

OVERVIEW

1. The Burden of Chronic Diseases

KEY MESSAGES

- 80% of chronic disease deaths occur in low and middle income countries.
- The threat is growing – the number of people, families and communities afflicted is increasing.
- This growing threat is an under-appreciated cause of poverty and retards the economic development of many countries.
- The chronic disease threat can be overcome using existing knowledge.
- The solutions are effective – and highly cost effective.
- Comprehensive and integrated action at country level, led by governments, is the means to achieve success.

Chronic diseases are the major cause of premature adult deaths in all regions of the world. Yet they have generally been neglected on the international health and development agenda. The global report on chronic diseases from the World Health Organization (WHO) presents current data on the burden of disease, and makes the case for increased and urgent action to prevent and control chronic diseases (1, 2).

In his foreword to the report (1), Dr LEE Jong-Wook, the late Director-General of WHO, declared: “The lives of too many people in the world are being blighted and cut short by chronic diseases such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes.” There is an urgent need to prevent and control chronic diseases within the context of international health.

Chronic diseases were estimated to account for 35 million (2), of a projected total of 58 million deaths from all causes in 2005. Chronic diseases account for twice as many deaths as all communicable diseases (including HIV/AIDS, tuberculosis and malaria), maternal and perinatal conditions, and nutritional deficiencies combined (Figure 1). Only 20% of cases of chronic disease occur in high income countries.

For the next 10–20 years, communicable diseases will remain the predominant health problem for the populations in low income countries. However, an

epidemic of chronic diseases is expected to occur in the future in all countries, including low and middle income countries (3–5).

Collecting information on non-fatal health outcomes of disease and injury has often been neglected in health planning because of the conceptual complexity of measuring morbidity and disability in populations, and the difficulty of defining terms. To overcome these difficulties, disability-adjusted life years (DALYs), which combine morbidity and mortality (see Box 1), were launched by the World Bank and backed by WHO as a measure of the global burden of disease (6).

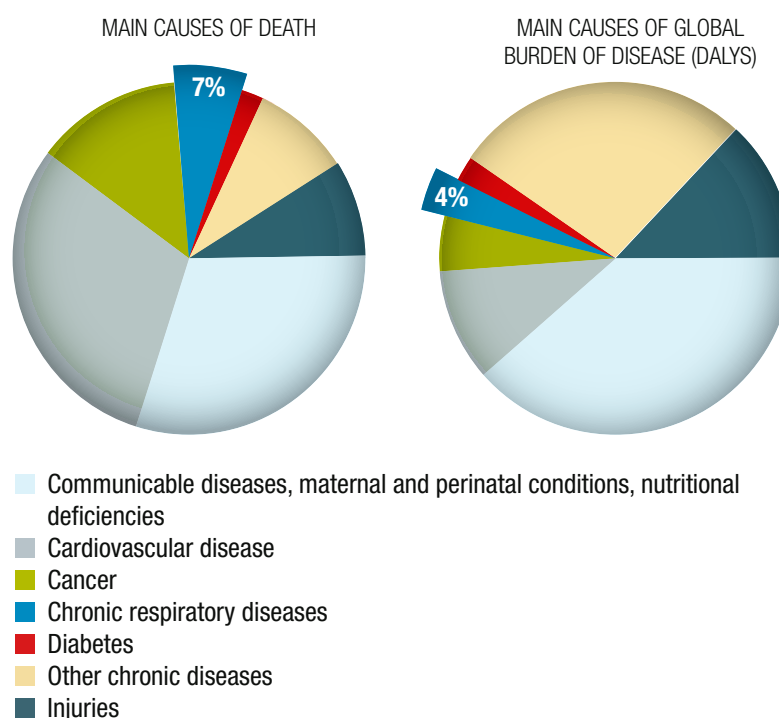
Box 1 Disability-adjusted life years (DALYs)

- One DALY represents the loss of the equivalent of one year of full health.
- DALYs for a disease are the sum of the years of life lost as a result of premature mortality in the population and the years lost as a result of disability for incident cases of the health condition.
- The DALY is a health gap measure that extends the concept of potential years of life lost as a result of premature death to include equivalent years of “healthy” life lost in states of less than full health, broadly termed disability.

Source: reference 7.

