Globalisation—the increasing interconnectedness of countries and the openness of borders to ideas, people, commerce, and financial capital—has beneficial and harmful effects on the health of populations.14 The effect of the current phase of globalisation, or more properly reglobalisation, on health has been debated worldwide.1,4,5 Most attention has been directed towards control of infectious diseases and national security threats, provision of affordable medicines, and changes required in international trade and finance agreements to improve access to treatment. Broader policy concerns include the relation between globalisation and equity and the changing role of the state and governance for health.5

By contrast, the growing burden of non-communicable diseases—mainly heart disease, stroke, cancer, diabetes, and obesity—has been neglected. In this article, we assess the relation between globalisation and non-communicable disease epidemics, summarise the evidence in support of preventing such disease, and outline the required global and national responses.

The global burden of non-communicable disease

This year there will be an estimated 56 million deaths globally, of which 60% will be due to non-communicable diseases;6 16 million deaths will result from cardiovascular disease (CVD), especially coronary heart disease (CHD) and stroke; 7 million from cancer; 3·5 million from chronic respiratory disease; and almost 1 million from diabetes. Mental health problems are leading contributors to the burden of disease in many countries and contribute substantially to the incidence and severity of many non-communicable diseases including CVD and cancer.7

Table 1 shows that non-communicable diseases are leading causes of death in developing and developed countries. Only in Africa do communicable diseases cause more deaths than non-communicable diseases; this year 2·8 million CVD deaths will occur in China and 2·6 million in India. Non-communicable diseases contribute substantially to adult mortality with the highest rates being in central and eastern European countries (figure).7 They add to health inequalities within and between countries, mainly affecting poor populations largely because of inequalities in the distribution of major risk factors.4,5 The global pattern of death will increasingly be dominated by non-communicable diseases; by 2020, CHD and stroke are expected to be the leading causes of death and loss of disability-adjusted life years.4

Causes of non-communicable disease

The burden of non-communicable disease results from past and cumulative risks; the future burden will be determined by current population exposures to risk factors. Although the major risk factors for non-communicable disease epidemics are more complex than those for infectious disease, they are well known and account for almost all such events;11,12 many are common to the main categories of non-communicable diseases and most are modifiable and operate in the same manner in all regions of the world, with some quantitative differences.13

The ageing of populations, mainly due to falling fertility rates and increasing child survival, are an underlying determinant of non-communicable disease epidemics. Additionally, global trade and marketing developments are driving the nutrition transition towards diets with a high proportion of saturated fat and sugars. This diet, in combination with tobacco use and little physical activity, leads to population-wide atherosclerosis and the widespread distribution of non-communicable disease.

Table 2 shows the contribution of the major non-communicable disease risk factors to the burden of disease. In developed countries, seven of the ten leading risk factors contributing to the burden of disease are for non-communicable disease, compared with six and three of ten in developing countries with low and high rates of mortality, respectively. In most developing countries, non-communicable disease risk factor levels have increased during the past decade, portending an increase in the rate of non-communicable diseases in the next two decades.
Effects of globalisation

Financial and economic globalisation and the World Trade Organization (WTO) rules that regulate trade, can improve population health status by increasing national incomes. However, the poorest and most excluded countries have not experienced this benefit.13 Global rules and power imbalances constrain the ability of countries and national health services to respond adequately to health problems. Although national governments can shape international trade rules their influence has been limited by insufficient resources, expertise, and technical support; although advances were made in promoting access to pharmaceuticals at the WTO Ministerial Meeting in Doha in 2001.15

Globalisation directly and indirectly affects the development of non-communicable disease epidemics.1 The indirect effects of globalisation are mediated by national economic performance and act through changes in household income, government expenditure, the exchange rate, and prices. National income is especially important because of its effects on public sector resources available for health and on household health-related behaviours—in particular in low-income households. The direct negative health effects of the modern phase of globalisation are illustrated by the increasingly globalised production and marketing of tobacco, alcohol, and other products with adverse effects on health.22,34

Protection of domestic producers by many developed countries and their regional organisations, impacts on non-communicable disease epidemics. For example, US and European Union (EU) agricultural subsidies limit competition from primary producers of fresh produce in developing countries and seriously reduce these countries’ national incomes. Subsidisation of tobacco production by the EU shows the continuing power of tobacco interests and is a major policy anomaly hindering progress on tobacco control; the EU spends about €1 billion on tobacco production subsidies and only €10–20 million on agricultural diversification and tobacco control programmes.17 The importance and urgency of removing such agricultural subsidies was endorsed in Doha and again during the Johannesburg World Summit on Sustainable Development. Recent pronouncements by the EU suggest that subsidies tied to production might soon be lifted.

