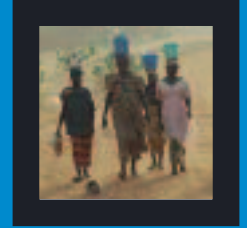# Addressing the changing health challenges of the developing world

The current state of adult health is characterized by three major

trends

- a slowing of health gains in poor countries and, as a result, a widening health gap between rich and poor nations.
- an increasingly complex burden of disease; and
- the globalization of adult health risks (1).

Each of these trends, discussed below, is a serious challenge to both national and international health and requires swift, coordinated action.

Widening health gaps

The United Nations Millennium Declaration - and the resulting Millennium Development Goals - represent a commitment to reduce global poverty and close the gap between rich and poor (2). Current trends in health suggest that the world is moving in the opposite direction.

During the past half century, we have observed a gradual increase in life expectancy: the global average life expectancy now exceeds 65 years, reaching that of the European countries in 1950. However, this rate of increase has slowed in recent decades.

Figure 1: Differentials in child mortality in three developing countries according to socioeconomic status
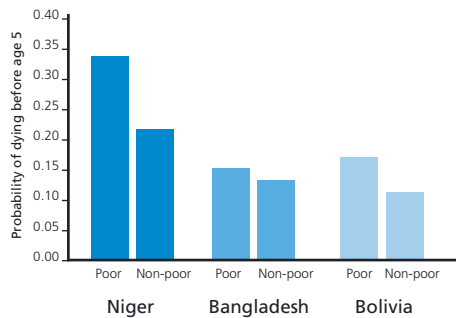
Source: WHO, 2003

Note: The poor are the individuals from the lowest quintile of income, while the non-poor are the remainder. The vertical axis represents the probability of dying in childhood (on a zero to one scale). The horizontal axis disaggregates the information by poor and non-poor. The identification of poor and non-poor populations uses a global scale based on an estimate of permanent income constructed from information on ownership of assets, availability of services and household characteristics. This approach has the advantage of allowing comparison of socioeconomic level across countries. It implies that the individuals defined as 'poor' in Bangladesh have the same economic status as the population defined as 'poor' in Niger.

A recent analysis shows that inequality in life expectancy decreased until the late 1980s, but increased during the 1990s - primarily due to an increase in adult mortality in sub-Saharan Africa (from the HIV/AIDS epidemic) and in the former socialist economies in Europe (3).

In global terms, child mortality rates in developing regions are continuously declining (3). However, in many countries of sub-Saharan Africa, the downward trend in child mortality has been reversed over the past decade. Overall, 35% of Africa's children face a greater risk of dying today, as compared with 10 years ago (1). Almost half of all deaths among children under five occur in this region, where progress has slowed due to lack of preventive care and treatment, fragile health systems, and socioeconomic stagnation due to conflicts, instability, and HIV/AIDS (4, 5). Those who do survive beyond childhood are confronted with adult mortality rates that exceed those of 30 years ago.

The result of these trends is a widening of the health gap within and across populations (3). Moreover, there is often considerable variation in mortality between rich and poor populations within countries. Data collected in more than 60 countries show that children from poor households have a significantly higher risk of dying before the age of five than children from better-off families. This trend is illustrated in Figure 1, using the results for three countries from different regions (6).

The analysis also shows that while child mortality has increased in the African countries surveyed, the gap between the poor and non-poor has remained constant over time (6). By contrast, there

has been a widening of the mortality gap between the poor and better-off in the Americas, where - overall - child mortality rates have fallen. This indicates that increases in survival rates in many regions have benefited the better-off and occurred at the expense of the poor. Another recent analysis confirms this finding, showing that the reduction of child mortality has been much slower in rural than in urban areas (6).

Health interventions implemented in the past decade may not have been as effective as intended in reaching the poor. Those formulating strategies to address the health MDGs must learn from this failure, and work actively to reduce health inequities. In practice, this means focusing on those countries most in need, and - within those countries - on the most disadvantaged population groups.