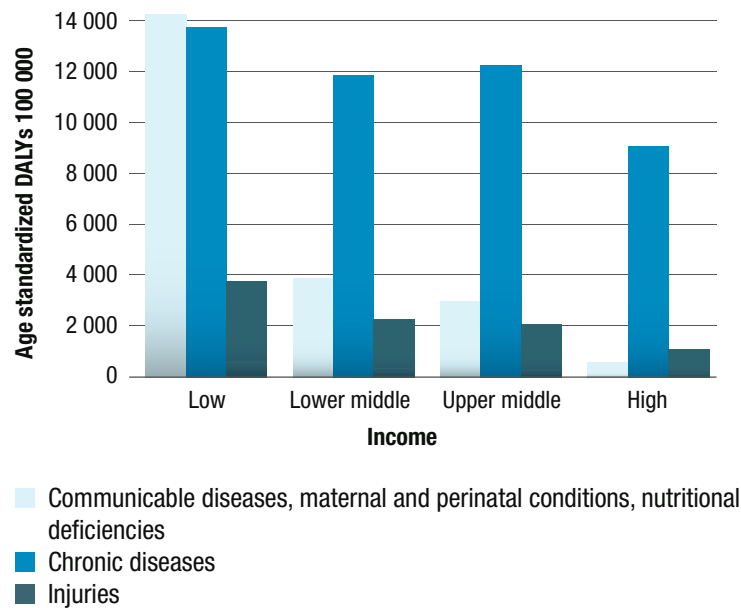
Although the DALY method may be subject to some criticism (8), it allows for comprehensive, consistent and comparable information on diseases and injuries. DALYs may be used as a health indicator allowing for surveillance and evaluation of overall health. Chronic diseases represent an important part of DALYs worldwide (Figure 1).

Figure 1 Projected global deaths and disability-adjusted life years (DALYs) in 2005



Source: reference 1.

Figure 2 Projected main causes of disability-adjusted life years (DALYs), by income (all ages, 2005)



Source: reference 1.

Assuming that no pandemic occurs, deaths from infectious diseases, maternal and perinatal conditions, and nutritional deficiencies combined are projected to decline by 3% over the next 10 years. In the same period, deaths attributable to chronic diseases are projected to increase by 17%.

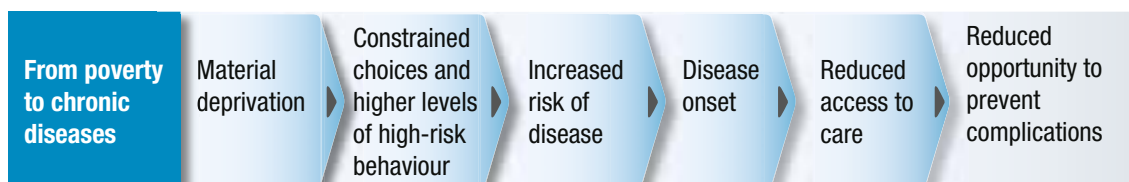
Chronic diseases hinder economic growth and reduce the development potential of countries, in particular the poorest ones. However, chronic diseases have generally been neglected in international health and development work (9). They were not included among the global Millennium Development Goal (MDG) targets.

Chronic diseases and poverty

Chronic diseases and poverty are interconnected in a vicious cycle (10). The reasons for this are clear (Figure 3).

In almost all countries, the poorest people are the most at risk for developing chronic respiratory diseases. The poorest people are also most likely to die prematurely from these diseases because of greater exposure to risks and decreased access to health services. For example, in children with asthma, poverty aggravates asthma and asthma aggravates poverty. People with

Figure 3 From poverty to chronic disease



Source: reference 1.

asthma are less able to work or look after their families. Children with asthma are likely to miss a significant part of their education. Drug costs, emergency visits, hospitalization and inappropriate treatments are a huge financial drain on struggling health systems.

For various reasons, tobacco use tends to be higher among poor people than among wealthier members of society, and poorer people therefore spend relatively more on tobacco products. In low and middle income countries, poor people are more exposed to indoor solid fuels and to unsafe occupational environments.

Chronic diseases also have an indirect impact on people's economic status and employment opportunities in the long term (1, 11). Indirect costs include:

- Reduction in income owing to loss of productivity as a result of illness or death.
- The earnings of adult household members forgone by caring for those who are ill.
- Reduction in future earnings by the selling of assets to cope with direct costs and unpredictable expenditures.
- Lost opportunities for young members of the household who leave school in order to care for adults who are ill or who go to work to help the household economy.

These costs are significant in high income countries where people are protected by social security systems. Even in these countries, not all patients can afford expensive medical services. However, these costs are devastating in low and middle income countries where insurance systems are either underdeveloped or nonexistent. For example, in Burkina Faso chronic diseases represent one of the major causes of catastrophic expenditure (any health expenditure that threatens a household's financial capacity to meet its subsistence needs) (12).