Modern information and communication technologies have positive and negative effects on health. Global marketing of tobacco and alcohol, and salty, sugary, and fatty foods now reaches most parts of most countries. A significant proportion of global marketing is targeted at children younger than 14 years. Worldwide, 600 million urban-based 5–14-year-olds spend more than US$200 billion per year on themselves and influence parental spending of more than ten times that amount.18 A large proportion of this money is spent on fast food, soft drinks, cigarettes, and alcohol. Advertisers increasingly use sophisticated means to ensure that their messages “slip below the radar of critical thinking”;21 take advantage of weak regulatory environments; and have used false, misleading, or deceptive advertising to reach their targets.

Globalisation and the tobacco pandemic

Tobacco is the only consumer product that, when used as recommended by its manufacturers, eventually kills half its regular users. Transnational tobacco companies are aggressively exploiting the potential for growth in tobacco sales in developing countries. The main targets of the industry and associated marketing campaigns are women and young people,20 in many developing countries, marketing strategies are used that have long been banned in many developed countries. Tobacco companies have consistently denied the adverse effects of tobacco, especially via passive smoking.19,22 More than 30 years ago, Philip Morris scientists were concerned that “the public have not yet arrived at the consensus that smoking causes heart disease, so cardiovascular developments must be watched extremely carefully”.23 The response was to publicly deny evidence of adverse effects and encourage scientists to carry out spurious research aimed at confusing the public and delaying action. For many years, tobacco companies have deliberately subverted the tobacco control efforts of WHO.24

There is a strong link between increased tobacco consumption and free trade and tobacco-related foreign direct investment.25 In the 1980s, bilateral agreements negotiated between the USA and several Asian countries under threat of sanctions resulted in an overall increase in
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UN partners to define complementary roles in tackling governments, consumer groups, multinationals, and extensive consultations are underway between WHO, relation to chronic diseases. The process has already developed a strategy to address diet and physical activity in multinationals is essential if progress is to be made in international consumer groups and commercial food forms of interaction are critical. Interaction with control. Unlike tobacco control, partnerships and new powerful opposition.41

Tobacco control
Table 3 shows progress in developing a global response to the tobacco threat and provides a model for response to non-communicable disease epidemics. An international treaty directed towards the control of tobacco use has been adopted after 3 years of negotiation. The Framework Convention on Tobacco Control (FCTC) is linking the science of tobacco control with the political process of negotiating an international treaty and possible associated protocols on tobacco control priorities, such as advertising restrictions, illicit trade in tobacco products, packaging and labelling, and product regulation.42 The process of developing the FCTC has led to a coherent UN system-wide approach to tobacco control with demand reduction as the primary goal. This global coherence is being translated into equally important and complementary actions within countries.43

Global advocacy
Advocacy is scarce at the global level for non-communicable disease prevention and control, and what there is tends to be fragmented and risk-factor or disease specific. The lack of connection between evidence and action in the USA44 applies globally. Many potential advocacy groups have their origins in specialist organisations of health professionals, and have not coalesced to become powerful promoters of broad prevention and control policies.45 This lack of advocacy for health promotion contrasts with the growing dominance of commercial and consumer groups who have placed treatment at the centre of health policy debates and funding priorities. Stronger and broader alliances of major health professional bodies, consumer groups, enlightened industries, and academics are needed to effectively prioritise prevention of major risk factors for non-communicable diseases.

Partnerships and interactions
WHO and governments alone cannot address the challenges of non-communicable disease prevention and control. Unlike tobacco control, partnerships and new forms of interaction are critical. Interaction with international consumer groups and commercial food multinationals is essential if progress is to be made in improving the quality of and access to healthy food and increased physical activity. WHO has started to develop a strategy to address diet and physical activity in relation to chronic diseases. The process has already led to the development of dietary guidelines, and extensive consultations are underway between WHO, governments, consumer groups, multinationals, and UN partners to define complementary roles in tackling obesity, CVD, and diabetes. Several food multinationals have announced changes in product competition and marketing practices; if widely implemented, these changes could harness the benefits of globalisation and promote public health.46 WHO is also working with the alcohol industry to assess whether its self-regulatory approaches will reduce marketing to young people and promote safe drinking.