**Increasingly complex burden of disease**

In 2002, 57 million people died. An analysis of the causes of death, and the age at which death occurred, reveals that the world is facing an increasingly complex set of health challenges (see Figure 2). The graph shows that the health priorities reflected in the MDGs - HIV, malaria, TB and other communicable diseases along with maternal deaths - together account for 32% of global mortality.
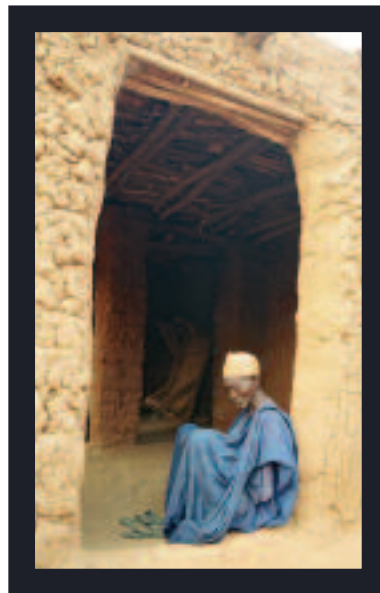
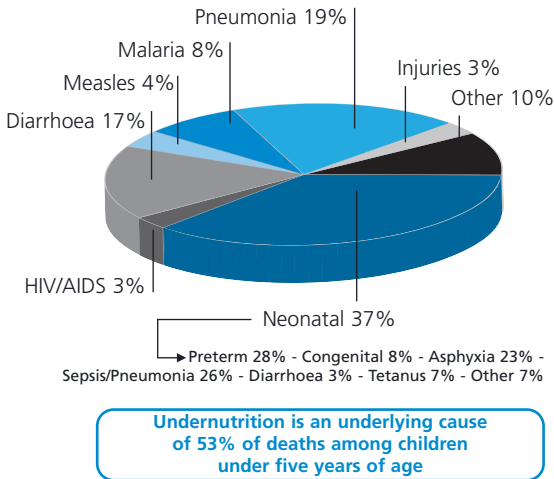*Figure 2: Worldwide distribution of causes of deaths, all ages, 2002*
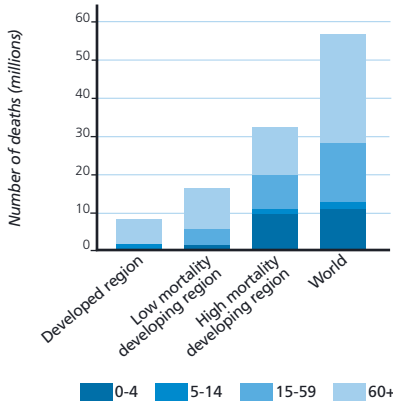
Global mortality: 57 million deaths in 2002

HIV, TB, malaria 10%

Other communicable diseases (including maternal causes) 22%

Injuries 9%

Noncommunicable diseases 59%
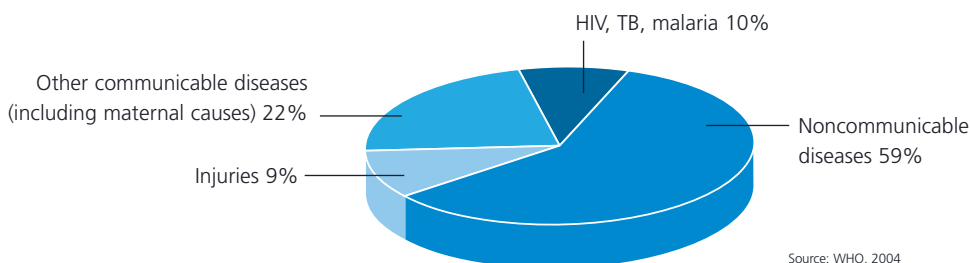
Source: WHO, 2004

Figure 3: Major causes of death worldwide among children under five years of age and neonates, annual average for 2000-2003

Pneumonia 19%
Malaria 8%
Measles 4%
Diarrhoea 17%
Injuries 3%
Other 10%
HIV/AIDS 3%
Neonatal 37%

→ Preterm 28% - Congenital 8% - Asphyxia 23% -
Sepsis/Pneumonia 26% - Diarrhoea 3% - Tetanus 7% - Other 7%

Undernutrition is an underlying cause of 53% of deaths among children under five years of age

Source: Bryce et al., 2005; WHO, 2005

Figure 4: Age distribution of global mortality, 2002

Number of deaths (millions)

Developed region
Low mortality developing region
High mortality developing region
World

■ 0-4 ■ 5-14 ■ 15-59 ■ 60+

Source: WHO, 2003

Developing countries have much higher rates of mortality in all age groups. Of greatest concern is child mortality: children under five years account for nearly 20% of deaths globally, and 99% of child deaths occur in developing countries. According to the most recent estimate (7), almost 90% of all child deaths are attributable to just six conditions (see Figure 3) and most could

be avoided through more widespread use of existing interventions that are simple, affordable, and effective (8, 9)[i]. To reduce the death toll, strategies to achieve the health MDGs should make much greater use of these known interventions, and develop a 'continuum of care' for mother and child that begins before pregnancy and extends through childbirth and into childhood (8).