Chronic respiratory diseases in particular place a grave economic burden on countries because of the major effect of occupational lung diseases. This burden will increase if no action is taken. The evidence is clear. Action is urgently needed to avoid an adverse impact on national economic development.

2. Preventable Chronic Respiratory Diseases: A Major Global Health Problem

KEY MESSAGES

- Chronic respiratory diseases are chronic diseases of the airways and the other structures of the lungs. Major preventable chronic respiratory diseases include asthma and respiratory allergies, chronic obstructive pulmonary disease (COPD), occupational lung diseases, sleep apnea syndrome and pulmonary hypertension.
- Hundreds of millions of people of all ages (from infancy to old age) suffer from preventable chronic respiratory diseases and respiratory allergies in all countries of the world.
- More than 500 million of these people live in low and middle income countries or deprived populations.
- Chronic respiratory diseases account for four million deaths annually.
- Measured in DALYs, in 2005 the burden of chronic respiratory diseases was projected to account for 4% of the global burden and 8.3% of the burden of chronic diseases.
- Preventable chronic respiratory diseases are increasing in prevalence, particularly among children and elderly people.
- The burden of preventable chronic respiratory diseases has major adverse effects on the quality of life and disability of affected individuals.
- Many risk factors for preventable chronic respiratory diseases have been identified and efficient preventive measures established.
- Effective management plans have been shown to reduce the morbidity and mortality caused by chronic respiratory diseases.
- Prevention and management plans concerning chronic respiratory diseases are fragmented and need to be coordinated.

The health of the world is generally improving. Fewer people are dying from infectious diseases and therefore in many cases are living long enough to develop chronic diseases (7).

Chronic respiratory diseases, chronic diseases of the airways and the other structures of the lungs, represent a wide array of serious diseases. Preventable chronic respiratory diseases include asthma and respiratory allergies, chronic obstructive pulmonary disease (COPD), occupational lung diseases, sleep apnea syndrome and pulmonary hypertension. They constitute a serious public health problem in all countries throughout the world, in particular in low and middle income countries and in deprived populations.

Hundreds of millions of people of all ages, in all countries of the world, are affected by preventable chronic respiratory diseases. More than 50% of them live in low and middle income countries or deprived populations. The prevalence of preventable chronic respiratory diseases is increasing everywhere and in particular among children and elderly people.

The burden of preventable chronic respiratory diseases has major adverse effects on the quality of life and disability of affected individuals. Preventable chronic respiratory diseases cause premature deaths. They also have large adverse and underappreciated economic effects on families, communities and societies in general.

Many risk factors for preventable chronic respiratory diseases have been identified:

- Tobacco smoke and other forms of indoor air pollution, particularly in low and middle income countries.
- Allergens.
- Occupational agents.
- Diseases such as schistosomiasis or sickle cell disease.
- Living at a high altitude.

Prevention of these risk factors will have a significant impact on morbidity and mortality. Efficient preventive measures exist. Yet, preventable chronic respiratory diseases and their risk factors receive insufficient attention from the health-care community, government officials, patients and their families as well as the media (Table 1). Preventable chronic respiratory diseases are under-recognized, under-diagnosed, under-treated and insufficiently prevented.

Barriers increasing the burden of chronic respiratory diseases

Several barriers have been shown to reduce the availability, affordability, dissemination and efficacy of optimal management of chronic respiratory diseases (13–15):

- Economic and generic barriers include poverty, poor education, illiteracy, lack of sanitation and poor infrastructure.
- Cultural barriers include multiplicity of languages, as well as religious and cultural beliefs.

Table 1 Barriers that increase the burden of chronic respiratory diseases

	Low and middle income countries	High income countries
Insufficient priority	In many low and middle income countries, the focus of health-care systems is on communicable diseases and injuries. Infrastructure for the diagnosis and management of chronic respiratory diseases is either not available or is viewed as low priority on any public health agenda.	Chronic respiratory diseases are usually independent of communicable diseases in terms of public health management, and there are structures for fighting both types of diseases. A few successful national programmes against chronic respiratory diseases exist. However, they are not comprehensive (e.g. there are programmes dealing with asthma or COPD), they are fragmented, need to be expanded and integrated within a single action plan and they require more coordination. Moreover, chronic respiratory diseases are rarely on the public health agenda.
	Data on chronic respiratory disease risk factors, burden and surveillance are scarce or unavailable in most countries. Consequently the true burden of chronic respiratory diseases on health services and society is not appreciated.	Data on the chronic respiratory disease risk factors, burden and surveillance are fragmented and often incomplete.
	Strategies for the prevention of chronic respiratory diseases and for health promotion related to chronic respiratory diseases are often absent or rudimentary.	Awareness of chronic respiratory diseases is largely insufficient.

