

THE ATLAS OF HEART DISEASE AND STROKE



DR JUDITH MACKAY AND DR GEORGE A. MENSAH



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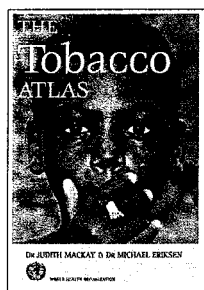


The Atlas of Heart Disease and Stroke



World Health Organization
Geneva

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The Atlas of Children's Health and the Environment

The Atlas of Heart Disease and Stroke

Dr Judith Mackay and Dr George A. Mensah

with

Dr Shanthi Mendis and Dr Kurt Greenlund



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Contents

Foreword	
by Dr LEE Jong-Wook , Director-General, World Health Organization	9
Preface	11
Acknowledgements	12
About the authors	15

Part One:	CARDIOVASCULAR DISEASE	16
------------------	-------------------------------	-----------

1	Types of cardiovascular disease	18
----------	--	-----------

Different types of cardiovascular diseases. Global deaths from cardiovascular diseases.

2	Rheumatic fever and rheumatic heart disease	20
----------	--	-----------

Deaths from rheumatic heart disease. Cases of rheumatic heart disease in children. Deaths among Aboriginal and non-Aboriginal populations in Australia.

Part Two:	RISK FACTORS	22
------------------	---------------------	-----------

3	Risk factors	24
----------	---------------------	-----------

Overview of modifiable, non-modifiable and “novel” risk factors. Percentage contribution of leading risk factors to disease burden. Contributory factors in coronary heart disease and ischaemic stroke.

4	Risk factors start in childhood and youth	26
----------	--	-----------

Tobacco use in youth. Overweight youth. Overweight trends in the USA.

5	Risk factor: blood pressure	28
----------	------------------------------------	-----------

Average systolic blood pressure worldwide. Trends of high blood pressure in USA and India. Changes in blood pressure with age in Gambia, and with education in South Africa.

6	Risk factor: lipids	30
----------	----------------------------	-----------

Cholesterol levels in women worldwide. Trends in cholesterol levels in Beijing, China. Current recommended lipid levels.

7	Risk factor: tobacco	32
----------	-----------------------------	-----------

Smoking rates worldwide. Cardiovascular risks of smoking and passive smoking. Smokers’ lack of knowledge of the risks.

8	Risk factor: physical inactivity	34
	Physical activity levels: energy expenditure in work, leisure and transport. Time spent seated. Various physical activities with similar health benefits. Physical inactivity by social class in India. Participation in sport in Singapore. Motor vehicle ownership and trends. Ratio of bicycles to cars in China and USA.	
9	Risk Factor: obesity	36
	Average adult body mass index (BMI) worldwide. Food consumption trends. Apple shape at higher risk of CVD than pear shape.	
10	Risk factor: diabetes	38
	Prevalence of diabetes worldwide. Diabetes trends to 2030.	
11	Risk factor: socioeconomic status	40
	Socioeconomic influences on cardiovascular risk factors and diseases. Education, income levels and occupation in Canada, China, India, Italy, Saudi Arabia, South Africa, Trinidad and Tobago, Uganda and USA.	
12	Women: a special case?	42
	Similar and different risks in women compared with men. Smoking, physical activity and hormone replacement therapy.	
Part Three:	THE BURDEN	44
13	Global burden of coronary heart disease	46
	Healthy years of life lost to coronary heart disease. Leading causes of disease burden by sex.	
14	Deaths from coronary heart disease	48
	Deaths from coronary heart disease. Comparison with other causes of death. Trends in coronary heart disease.	
15	Global burden of stroke	50
	Healthy years of life lost to stroke. Stroke in young people. Risks of the oral contraceptive pill.	
16	Deaths from stroke	52
	Deaths from stroke. Predictors of death from stroke in Italy. Comparison with other causes of death.	

17	Economic costs	54
	Cost of cardiovascular diseases and their risk factors in selected countries, regions and worldwide. Price of medications compared with cheapest crop available. Lifetime costs of coronary heart disease. Expenditure on cardiovascular medications. Cost of risk factors.	
Part Four:	ACTION	56
18	Research	58
	Number of publications on cardiovascular research by country. Regional research. Clinical trials on humans: cardiovascular disease compared with other health problems. Research funding in the USA: CVD compared with other diseases.	
19	Organizations	60
	International and regional organizations involved with cardiovascular disease. World conferences on cardiovascular diseases.	
20	Prevention: personal choices and actions	62
	Personal choices in lifestyles and behaviours in children, adolescents and adults: stopping smoking, eating more fruit and cereals, reducing salt intake, physical activity, and prevention and control of obesity and high blood pressure.	
21	Prevention: population and systems approaches	64
	Noncommunicable disease prevention and control. Availability of basic equipment, medical professionals, and availability, affordability, and local manufacture of drugs. Use of medications in stroke and coronary heart disease. Profiles of Finland, Japan, Mauritius and New Zealand. Dieticians in the United Kingdom promote healthy eating.	
22	Health education	66
	World Heart Day participation, themes and trends. Medical activities, physical activities and promotion of healthy diet. Giving up smoking: the International Quit and Win campaign.	
23	Policies and legislation	68
	Smoke-free government buildings and private workplaces. The first five countries to ratify the WHO Framework Convention on Tobacco Control (FCTC). National plans for CVD prevention and control. Tobacco, food and nutrition legislation. Smoking ban in the USA led to reduction in heart attacks.	