Premature adult death is a less recognized but equally serious problem. As shown in Figure 4, there is a comparatively higher number of deaths in developing countries among adults aged 15-59 years (10). Just over 30% of all deaths in developing countries occur at these ages, as compared to 15% in richer regions. By contrast, almost 70% of deaths in developed countries occur beyond the age of 70, compared to approximately 30% in developing countries.

Furthermore, there is a growing burden of chronic and noncommunicable diseases in the poor countries. Until recently, major risk factors - such as blood pressure, cholesterol, tobacco, alcohol, obesity, and the chronic diseases linked to them - were thought to be a threat only in high-income countries. In fact, globally many of the deaths due to these risk factors occur in middle- and low-income countries (see Figure 5) (10). This change is part of a 'risk transition' reflecting shifting patterns of lifestyle and diet in developing countries.

Globally, the communicable disease burden among adults is declining, although HIV/AIDS has become the

i - These include oral rehydration therapy, antibiotics, antimalarial drugs and insecticide-treated bednets, vitamin A and other micronutrients, promotion of breastfeeding, immunization, and skilled care during pregnancy and childbirth.
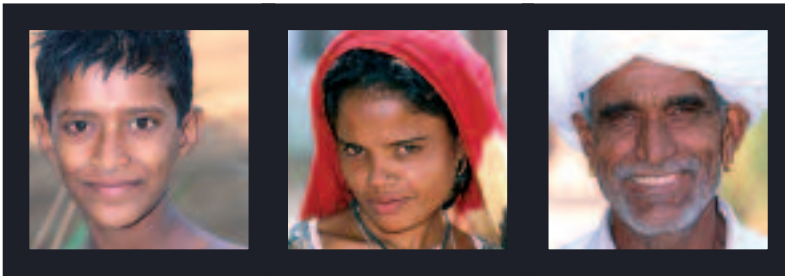
leading cause of mortality among adults aged 15-59 years - it is responsible for over 2.2 million deaths annually, which represent 14% of deaths globally in this age group. However, an almost equal proportion of deaths in this age group is caused by ischaemic heart disease and cerebrovascular disease combined, and as many again by road traffic accidents and intentional injuries (suicide, homicide, and war). Four of the highest 10 causes of death worldwide are related to smoking - making tobacco control an important strategy to prevent premature deaths among adults. Tobacco has an impact on each of the MDGs (see page 56).

Given the rapid spread of the double burden of disease due to ageing and health transitions in developing countries, adult mortality becomes a matter of global concern. However, according to the WHO mortality database only one-third of adult deaths in the world are registered, most of which are in high- and middle-income countries (11). Furthermore, mortality statistics substantially underestimate the burden of noncommunicable diseases among adults because they exclude non-fatal health outcomes such as neuropsychiatry conditions, blindness, and hearing loss. More comprehensive evidence is needed on non-fatal health outcomes in order to assess the magnitude of the global burden due to morbidity and disability, in particular among adults.

*Figure 5: Global distribution of mortality attributable
to 20 leading selected risk factors, 2000*