TABLE 1 (CONTINUED)

	Low and middle income countries	High income countries
Insufficient prevention	Exposure to risk factors for chronic respiratory diseases, including indoor air pollution, the use of solid biomass fuels and smoking, is high.	Prevention and health promotion for chronic respiratory diseases is largely insufficient. Although many risk factors predisposing people to chronic respiratory diseases are preventable, policies and legislation are still inadequate throughout the world. The Framework Convention on Tobacco Control has become an international law but there are still many countries that have yet to ratify it. As of 20 June 2007, 148 countries out of 193 WHO Member States have ratified the Convention.
	Surveillance systems and diagnostic services for work-related chronic respiratory diseases are poorly developed, and the true burden of occupational lung disease is largely unknown.	Asthma is under-diagnosed. It is often better controlled than other chronic respiratory diseases but many patients are not well controlled.
	Asthma is mostly under-diagnosed and under-treated (in particular in children), causing high morbidity and significant mortality.	COPD is largely under-diagnosed, under-treated and largely induced by smoking.
Inadequate Control	The burden of COPD is very high, in particular in the Western Pacific Region.	COPD is not regarded as a systemic disease. It is not assessed as part of chronic systemic disease surveillance (which often includes cardiovascular diseases, cancer and metabolic disorders).
	The management of conditions such as asthma and COPD emphasizes the treatment of acute episodes of exacerbations instead of care for the chronic disease and the prevention of acute episodes of exacerbations.	Work-related chronic respiratory diseases should be better identified, diagnosed and prevented.
	In some countries, additional risk factors such as altitude, parasitosis and sickle cell disease result in unique forms of chronic respiratory diseases.	In some countries, there may be additional chronic respiratory diseases associated with altitude.
	In the majority of countries, diagnostic tests (e.g. spirometry) that are required for the diagnosis and assessment of the severity of chronic respiratory diseases are not readily available, resulting in mis-assessment and under-diagnosis of chronic respiratory diseases.	Lung function testing is available in specialist practices and, in some countries, in primary care.
	Essential drugs for the treatment of chronic respiratory diseases are not available or not affordable in a large proportion of developing countries.	Drugs are usually available but are not always affordable.
	Programmes for educating health-care professionals in the care and management of patients with chronic respiratory diseases need to be strengthened.	
		Public awareness of chronic respiratory disease should be increased

- Environmental barriers include tobacco smoke and other indoors pollutants, outdoor pollution, occupational exposure and nutrition. Poor nutrition is common in low and middle income countries, whereas obesity and overweight are increasing in high income countries and in urban areas of low and middle income countries (16).
- Availability and accessibility of drug and devices are often poor. In many countries, there is still poor accessibility to drugs (17,

18) despite the Bamako Initiative launched over 15 years ago (19). There is also a lack of resources for the diagnosis of chronic respiratory diseases in low and middle income countries.

- The potential of traditional medicine may be underestimated. In many countries, alternative and complementary medicine are commonly used. In low and middle income countries, traditional medicine is extremely important and may often be the only available therapy (20). Treatment with traditional medicines is usually the first step in the management of diseases, because of the beliefs of patients and taboos, the inaccessibility of health care and the high cost of drugs. In many places, traditional and modern medicine have tended to work in tandem. Because the cost of drugs is often high, the use of appropriate traditional medicine was promoted at the Fifty-fifth World Health Assembly. Unfortunately, there have as yet been no large controlled studies on the efficacy of traditional remedies in treating chronic respiratory diseases.
- There are large differences in health-care systems. Differences exist even within high income countries and are far more marked between middle and low income countries (Boxes 2 and 3).
- There is a need to put evidence into practice in low-resource settings. Gaps between evidence and practice in low and middle income countries result in ineffective treatment (21). There is a need to adapt guidelines into context-specific and user-friendly formats (such as algorithms, guidelines and desktop guides) (22, 23).

The training of health-care workers is often problematic. In most low income countries there is a lack of trained personnel, and staff turnover makes education very difficult (21).