24	Treatment	70
	Medication, devices, and operations. Simple secondary prevention. Proportion of patients reaching blood pressure and cholesterol treatment goals. Participation in cardiac rehabilitation. Proportion of people with diabetes treated with medication or diet. Trends in cardiovascular operations and procedures in the USA.	
Part Five:	THE FUTURE AND THE PAST	72
25	The future	74
	Predictions to 2030 of the cardiovascular disease epidemic, risk factors, economic costs, research, UN Conventions, technology and treatment.	
	Milestones in knowledge of heart and vascular disorders	
	History of key events, developments and research, including epidemiology, risk factors, economic costs, inventions and interventions.	
	BCE–1852	76
	1856–1967	78
	1969–2004	80
Part Six:	World Tables	82
	World data tables	84
	Glossary	92
	Sources	94
	Useful contacts	109
	Index	111

Foreword



A message from

Dr LEE Jong-Wook
Director-General
World Health Organization

Hearth disease and stroke are currently the leading cause of death in all developed countries and in most developing countries. There were approximately 17 million deaths due to cardiovascular disease in 2003 – one-third of all deaths in the world.

It is disturbing to note that at least 75% of deaths from heart disease and stroke now occur in the poorer regions of the world, which also face major threats from communicable diseases. These regions thus suffer under the so-called “double burden” of disease. If preventive action is not taken urgently, heart disease and stroke – which are already major public health problems – will rapidly advance across regions and social classes to reach epidemic proportions worldwide.

We know that the major risk factors for heart disease and stroke are high blood pressure, high blood cholesterol, tobacco use, physical inactivity, unhealthy diet and obesity. Many of these risk factors result from unhealthy lifestyles. These unhealthy lifestyle habits, which are linked to urbanization, often start in childhood and youth, encouraged by the influence of mass advertising and social pressures. This underscores the importance of targeting children and young people in all programmes that aim to prevent heart disease and stroke.

Prevention and control of heart disease and stroke in developing countries represent a challenging task. There are a number of major barriers to progress, including lack of reliable epidemiological information, inaccessibility of health care, shortages of trained manpower and resources, and misconceptions about heart disease and stroke among policy-makers and the public.

However, the good news is that knowledge about the causes of heart disease and stroke is growing, and various countries are gaining experience in translating this knowledge into effective action.

I believe that our efforts to control heart disease and stroke can only succeed if they are focused at country level. Current WHO activities in this area are based on the WHO Global Strategy for the Prevention and Control of Noncommunicable Disease, which was adopted by the World Health Assembly in 2000. Our goals are to:

- provide guidance to countries on policy, legislative and financial measures that can help prevent cardiovascular disease;
- assess and track the magnitude of the cardiovascular disease epidemic and its social, economic, behavioural and political determinants in developing countries;
- reduce cardiovascular risk factors and their determinants and promote cardiovascular health for all age groups;
- strengthen the health care of people with cardiovascular disease by developing norms and guidelines for cost-effective interventions.

To achieve these goals, WHO has developed standardized approaches to strengthen national surveillance systems for key risk factors. Further, WHO has initiated programmes at country level to scale up health care for those with established cardiovascular disease and to introduce affordable and innovative approaches for managing cardiovascular risk factors and cardiovascular disease in low-resource settings.

WHO is also in the process of addressing some of the main risk factors for cardiovascular disease through global action, such as the Framework Convention on Tobacco Control and the Global Strategy on Diet, Physical Activity and Health. These strategies will help countries in their efforts to develop and implement policies to reduce the burden of cardiovascular disease.

We recognize that advocacy, resource mobilization, capacity development, and research are necessary to galvanize global action against the causes of cardiovascular disease. WHO is working with other UN agencies, research institutions, nongovernmental organizations, the private sector and civil society to promote these activities. Together, we can move the global public health agenda forward to avert unnecessary deaths and suffering due to this eminently preventable disease.

A handwritten signature in black ink, reading "Jong Hark Lee". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Preface

“We have the scientific knowledge to create a world in which most heart disease and stroke could be eliminated.”

The Victoria Declaration on Heart Health, 1992

“Change before you have to.”

Jack Welch,

former Chairman and Chief Executive Officer of

General Electric, USA (1935–)

Heart disease and stroke, the main cardiovascular diseases, are truly global epidemics. They deserve the attention of governments, policy-makers, national and international organizations, committed individuals and families everywhere.

Heart disease and stroke are no longer diseases of old men in developed countries. They are also diseases of women, young adults, and even children. They affect the wealthy and the poor. Already they claim more lives in developing than developed countries. The Asian girl on the cover is at risk, as are many children and young adults throughout the world.

The risk factors for heart disease and stroke begin in youth, and most can be prevented or controlled. Yet, worldwide, most people who have risk factors are either not treated or are inadequately treated. Special attention to high blood pressure, high blood cholesterol, tobacco and other major risk factors is crucial.