Source: WHO, 2002
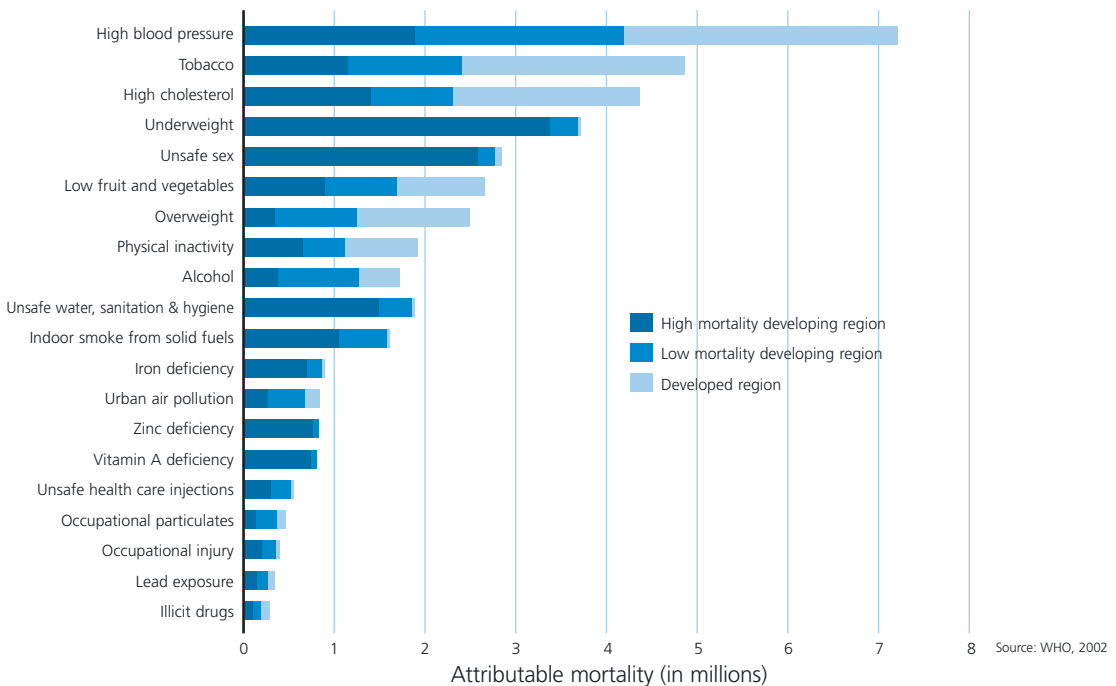
Tobacco and the MDGs

The implementation of tobacco control measures can have a positive impact on achieving each of the MDGs [i]

Eradicate extreme poverty and hunger `GOAL 1`

Data from many countries show that the poor are more likely to smoke. Indeed, many poor families spend more on tobacco than on health and education. Tobacco use can also contribute to national impoverishment. For example, the productivity cost of tobacco-related premature deaths is US$ 82 billion per annum in the United States of America. [ii]

Achieve universal primary education `GOAL 2`

The opportunity cost of tobacco use is very high for poor families. When a significant share of the family income is spent on tobacco, resources for child education and health care are limited. Moreover, child labourers are employed by the tobacco industry - which in turn affects education levels.

Promote gender equality and empower women `GOAL 3`

Young girls are smoking almost as much as young boys, and girls are also using non-cigarette tobacco products such as spit tobacco, bidis, and water pipes at similar rates as boys. The tobacco industry targets women and girls with seductive but false images of vitality, slimness, emancipation, sophistication, and sexual allure. Liberation, autonomy and even female friendship are being used in advertising in developed countries, and increasingly in regions where female roles have begun to change. It is thus important to incorporate a gender-perspective to tobacco control efforts.

Reduce child mortality and `GOAL 4`

Improve maternal health `GOAL 5`

Poor maternal nutrition and health are major causes of infant mortality. Money spent on tobacco deprives mothers and babies of food and possibly of medical attention. Women who use tobacco are at higher risk of having smaller babies, who in turn are more likely to suffer from ill-health and die. Second-hand tobacco smoke disproportionately affects women and children and increases respiratory and other diseases in children.

Combat HIV/AIDS, malaria and other diseases `GOAL 6`

Smoking causes further illness in those with HIV/AIDS, including bacterial pneumonia and AIDS-related dementia. Smoking causes sub-clinical tuberculosis to advance to clinical tuberculosis and increased deaths. Already, smoking is implicated in 50% of deaths from tuberculosis in India.

Ensure environmental sustainability `GOAL 7`

An estimated 200 000 hectares of forests and woodlands are cut down each year because of tobacco farming, and almost 5% of deforestation in developing countries where tobacco is grown is due to tobacco cultivation. [iii]

Furthermore, 10 to 20 million people could be fed by food crops grown instead of tobacco. [iv] *Moreover, tobacco causes degradation of the soil; pesticides used during tobacco cultivation lead to environmental degradation; and tobacco manufacturing produces 2.5 billion kilograms of waste each year.*

Develop a global partnership for development `GOAL 8`

The global problem of tobacco needs to be addressed from a global perspective. The WHO Framework Convention on Tobacco Control (WHO FCTC) is an instrument that aims to address tobacco control at the global level

i - *The millennium development goals and tobacco control. An opportunity for global partnership. Executive Summary.* Geneva, World Health Organization, 2004.
ii - Centers for Disease Control. Annual smoking-attributable mortality, years of potential life lost, and economic costs - United States, 1995-1999. *Morbidity and Mortality Weekly Report*, 2002, 51:300-303 (http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5114a2.htm, accessed 28 April 2005).
iii - Geist HJ. Global assessment of deforestation related to tobacco farming. *Tobacco Control*, 1999, 8:18-28 (http://tc.bmjjournals.com/cgi/reprint/8/1/18, 28 April 2005).
iv - Barry M. The influence of the US Tobacco industry on the health, economy, and environment of developing countries. *The New England Journal of Medicine*, 1991, 324:917-920.

