke, and risk factors for CVD are now significant in all populations around the world.⁶ Contrary to a commonly-held belief that CVD is a disease of men living in rich, developed nations, over 80% of CVD deaths take place in low and middle-income countries, and these occur almost equally in men and women.¹

Addressing the burden of cardiovascular disease

- ▶ Pharmacological interventions can help to treat nearly all forms of CVD including hypertension, high cholesterol and diabetes/impaired glucose tolerance. The different classes of drugs that exist to treat forms of CVD include:
 - Anti-hypertensives
 - Anti-platelets
 - Oral anticoagulants
 - Statins (lipid-lowering drugs)
 - Cholesterol absorption inhibitors
 - Oral hypoglycaemics
 - Insulin.
- ▶ Following a CVD-related event including a heart attack or stroke, the risk of a recurrence or death can be substantially lowered with a combination of drugs – statins to lower cholesterol, drugs to lower blood pressure, and aspirin.¹

References

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