Cardiovascular diseases are more than just health problems: both the diseases and their underlying causes have major financial implications for governments, businesses and individuals. The “globesity” epidemic is causing international concern. The tobacco epidemic is linked to smuggling, big business and politics. If people are to be encouraged to take regular physical activity, commitment is needed from both individuals and society. The prevention and control of high blood pressure and high blood cholesterol require action from governments and the pharmaceutical industry, not just individual patients.

Research achievements in the field of heart disease and stroke have been phenomenal. We know a lot today, but as Goethe put it, “knowing is not enough, we must apply.” We must apply what we already know, and translate the best science into practice for the benefit of all, worldwide.

The good news, as stated most eloquently in the Victoria Declaration on Heart Health more than a decade ago, is that we know what we need to do to eliminate most heart disease and stroke. What is needed now is the combination of necessary resources and political will on a global scale to take effective action. Now is the time to act – and to change before we have to.

Judith Mackay, Hong Kong SAR, China

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Glossary of terms used in this publication

ACE inhibitors: angiotensin-converting-enzyme inhibitors. Drugs used to treat high blood pressure, and to aid healing after a heart attack.

Angina (angina pectoris): pain or discomfort in the chest that occurs when part of the heart does not receive enough blood. Typically, it is precipitated by effort and relieved by rest.

Angioplasty: a non-invasive surgical procedure used to open up blockages in blood vessels, particularly the coronary arteries that feed the heart. Often performed with either a balloon or a wire mesh (stent).

Anticoagulant: medication that delays the clotting (coagulation) of blood.

Arrhythmia: a change in the regular beat or rhythm of the heart. The heart may seem to skip a beat, or beat irregularly, or beat very fast or very slowly.

Arteriosclerosis: a general term for the hardening of the arteries.

Asymptomatic: without symptoms. This term may apply either to healthy persons or to persons with preclinical (prior to clinical diagnosis) disease in whom symptoms are not yet apparent.

Atherosclerosis: one form of arteriosclerosis, where the hardening and narrowing of the arteries is caused by the slow build-up of fatty deposits on the inside lining.

Atrial fibrillation: a common heart rhythm disorder in which the two small upper chambers of the heart (the atria) quiver instead of beating effectively. This quivering makes the heart less efficient, allows blood to pool and form clots, and predisposes to stroke.

Blood pressure: the force of the blood pushing against the walls of arteries. Blood pressure is given as two numbers: systolic pressure (the pressure while the heart is contracting) and diastolic pressure (the pressure when the heart is resting between contractions).

Body mass index (BMI): a measure of weight in relation to height. It is calculated as weight (in kilograms) divided by the square of height (in metres). A BMI of less than 25 is considered normal, 25–30 is overweight, and greater than 30 defines obesity.

Cardiovascular disease (CVD): any disease of the heart or blood vessels, including stroke and high blood pressure.

Carotid stenosis: narrowing of the carotid arteries, the main arteries in the neck that supply blood to the brain.

Cerebrovascular disease: also called a stroke or the brain equivalent of a heart attack. A condition in which a blood vessel in the brain bursts or is clogged by a blood clot, leading to inadequate blood supply to the brain and death of brain cells.

Cholesterol: a waxy substance that circulates in the bloodstream.

Cholesterol plaques: deposits of fat, cholesterol, cellular waste products, calcium and other substances that build up on the inner lining of an artery.

Congestive heart failure: a condition in which the heart cannot pump enough blood to meet the needs of the body's other organs.

Coronary artery bypass surgery (CABG): A type of heart surgery that re-routes blood around clogged arteries – or “bypasses” them – to improve the supply of blood and oxygen to the heart.

Coronary heart disease: heart disease in which the coronary arteries are narrowed and the supply of blood and oxygen to the heart therefore decreased. Also called coronary artery disease or ischaemic heart disease. It includes heart attack and angina.

Developing country, high mortality: a developing country with high child mortality and high or very high adult mortality.

Developing country, low mortality: a developing country with low child mortality and low adult mortality.

Diabetes mellitus: a chronic disease due to either insulin deficiency or resistance to insulin action or both, and associated with hyperglycaemia (elevated blood glucose levels).

Direct costs: costs associated with an illness that can be attributed to a medical service, procedure, medication, etc., such as X-ray examination, pharmaceutical drugs (for example, insulin), surgery, or a clinic visit.

Disability adjusted life years (DALYs): a measure of overall burden of a disease by combining the years of potential life lost due to premature death and the years of productive life lost due to the disability. One DALY is one lost year of healthy life.

Epidemic: the occurrence in a community or region of cases of an illness, specific health-related behaviour, or other health-related events clearly in excess of what would normally be expected.

Health: a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

HDL (high-density lipoprotein) cholesterol: the so-called “good cholesterol”. HDL helps remove cholesterol from the blood vessels. High levels of blood HDL protect against heart disease.

Heart attack (myocardial infarction): death of part of the heart muscle as a result of a coronary artery becoming completely blocked, usually by a blood clot (thrombus), resulting in lack of blood flow to the heart muscle and therefore loss of needed oxygen.

Heart failure: see Congestive heart failure.

High blood pressure: a systolic blood pressure of 140 mmHg or greater or a diastolic pressure of 90 mmHg or greater.