The impact of globalization

Globalization - worldwide social and economic integration - has accelerated in the past decade. This has had direct and indirect consequences for health.

First, the increased movement of people and goods associated with globalization has facilitated the spread of communicable diseases. Throughout history, health threats have swept across continents irrespective of national borders (12). In the 21st century, diseases can spread even more rapidly across national borders and affect communities worldwide - as illustrated by the recent outbreaks of SARS and avian influenza. Second, globalization has also facilitated adverse lifestyle changes, including inappropriate diets and physical inactivity, which in turn affect health. For example, an increase in imported foods to developing regions has led to greater consumption of processed foods containing high levels of salt and saturated fats. This 'nutrition transition' - now increasingly evident in middle- and lower-income countries - has, together with reduced exercise, contributed to a higher prevalence of risk factors (e.g. high blood pressure, high cholesterol, and obesity) and the rising incidence of noncommunicable diseases described above (13).

Third, lower trade tariffs - negotiated as part of globalization processes - may have a positive effect by reducing the price of medical equipment and products. On the other hand, changing international rules concerning patent protection affect access to essential medicines (14).

The process of globalization has also highlighted the incongruity between threats to global health and the policy instruments that decision-makers use to manage these threats on a national level.

Neglected tropical diseases

The MDGs have helped to focus international attention on and mobilize much-needed resources for HIV/AIDS, TB and malaria - three of the world's most devastating diseases. Additionally - and importantly - Goal 6 of the MDGs recognizes that there are 'other major diseases' which affect at least one billion people. These include Buruli ulcer, Chagas disease, lymphatic filariasis (elephantiasis), schistosomiasis, intestinal parasites, leprosy, leishmaniasis, sleeping sickness (African trypanosomiasis) and others. Sometimes called the 'neglected diseases' because of their lack of both international attention and resources, these diseases thrive in resource-poor settings and tend to affect poor and marginalized groups. Most at risk are those living in remote areas, conflict zones, or urban slums - with little or no access to health, clean water, or other services.

Illness and disability caused by the neglected tropical diseases have tremendous social and economic impacts. These diseases cause the most severe health-related impairment of social and economic activities in the developing world, and they do so among the poorest populations.

Fortunately, many of these diseases can be controlled using low-cost technologies that are safe, rapidly effective, and easy to administer in resource-poor settings. When applied on a large scale, control strategies can interrupt transmission - helping to reduce the risk of onward infection for a limited time. These population-wide interventions (such as vector control and mass drug administration) do not discriminate between poor and non-poor - reducing the risk that excluded groups are further marginalized.

Efforts to achieve the MDGs should prioritize intensified control of neglected tropical diseases. This approach will contribute directly to the reduction of the communicable disease burden (Goal 6) and indirectly to efforts to reduce poverty and hunger (Goal 1).

It is clear that new rules and regulations for interaction between countries are required to better cope with globalized health risks. Increasingly, the global community is establishing mechanisms to tackle such risks.

For example, the extensive global surveillance network offers health authorities more time to plan for and respond to communicable disease outbreaks. However, such collective elements are generally too fragmented, and need:

■ better evidence on the global nature of health challenges and the effectiveness of recommended strategies to deal with them;

■ further development of mechanisms - including the refinement of international rules and regulations - to address global health threats (12).

WHO is addressing these issues through its efforts to strengthen international measures to control disease (e.g. WHO Framework Convention on Tobacco Control, and the revision of the International Health Regulations), and by strengthening surveillance and control measures (15).