Capacity and resources
National capacity for non-communicable disease prevention and control is weak47 and the institutional response to capacity development has not kept pace with epidemiological transition. Substantial investment is needed in the capacity of countries to plan and manage health projects for infectious disease48 and even more so for non-communicable disease. Donors and governments have been reluctant to invest in national institutions and infrastructures. Global commitment is needed to assure sustainable progress in policy development and implementation for non-communicable diseases, among other aspects of public health. During the past two decades, WHO’s tropical disease research programme, funded by a consortium of donors, has developed an impressive network of communicable disease researchers49 and provides a useful model for efforts in non-communicable disease. The USA National Institutes for Health, through their Fogarty International Center, and Canada’s International Development Research Center have begun to invest modestly in tobacco control research in developing countries; this needs to be expanded to other aspects of non-communicable diseases.

Global norms and standards
There is an increasing need to establish global norms, both legally binding and non-binding, across many spheres to balance otherwise unrestrained influences of powerful actors. Relevant public health professionals need to master technical issues in international trade regulation. They could then influence bodies such as WTO, where health issues are increasingly considered,46 and develop stronger WHO-led norms that could be used to resolve trade disputes about products with health effects. The proposed FCTC is one example of a legally-binding global norm; non-binding instruments important for non-communicable disease control include the Codex Alimentarius Commission (with its probable increased focus on food labelling and health claims), but more will be needed. Treaties are not the solution to the complex issues related to nutrition transition or physical inactivity. Multistakeholder and intergovernmental mechanisms and other non-binding measures are better options, especially in relation to children and to marketing of alcohol and foods. Such approaches are already being used in improving labour conditions, environmental quality, and human rights.48

Reorientation of health services
Untold lives are lost prematurely because of inadequate acute and long-term management of non-communicable disease, many of which have simple and cheap treatments. For example, excellent evidence shows the effectiveness of fairly cheap interventions for CVD.49 Even in wealthy countries, the potential of these interventions for secondary prevention is far from fully utilised50 and the situation in poorer countries is even less satisfactory. Effective means of preventing, treating, and providing palliative care for cancer exist51 but are not implemented in most countries. There are many opportunities for
coordinated non-communicable disease risk reduction, care, and long-term management; for example, smoking cessation is a priority for all patients.  

Conclusion

The pace of globalisation of the major risks for non-communicable diseases is increasing. However, the prospects for non-communicable disease prevention and control are only slowly improving. Sustained progress will occur when governments, relevant international agencies, non-governmental agencies, and civil society acknowledge that public health must include non-communicable diseases and their risk factors. The challenges are enormous and the ongoing tobacco wars indicate that progress will remain slow until the response to non-communicable disease epidemics is scaled up in a manner commensurate with their burden.

Conflict of interest statement

Both authors are full-time employees of WHO.

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References


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**Uses of error**

**Surgical planning error: what’s in a name?**

*Mark Bernstein*

A woman was referred with a 1-year history of intractable left leg sciatica refractory to conservative therapy. Neurological examination revealed signs of nerve root irritation but no hard neurological deficit. MRI from another hospital showed a large disc herniation to the left side between the fourth and fifth lumbar vertebrae.

She was offered lumbar microsurgical discectomy. On the morning of surgery she was given a general anaesthetic, and placed in the knee-chest position. After the localising radiograph was done to establish the correct level, but before the skin was cut, the junior resident noticed that the name on the actual MRI sheet was not the patient’s even though the radiograph folder had the patient’s correct name on it.

An urgent MRI was done while she remained under general anaesthesia; this revealed a disc herniation to the left side at the level below (ie, between the fifth lumbar vertebra and the sacrum). Surgery was then done at the correct level with an excellent outcome and the patient remains pain-free 3 years later.

Many purists would argue that the patient should have been awakened after the error was discovered, but I felt we should avoid a wasted anaesthetic for her if possible. However that issue is peripheral to the main message here. The message is simply that busy clinicians must carefully examine the names on all imaging studies despite the fact that the imaging study the patient brings matches his/her clinical picture well. In this case the patient and her family were openly informed that two errors had been committed: (1) a mix-up by the hospital where the MRI was reported; and (2) failure of the neurosurgeon to confirm that the MRI in hand was indeed that of the patient.

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