Homocysteine: an amino acid produced by the body. Elevated levels of homocysteine in the blood can damage blood vessels and disrupt normal blood clotting, and possibly increase the risk of heart attack, stroke, and peripheral vascular disease.

Indirect costs: costs associated with an illness that occur because an individual or family members cannot work at their usual jobs, because of premature death, sickness, or disability.

Ischaemic heart disease: see Coronary heart disease.

LDL (low-density lipoprotein) cholesterol: the so-called “bad cholesterol”. High levels of LDL put people at risk of heart attack.

Lipid: fat or fat-like substance, such as cholesterol, present in blood and body tissues.

MET: metabolic equivalent; a measure of energy expenditure. One MET/min is the amount of energy expended while sitting quietly at rest for one minute.

Obesity: a condition characterized by excessive body fat. Usually defined as a body mass index greater than 30.

Peripheral vascular disease: disease of certain blood vessels outside the heart or disease of the lymph vessels, for example the arteries supplying the limbs, which leads to inadequate blood supply and claudication (intermittent pain on exercise such as walking).

Physical activity: bodily movement that substantially increases energy expenditure.

Premature death: death that occurs at an age earlier than the average life expectancy for the population.

Primary prevention: a strategy that helps to prevent the onset of a disease or condition in people who are at risk but do not already have the disease or condition. Examples are promotion of exercise in the general population, smoking prevention in young people, and also the treatment and control of high blood pressure as a strategy for primary prevention of stroke.

Rheumatic heart disease: damage to the heart valves and other heart structures from inflammation and scarring caused by rheumatic fever. Rheumatic fever begins with a sore throat due to streptococcal infection.

Secondary prevention: a strategy that helps to prevent recurrent disease or complications in people who already have the disease. For example, the use of a daily dose of aspirin by heart attack survivors is an effective strategy for preventing a second heart attack.

Sedentary: denotes a person who is relatively inactive and has a lifestyle characterized by a lot of sitting.

Stent: a device used to support tissues while healing takes place. A stent can keep “tube-shaped” structures, such as blood vessels, open after a surgical procedure. An intraluminal coronary artery stent is a small, self-expanding, stainless steel mesh tube, which is placed within a coronary artery to keep the vessel open.

Stroke: the brain equivalent of a heart attack. A condition in which a blood vessel in the brain bursts (haemorrhagic stroke) or is clogged (embolic or ischaemic stroke) by a blood clot. This leads to inadequate blood supply to the brain and death of the brain cells, and usually results in temporary or permanent neurological deficits.

Transient ischaemic attack (TIA): small stroke-like event, which resolves in a day or less. It is often a warning sign of an impending stroke.

Triglyceride: the chemical form in which most fat exists in food and in the body.

Sources

PART 1 CARDIOVASCULAR DISEASE

1 Types of cardiovascular disease

Deaths from cardiovascular diseases

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2 Rheumatic fever and rheumatic heart disease

Map: Deaths from rheumatic heart disease

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PART 2 RISK FACTORS

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Maps: Blood Pressure

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Map: Cholesterol

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8 Risk factor: physical inactivity

Map: Physical activity levels

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9 Risk factor: obesity

Maps: Body mass index

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PART 3 THE BURDEN

13 Global burden of coronary heart disease

Map: Healthy years of life lost to coronary heart disease

Mortality and burden of disease estimates for countries provided by Colin Mathers (Evidence and Information for Policy, WHO) from analyses prepared for *The World Health Report 2003*.

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Map: Deaths from coronary heart disease

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15 Global burden of stroke

Map: Healthy years of life lost to stroke

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American Stroke Association
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PART 4 ACTION

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Personal choices in lifestyles and behaviour; Personal actions for safeguarding cardiovascular health

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Eat fruit and cereals

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HeartBytes. Reduce heart disease risk: encourage and prescribe exercise for your patients. *Medscape cardiology*, 2004, 8(1)
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Wow: People with low fitness...

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21 Prevention: population and systems approaches

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Gaps in secondary prevention of myocardial infarction and stroke: WHO study on Prevention of REcurrences of Myocardial Infarction and Stroke (WHO-PREMISE) in low and middle income countries. WHO-PREMISE (Phase I) Study Group.

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22 Health education

Map: World Heart Day

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World Heart Day: themes; activities; Evaluation of

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23 Policies and legislation

Map: Smoke-free workplaces

Shafey O, Dolwick S, Guindon GE, eds. *Tobacco control country profiles 2003*. Atlanta, GA, American Cancer Society, WHO, International Union Against Cancer, 2003.

Cardiovascular disease plans worldwide; Legislation

Policy data from: WHO. Capacity for NCD prevention and control survey 2001. *Assessment of national capacity for noncommunicable disease prevention and control. The report of a global survey*. Geneva, WHO, 2001.

Wow: 2002 USA

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24 Treatment

Cardiac rehabilitation; Patients reaching blood pressure and blood cholesterol goals during treatment

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Simple secondary prevention medication treatments

Yusuf S. Two decades of progress in preventing vascular disease. *Lancet*, 2002, 360:2–3
<http://www.thelancet.com>

Diabetes treatment

Ustun TB, Chatterji S, Mechbal A, Murray CJL, WHS Collaborating Groups. *The World Health Surveys in Health Systems Performance Assessment: debates, methods and empiricism*. Murray CJL and Evans DB, eds, Geneva, WHO, 2003.