Box 2 Distinct groups of people with different health-care status in low income countries

Heterogeneity of lifestyles requires a variety of health promotion, disease prevention and control strategies. In low-income countries, particular groups that need attention include:

- **People living in urban areas with a high income and with a settled and sedentary life style, including:**
 - high-income people who can afford expensive diagnostic examinations and treatments;
 - government workers who are reimbursed for diagnostic examinations and treatments;
 - industrial, agricultural or service sector workers who are reimbursed for diagnostic examinations and treatments.
- **People living in urban areas who are jobless or with limited financial resources, and people living in low income suburban or periurban areas.**
- **Poor people living in rural areas.**

Source: adapted from reference 13.

Box 3 Major drawbacks in the organization of health-care services in low income countries

- **Inaccessibility of health-care facilities (distance, lack of facilities, or facilities not adequately staffed).**
- **Disparities in the establishment and availability of health-care facilities.**
- **Poor quality or not enough technical support.**
- **Lack qualified personnel, and no equivalence in training between the different countries.**
- **Trained personnel unlikely to stay in the same location.**

Source: adapted from reference 13.

A vision for the future: reducing deaths and improving lives

Recent progress in public health has helped people in many parts of the world to live longer and healthier lives. The use of existing knowledge has led to major improvements in the life expectancy and quality of life of middle-aged and older people.

In *Preventing chronic diseases: a vital investment (1)*, a global goal for preventing chronic disease is suggested to generate the sustained actions required to reduce the disease burden. The target for this proposed goal is an additional 2% annual reduction in chronic disease death rates over the decade up to 2015.

The indicators for the measurement of success towards this goal are the number of chronic disease deaths averted and the number of healthy life years gained. Most of the deaths averted from specific chronic diseases would be in low and middle income countries. It is expected that cardiovascular diseases and cancer are the diseases for which most deaths would be averted.

3. A Mechanism for Action: The Global Alliance Against Chronic Respiratory Diseases (GARD)

KEY MESSAGES

- The Global Alliance against Chronic Respiratory Diseases (GARD) brings together national and international organizations, institutions and agencies to combat chronic respiratory diseases.
- GARD's goal is to reduce the global burden of chronic respiratory diseases.
- GARD's emphasis is on the needs of low- and middle-income countries.

The Fifty-third World Health Assembly recognized the enormous human suffering caused by chronic diseases. It requested the WHO Director-General to give priority to the prevention and control of chronic respiratory diseases, with special emphasis on low and middle income countries and other deprived populations. The task was, in collaboration with the international community, to coordinate global partnership and alliances for resource mobilization, advocacy, capacity building and collaborative research (resolution WHA53.17, May 2000, endorsed by all WHO Member States). In order to develop a comprehensive approach for the surveillance, diagnosis, prevention and control of chronic respiratory diseases, WHO organized four consultation meetings:

- WHO Strategy for prevention and control of chronic respiratory diseases, Geneva, 11–13 January 2001 (24).
- Implementation of the WHO strategy for prevention and control of chronic respiratory diseases, Montpellier, 11–12 February 2002 (25).
- Prevention and control of chronic respiratory diseases in low and middle income African countries, Montpellier, 27–28 July 2002, and Paris, 10 June 2003 (26).
- Prevention and control of chronic respiratory diseases at country level: towards a global alliance against chronic respiratory diseases, Geneva, 17–19 June 2004 (27).

These meetings led to the formation of the Global Alliance against Chronic Respiratory Diseases (GARD) (28).

The Global Alliance against Chronic Respiratory Diseases (GARD) is a voluntary alliance of national and international organizations, institutions and agencies working towards the common goal of improving global lung health.

- GARD's vision: a world where all people breathe freely.
- GARD's goal: to reduce the global burden of chronic respiratory diseases.
- GARD's objective: to initiate a comprehensive approach to fight chronic respiratory diseases. This involves:

- developing a standard way of obtaining relevant data on chronic respiratory disease risk factors;
 - encouraging countries to implement health promotion and chronic respiratory disease prevention policies;
 - recommending affordable strategies for the management of chronic respiratory diseases.
- GARD's added value: to provide a network through which collaborating parties can combine their strengths, thereby achieving results that no one partner could obtain alone; and to improve coordination between existing governmental and nongovernmental programmes, so as to avoid a duplication of efforts and the waste of resources.
 - GARD's approach: to promote an integrated approach that capitalizes upon strategic synergies on prevention and control between chronic respiratory diseases and other chronic diseases; and to consider especially the needs of low and middle income countries and vulnerable populations, fostering country-specific initiatives that are tailored to local needs.

The emphasis on the needs of low- and middle-income countries is appropriate, as most cases of chronic respiratory disease occur in these countries, with communicable diseases (including HIV/AIDS) adding to the burden of chronic respiratory disease morbidity.