1 - *The world health report 2004. Changing history.* Geneva, World Health Organization, 2004 (http://www.who.int/whr/2004/en/report04_en.pdf, accessed 28 April 2005).
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4 - Walker N, Schwartlander B, Bryce J. Meeting international goals in child survival and HIV/AIDS. *Lancet*, 2002, 360:284-289.
5 - Black RE, Morris SS, Bryce J. Where and why are 10 million children dying every year? *Lancet*, 2003, 361:2226-2234.
6 - *The world health report 2003. Shaping the future.* Geneva, World Health Organization, 2003 (http://www.who.int/whr/2003/en/whr03_en.pdf, accessed 28 April 2005).
7 - Bryce J et al. and the WHO Child Health Epidemiology Reference Group. WHO estimates of the causes of death in children. *Lancet*, 2005;365:1147-1152.
8 - *The world health report 2005. Make every mother and child count.* Geneva, World Health Organization, 2005 (http://www.who.int/whr/2005/whr2005_en.pdf, accessed 28 April 2005).
9 - Jones G et al. How many child deaths can we prevent this year? *Lancet*, 2003, 362:65-71.
10 - *The world health report 2002. Reducing risks, extending healthy life.* Geneva, World Health Organization, 2002 (http://www.who.int/whr/2002/en/whr02_en.pdf, accessed 28 April 2005).
11 - *WHO mortality database.* 2004. Geneva, World Health Organization, January 2005 (http://www3.who.int/whosis/menu.cfm?path=whosis,mort, accessed 28 April 2005).
12 - Store JG. Health and human security: politics, policies, and global institutions. In: Chen LC, Leaning J, Narasimhan V, eds. *Global health challenges for human security.* Cambridge, MA, Harvard University Press, 2003.
13 - Popkin BM. Nutrition in transition: the changing global nutrition challenge. *Asia Pacific Journal of Clinical Nutrition*, 2001, 10:S13-S18(6) (http://www.ingentaconnect.com/content/bsc/ajc/2001/00000010/A00100s1/art00211, accessed 28 April 2005).
14 - WTO agreements and public health. A joint study by the WHO and the WTO Secretariat. Geneva, World Health Organization and World Trade Organization, 2002 (http://www.who.int/trade/resource/wtoagreements/en/, accessed 28 April 2005).
15 - Shibuya K et al. WHO Framework Convention on Tobacco Control: development of an evidence based global public health treaty. *British Medical Journal*, 2003, 327:154-157 (http://bmj.bmjjournals.com/cgi/reprint/327/7407/154?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&author1=shibuya&andorexactfulltext=and&searchid=1114691928822_9741&stored_search=&FIRSTINDEX=0&sortspec=relevance&resourcetype=1, accessed 28 April 2005).

Conclusion

The health MDGs

focus

on some of the leading causes of death and illness in poor countries and among poor populations. HIV/AIDS, TB, and malaria as well as other communicable diseases and maternal deaths, account for roughly one third of global mortality (see Figure 2).

In addition, demographic trends and health transition - together with changes in the distribution of risk factors - have accelerated an epidemic of noncommunicable disease in developing countries (10). As a consequence, many poor countries are now facing a double burden of disease: ill-health associated with poverty and lack of development on the one hand, and chronic diseases associated with smoking, obesity, poor diet, and physical inactivity on the other.

Strategies to improve health should therefore address the totality of the disease burden in poor countries. In some cases, this will require substantial transformation of the scope of health systems and services, as well as much better quality data on the changing levels and causes of adult mortality. The MDGs provide a framework for action. For example, the MDG Goal 6 "Combat HIV/AIDS, malaria and other diseases" recognizes to need to address other important diseases and risk factors. An example includes "neglected tropical diseases" which are prevalent in poor communities and impose substantial burden of disease, but which have received too little attention to date (see page 57).

WHO continues to collect and analyse evidence on the changing disease burden and, towards this end, has defined a strategy for long-term development of core health indicators (see Chapter 7) to complement the health indicators specified in the MDGs. These will be reported on periodically. The strategy will gradually identify essential indicators for health, performance of health systems, and those areas that are inadequately reflected in the development goals. This scheme also takes into account indicators recommended by international initiatives, such as the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and the Global Alliance for Vaccines and Immunization (GAVI).

Concurrent with this analysis is an assessment of potential interventions that can be used to address the changing health challenges (10). As with child survival (9), we now know of feasible strategies to reduce disease burden among adults - including HIV/AIDS prevention and treatment, reduction of tobacco and alcohol use, prevention of cardiovascular disease, and treatment of mental illness.

WHO has a leading role to play in helping countries to prepare for emerging and evolving global health threats, by strengthening their public health infrastructure and health systems. Epidemics of both communicable and noncommunicable diseases cannot be controlled by domestic policies alone; specific commitments to address challenges that cross national boundaries are needed. WHO can contribute to the achievement of the MDGs by providing a better evidence base on the global nature of health challenges and recommended strategies to deal with them, and by supporting countries to address these challenges.