Trends in cardiovascular operations and procedures in the USA

American Heart Association. *Heart disease and stroke statistics – 2004 update*. Dallas, American Heart Association, 2003.

Wow: Proportion of people...

Mensah GA. The global burden of hypertension: good news and bad news. *Cardiology clinics*, 2002, 20(2):181–185

Wolf-Maier K, Cooper RS, Banegas JR et al. Hypertension prevalence and blood pressure levels in 6 European countries, Canada, and the United States. *Journal of the American Medical Association*, 2003, 289(18):2363–2369.

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Ford ES, Mokdad AH, Giles WH, Mensah GA. Serum total cholesterol concentrations and awareness, treatment, and control of hypercholesterolemia among US adults: findings from the National Health and Nutrition Examination Survey, 1999 to 2000. *Circulation*, 2003, 107(17):2185–2189.

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PART 5 THE FUTURE AND THE PAST

25 Future

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Treatment

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Weisse AB. *Heart to heart: the twentieth century battle against cardiac disease: an oral history*. London, USA, Rutgers University Press, 2002.

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Schooler C, Farquhar JW, Fortmann SP, Flora JA. Synthesis of findings and issues from community prevention trials. *Annals of epidemiology*, 1997, S7:S54–68.

Useful contacts

World Health Organization

<http://www.who.int>

Cardiovascular disease:

<http://www5.who.int/cardiovascular-diseases/>

Diabetes:

http://www.who.int/health_topics/diabetes_mellitus/en/

Diet:

http://www.who.int/health_topics/diet/en/

Nutrition:

http://www.who.int/health_topics/nutrition/en/

Obesity:

http://www.who.int/health_topics/obesity/en/

Public Health Surveillance:

http://www.who.int/health_topics/public_health_surveillance/en/

Tobacco Free Initiative:

<http://www.who.int/tobacco/en/>

Centers for Disease Control and Prevention, USA

<http://www.cdc.gov/>

Cardiovascular Health Program:

<http://www.cdc.gov/cvh/>

Nutrition and Physical Activity Program:

<http://www.cdc.gov/nccdphp/dnpa/>

Tobacco Program:

<http://www.cdc.gov/tobacco/>

Diabetes Program:

<http://www.cdc.gov/diabetes/>

Laboratory Sciences Program:

<http://www.cdc.gov/ncchd/dls/programs.htm>

Office of Global Health:

<http://www.cdc.gov/ogh/>

Behavioral Risk Factor Surveillance System:

<http://www.cdc.gov/brfss>

National Center for Health Statistics:

<http://www.cdc.gov/nchs>

International and Regional Organisations

Asian Society for Cardiovascular Surgery:

<http://www.ascvs.org/>

Association for European Paediatric Cardiology/Association

Européenne pour la Cardiologie Pédiatrique:

<http://www.aepc.org/home.htm>

Brain Aneurysm Foundation:

<http://www.bafound.org>

Cairdes: <http://www.cairdes.com>

CardioStart International Inc:

<http://www.cardiostart.com/>

Cardiothoracic Surgery Network:

<http://www.ctsnet.org/>

Chain of Hope: <http://www.chainofhope.org>

Children's HeartLink:

<http://www.childrensheartlink.org/>

Children's Hearts: <http://www.childrensheart.org.uk>

Clearinghouse for Tobacco Control (South East Asia):

<http://www.prn2.usm.my/pages/about.asp>

Cœurs pour Tous (Hearts for All):

<http://www.cptg.ch/fr/start.htm>

Congenital Heart Information Network:

<http://www.tchin.org/>

Congress of Neurological Surgeons:

<http://www.neurosurgeon.org>

Consortium for Southeastern Hypertension Control (COSEHC):

<http://www.cosehc.org/>

East Meets West: <http://www.eastmeetswest.org>

Eastern Mediterranean Network on Heart Health, (EMNHH):

<http://emnhh.homestead.com/files/index.htm>

The Endocrine Society: <http://www.endo-society.org/>

European Association for Cardiothoracic Surgery:

<http://www.eacts.org/>

European Heart Institute:

<http://www.european-academy.at>

European Heart Network:

<http://www.ehnheart.org/index2.asp>

EMASH European Medical Association on Smoking and Health:

<http://emash.globalink.org/>

ENSH European Network for Smoke-free Hospitals:

<http://ensh.free.fr/>

ENSP European Network for Smoking Prevention:

<http://www.ensp.org>

European Network of Young People and Tobacco:

<http://www.kul.fi/enypat/>

European Network of Quitlines:

<http://www.quitlines-conference.com/>

European Society for Noninvasive Cardiovascular Dynamics:

<http://www2.mf.uni-lj.si/~esnicvd/>

European Society of Cardiology:

<http://www.escardio.org/>

European Society of Hypertension:

<http://www.eshonline.org/>

European Stroke Initiative:

<http://www.eusi-stroke.com/index.shtml>

European Union of Non-smokers:

<http://www.globalink.org/tobacco/docs/eu-docs/uene.htm>

Framework Convention Alliance (FCA):

<http://www.fctc.org/>

G8 Telematics Heart Health Project:

<http://www.med.mun.ca/g8hearthealth/>

Gift of Life International Inc.:

<http://www.giftoflifeinternational.org/>

Global Connection International:

<http://www.gciworld.org>

Global Cardiovascular Infobase (in English and Spanish):

<http://www.cvdinfobase.ca/>

Global Healing: <http://www.globalhealing.org>

Global Health Information Network:

<http://www.healthnet.org/>

Global Partnerships for Tobacco Control:

<http://www.essentialaction.org/tobacco/>

Globalink, UICC International Union against Cancer:

<http://www.globalink.org/>

Healing the Children:

<http://www.healingchildren.org>

Heart Care International:

<http://www.heartcareintl.org>

HeartGift Foundation:

<http://www.heartgift.org/index.html>

The Heart of a Child Foundation – Little Hearts on the Mend:

<http://www.littleheartsonthemend.org>

Heart-to-Heart International:

<http://www.hearttoheart.org/>

Heart-to-Heart International Children's Medical Alliance:
<http://www.heart-2-heart.org/>

Initiative for Cardiovascular Health Research in Developing Countries:
http://www.globalforumhealth.org/pages/index.asp?ThePage=page1_000500040001_1.htm&Nav=000500040001

InterAmerican Heart Foundation:
<http://www.interamericanheart.org>

InterAmerican Society of Cardiology (in Spanish and English):
<http://www.soinca.org>

Inter-American Society of Hypertension:
<http://org.unc.edu/iash/homepage.htm>
<http://www.musc.edu/iash/generale.htm>

International Academy of Cardiology:
<http://www.cardiologyonline.com/>

International Agency on Tobacco and Health (IATH):
 Email: admin@iath.org

International Atherosclerosis Society:
<http://www.athero.org/>

International Children's Heart Foundation:
<http://www.ichf.org/>

International Children's Heart Fund:
<http://www.ichfund.org/>

International Diabetes Federation:
<http://www.idf.org/>

International Diabetes Institute, Australia:
<http://www.diabetes.com.au/home.htm>

International Federation of Sports Medicine:
<http://www.fims.org/>

International Hospital for Children (IHC):
<http://www.healachild.org>

International Network of Women against Tobacco (INWAT):
<http://www.inwat.org/>

International Network towards Smoke-Free Hospitals (INTSH):
<http://intsh.globalink.org/>

International Non Governmental Coalition against Tobacco (INGCAT):
<http://www.ingcat.org/>

International Obesity Task Force:
<http://www.iotf.org/>

International Pediatric Hypertension Association:
<http://www.pediatrichypertension.org/>

International Society for Adult Congenital Cardiac Disease:
<http://www.isaccd.org/>

International Society for Aging and Physical Activity:
<http://www.isapa.org/>

International Society for Cardiovascular Surgery:
<http://www.vascarg.org/doc/1576.html##.htm>

International Society for Heart Research:
<http://www.ishrworld.org/>

International Society for Heart & Lung Transplantation:
<http://www.isht.org/>

International Society for Minimally Invasive Cardiac Surgery:
<http://www.ismics.org/>

International Society for the Prevention of Tobacco Induced Diseases (PTID): <http://www.ptid.org>

International Society of Cardiovascular Ultrasound:
<http://www.iscu.org/>

International Society of Hypertension:
<http://www.hypertension2004.com.br/>

International Society of Nephrology:
<http://www.isn-online.org/>

International Society on Hypertension in Blacks (ISHIB):
http://www.ishib.org/main/ishib_open.htm

International Stroke Society:
<http://www.internationalstroke.org/index.php>

International Task Force for the Prevention of Coronary Heart Disease:
<http://www.chd-taskforce.de/>

International Tobacco Evidence Network (ITEN):
<http://www.tobaccoevidence.net/>

The Internet Stroke Center:
<http://www.strokecenter.org/pat/organizations.htm>

Legacy Foundation, tobacco document site:
<http://legacy.library.ucsf.edu/cgi/b/bib/bib-idx?g=tob>

Mediterranean Stroke Society:
<http://www.hsanmartino.liguria.it/cictus/med.htm>

OTAF L'Observatoire du Tabac en Afrique Francophone:
<http://otaf.globalink.org/>

Physicians for Peace: <http://www.physiciansforpeace.org>

ProCOR: Conference on Cardiovascular Health:
<http://www.procor.org/>

Project Hope: <http://www.projecthope.org>

Project Kids Worldwide:
<http://www.projectkidsworldwide.org>

Project Open Hearts: <http://www.poh.org>

Repace's site, especially on passive smoking (Jim Repace):
<http://www.repace.com/>

Save A Child's Heart Foundation:
<http://www.saveachildsheart.com>

Society for Research on Nicotine and Tobacco (SRNT):
<http://www.srnt.org/>

Smokescreen Action Network:
<http://www.smokescreen.org>

Southeast Asian Tobacco Control Alliance:
<http://www.tobaccofreeasia.net/>

Stroke Awareness for Everyone:
<http://www.strokesafe.org/>

Stroke Clubs International:
 Email: strokeclub@aol.com

Stroke Net:
<http://www.strokenet.info/resources/stroke/internationalsites.htm>

Surgeons of Hope Foundation:
<http://www.surgeonsofhope.org>

Tobacco.org: <http://www.tobacco.org>

Tobacco Control journal:
<http://www.tobaccocontrol.com>

Tobacco Control Resource Center/Tobacco Products Liability Project (TCRC/TPLP): <http://tobacco.neu.edu/>

TCRC Tobacco Control Resource Centre, BMA, UK:
<http://www.tobacco-control.org/>

Tobacco Control Supersite:
<http://www.health.usyd.edu.au/tobacco/>

Tobacco Documents Online (TDO, Smokescreen):
<http://www.tobaccodocuments.org>

Tobaccopedia:
<http://TobaccoPedia.org>

Treatobacco Database & Educational Resource for Treatment of Tobacco Dependence:
<http://www.treatobacco.net/>

World Federation of Neurology:
<http://www.wfnneurology.org/>

World Heart Federation:
<http://www.worldheart.org/>

World Heart Foundation:
<http://www.world-heart.org/>

World Hypertension League:
<http://www.mco.edu/org/whl/>

World Kidney Foundation:
<http://www.worldkidneyfund.org/>

World Medical Association:
<http://www.wma.net/>

- activity *see* physical activity and inactivity
- ACE inhibitors 40, 71, 92
- age, advancing 19, 25, 42
- alcohol use 19, 24–25
- aneurysm *see* aortic aneurysm and dissection
- angina pectoris 32, 77, 78
- angioplasty 71, 79, 92
- anticoagulant 92
- antihypertensive drugs 65
- aortic aneurysm and dissection 19, 32
- arrhythmia 71, 92
- arteriosclerosis 76, 92
- artificial body parts 71, 75, 80
- arterial disease, peripheral 19, 32, 76
- aspirin 55, 65, 71, 78, 79, 80, 81
- atherosclerosis 26, 31, 32, 42, 77, 92
- atrial fibrillation 19, 20, 50, 52, 78, 80, 92
- beta-blockers 71
- blood clotting
 - disorders 19, 25, 32; *see also* stroke
 - treatment of 80, 81
- blood pressure 28–29, 32, 48, 62–63, 66, 70, 77, 78, 80, 92
 - high 19, 24–25, 26, 28–29, 32, 34, 40, 42, 50, 52, 63, 64, 70, 79, 93
 - see also* hypertension and hypertensive heart disease
- blood sugar levels 62
- body mass index (BMI) 36–37, 92
- brain tumours, vascular 19
- bypass *see* coronary artery bypass surgery
- cardiac
 - defibrillation 71, 78, 79
 - pacemakers 71, 78, 79
 - rehabilitation 70
 - see also* coronary and heart
- cardiovascular disease (CVD) 92
 - deaths from 18, 74
 - disability-adjusted life years (DALYs) 74
 - investigations for 75
 - economic costs of 55
 - medication for 65, 71, 75, 77
 - prevention of 62–63, 64–65, 66–67, 68, 80, 81
 - research into 58–59, 75
 - risk factors 24–43
 - surgery 70–71, 75, 78, 79, 80, 81
 - types of 18–19
- carotid
 - endarterectomy 71
 - stenosis 52, 92
- cars *see* motor vehicles
- Centers for Disease Control and Prevention (USA) 60
- cerebrovascular disease *see* stroke
- childbirth 19
- children and youth 20–21, 25, 26–27, 38, 51, 62, 66
- cholesterol 19, 24–25, 30–31, 40, 42, 48, 62, 65, 70–71, 77, 79, 80, 81, 92
 - HDL (high-density lipoprotein) 25, 30, 32, 42, 80, 93
 - LDL (low-density lipoprotein) 25, 30, 32, 80, 93
 - plaques 32, 77, 92
- cigarettes *see* tobacco use
- clotting *see* blood clotting
- contraceptive, oral 19, 25, 42, 50
- coronary
 - artery bypass surgery 71, 92
 - artery disease 79
 - artery spasm 32
 - stent 71, 80, 93
 - see also* cardiac and heart
- coronary heart disease 19, 32, 34–35, 40, 52, 92
 - burden 46–47
 - deaths from 18–19, 35, 46–47, 48–49, 74
 - disability-adjusted life years (DALYs) 46–47, 74
 - economic costs of 55
 - medication for 65, 71, 81
 - prevention of 48
 - research into 58–59
 - risk factors 19, 79
- costs *see* economic costs
- deaths from
 - cardiovascular disease 18, 74
 - coronary heart disease 18–19, 35, 48–49, 74
 - diabetes mellitus 48
 - hypertensive heart disease 18, 48
 - inflammatory heart disease 18
 - physical inactivity 35
 - rheumatic heart disease 18, 20–21
 - stroke 18–19, 48, 50–51, 52–53, 74
 - tobacco use 74
- deep venous thrombosis 19
- diabetes mellitus 19, 25, 34, 38–39, 40–41, 42, 48, 52, 63, 64, 75, 80, 81, 92
 - deaths from 48
 - economic costs of 54
 - predicted number of people with 75
 - research into 58–59
 - treatment of 71
 - type 1 diabetes 38
 - type 2 diabetes 26, 36, 38, 54
- diet 19, 24–25, 26, 28, 36, 42, 48, 52, 62–63, 64, 66, 77, 80; *see also* food
- digitalis 77
- disability-adjusted life years (DALYs) 46–47, 50–51, 74, 92
- economic costs 54–55, 75, 92, 93
- education
 - health 66–67
 - level of 19, 28, 40, 41
- electrocardiogram (ECG) 78, 79
- embolism *see* pulmonary embolism
- ethnicity and race 25, 42
- food 30, 36, 62
 - cereals 63
 - fast 68
 - fruit and vegetables 24, 28, 36, 62–63, 64
 - labelling of 65, 68
 - legislation on 69
 - processed 28
 - see also* diet
- future 74–75
- gender differences 25, 27, 28–29, 32–33, 42–43, 81; *see also* women

- genetic
 - disposition 19, 25, 48, 81
 - science 75
 - therapy 81
 - see also* heredity
- HDL-cholesterol *see* cholesterol, HDL
- health *see also* education, health and mental health and public health and tobacco use, health warnings
- health care
 - access to 40
 - economic costs of 54–55
- heart 18
 - attack 30, 32, 93
 - catheterization 71, 78
 - congenital disease 19
 - failure, congestive 92
 - inflammatory disease 18–19, 81
 - muscle 18–19, 77
 - transplantation 71, 75, 79, 81
 - tumours 19
 - valves 19, 20, 71, 76, 79
 - see also* cardiac and coronary and hypertensive heart disease
- heredity 25, 42 *see also* genetic
- homocysteine levels in blood 19, 25, 93
- hormone replacement therapy 19, 25, 42–43
- hypertension 28
 - see also* blood pressure, high
- hypertensive heart disease
 - deaths from 18, 48
 - see also* blood pressure, high
- inactivity *see* physical activity and inactivity
- International Conferences on Preventive Cardiology 60
- International Heart Health Conferences and Declarations 61, 64, 66–67, 81
- labelling *see* food
- LDL-cholesterol *see* cholesterol, LDL
- left ventricular hypertrophy 25
- legislation 68–69
- lipids 25, 26, 30–31, 34, 52, 93
 - lowering medication 40, 71
 - see also* cholesterol
- medical professionals 42, 62, 65
- medication 42, 54–55, 62, 65, 71, 75, 77, 81
- mental health 19, 25
- MET (metabolic equivalent) 35, 93
- motor vehicles 34–35
- myocardial infarction *see* heart attack
- nutrition *see* food and diet
- obesity 19, 24–25, 26, 34, 36–37, 41, 42, 62, 65, 66, 79, 80, 93
 - economic costs of 54–55, 75
- open heart surgery 71, 79
- operations 71
- organizations 60–61
- physical activity and inactivity 19, 24–25, 26–27, 28, 34–35, 40, 42–43, 48, 54, 62–63, 66, 78, 79, 80, 81, 93
- policies 68–69
- poverty 19, 20
- prevention *see* cardiovascular disease, prevention of
- public health
 - initiatives 64–65
 - policy 68–69
- pulmonary embolism 19
- Quit and Win 67
- race *see* ethnicity and race
- rehabilitation 70
- research 58–59, 75, 76–81
- rheumatic fever 20, 78, 93
- rheumatic heart disease 19, 20–21, 93
 - deaths from 18, 20–21
- risk factors 19, 24–43, 55, 62–63, 66–67, 79, 80
- salt intake 28, 52, 63, 65
- schools
 - health education in 66
- smoking *see* tobacco use
- socioeconomic status 25, 34, 40–41, 52
- sphygmomanometer 78
- statins 65, 81
- stent *see* coronary stent
- streptococcal infection 19, 20
- stress 25, 34, 40, 42, 62, 77
- stroke 19, 20, 30, 32, 34, 50–53, 76, 78, 80, 93
 - burden 50–51
- carotid stenosis 52
- deaths from 18–19, 48, 50–51, 52–53, 74
- disability-adjusted life years (DALYs) 50–51
- economic costs of 54–55
- medication for 65, 71, 80
- research into 58–59
- risk factors 19, 63, 79, 80
- young people 51
- surgery *see* coronary artery bypass surgery and open heart surgery and cardiovascular disease surgery
- technology 70–71, 75, 77–81
- thrombosis *see* deep venous thrombosis
- tobacco use 19, 24–25, 26–27, 32–33, 40–41, 42–43, 48, 50, 52, 62, 74, 79, 80, 81
 - deaths from 74
 - economic costs of 54–55
 - health warnings about 68
 - knowledge of risks 32–33
 - legislation on 69
 - passive smoking 32, 62
 - prevalence of 27, 33, 75
 - quitting smoking 33, 62–63, 67
 - smoke-free areas 68–69, 81
- transplant *see* heart transplantation
- treatment 64–65, 70–71, 75, 80
- triglycerides 30, 42, 80, 93
- United Nations Conventions and Goals 75
- vascular disease, peripheral 92
- women 25, 28–29, 30, 32–33, 42–43
- World Congresses of Cardiology 60
- World Health Assembly 68, 81
- World Health Organization 60–61, 79, 81
 - Framework Convention on Tobacco Control 68–69, 81
 - Global School Health Initiative 66
 - Global School-based Student Health Survey 66
 - Global Strategy on Diet, Physical Activity and Health 81
- World Heart Days 66–67, 81
- World Heart Federation 60, 66–67, 79
- World Stroke Congresses 61
- youth *see* children and youth