Preventing CHRONIC DISEASES
a vital investment
part four
TAKING ESSENTIAL STEPS
This part of the report outlines the steps that ministries of health can follow to implement successfully the interventions presented in Part Three. The opportunity exists to make a major contribution to the prevention and control of chronic diseases, and to achieve the global goal for chronic disease prevention and control by 2015.

Each country has its own set of health functions at national and sub-national levels. While there cannot be a single prescription for implementation, there are core policy functions that should be undertaken at the national level. A national unifying framework will ensure that actions at all levels are linked and mutually supportive. Other government departments, the private sector, civil society and international organizations all have crucial roles to play.
Providing a unifying framework – the role of government

A sound and explicit government policy is the key to effective prevention and control of chronic diseases. This chapter outlines a stepwise framework that ministries of health can use to create a policy and regulatory environment in which other sectors can operate successfully. The guidance and recommendations provided in this chapter may be used by national as well as sub-national level policymakers and planners.

- The national government’s unifying framework for chronic disease prevention and control will ensure that actions at all levels and by all sectors are mutually supportive.

- Integrated prevention and control strategies are most effective – focusing on the common risk factors and cutting across specific diseases.

- Comprehensive public health action requires a combination of interventions for the whole population and for individuals.

- Most countries will not have the resources immediately to do everything that would ideally be done. Those activities which are most feasible given the existing context should be implemented first: this is the stepwise approach.

- Because major determinants of the chronic disease burden lie outside the health sector, intersectoral action is necessary at all stages of policy formulation and implementation.

- Locally relevant and explicit milestones should be established for each step and at each level of intervention, with a particular focus on reducing health inequalities.
# The Stepwise Framework

## Planning Step 1
Estimate Population Need and Advocate for Action

## Planning Step 2
Formulate and Adopt Policy

## Planning Step 3
Identify Policy Implementation Steps

<table>
<thead>
<tr>
<th>Policy Implementation Steps</th>
<th>Population-wide Interventions</th>
<th>National Level</th>
<th>Sub-national Level</th>
<th>Interventions for Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation step 1 CORE</td>
<td>Interventions that are feasible to implement with existing resources in the short term.</td>
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<tr>
<td>Implementation step 2 EXPANDED</td>
<td>Interventions that are possible to implement with a realistically projected increase in, or reallocation of, resources in the medium term.</td>
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<td></td>
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</tr>
<tr>
<td>Implementation step 3 DESIRABLE</td>
<td>Evidence-based interventions which are beyond the reach of existing resources.</td>
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</table>

Chapter One. Providing a unifying framework – the role of government
The stepwise framework offers a flexible and practical approach to assist ministries of health in balancing diverse needs and priorities while implementing evidence-based interventions.
OVERVIEW

The stepwise framework includes three main planning steps and three main implementation steps, which will be described in detail later in this chapter.

The first planning step is to assess the current risk factor profile of the population. This is followed by making the case for action.

The second planning step is to formulate and adopt chronic disease policy.

The third planning step is to identify the most effective means of implementing this policy. The chosen combination of interventions can be considered as levers for putting policy into practice with maximum effect.

Planning is followed by a series of implementation steps: core, expanded and desirable. The chosen combination of interventions for core implementation forms the starting point and the foundation for further action.

This chapter suggests specific milestones for different stages of implementation. These are not prescriptive, because each country must consider a range of factors in deciding the package of interventions that constitute the first, core implementation step, including the capacity for implementation, acceptability and political support.

THE REALITY OF PLANNING

While the stepwise framework has the benefits of offering a rational process and rallying multiple disciplines around an acceptable course of action, it does not automatically resolve the difficulties encountered in planning chronic disease prevention and control programmes. The reality is that public health action is incremental and opportunistic, reversing and changing directions constantly. The different planning and implementation steps might in fact overlap with one another depending on the unique situation.

The priority accorded to different health programmes is partly a result of the broader political climate. It is important to identify, and ideally predict, the national or sub-national political climate and to capitalize on opportunities.

The priorities of individual political leaders can be dramatically shaped by private experiences. There are many examples of leaders who, after being personally touched by disease, have subsequently made that disease a new national priority for action. These people can be important allies for change.
Although some disease burden information may be available, the distribution of risk factors among the population is the key information required by countries in their planning of prevention and control programmes. This information predicts the future burden of disease; it must then be synthesized and disseminated in a way that successfully argues the case for the adoption of relevant policies.

**ESTIMATING NEED**

WHO has developed a tool to help low and middle income countries assess their risk factor profiles – the STEPwise approach to Surveillance (STEPS).

WHO STEPS focuses on building capacity in low and middle income countries to collect small amounts of high-quality risk factor data:

- Step 1: collect questionnaire-based information about diet and physical activity, tobacco use and alcohol consumption;
- Step 2: use standardized physical measurements to collect data on blood pressure, height and weight;
- Step 3: expand physical measurements with the collection of blood samples for measurement of lipids and glucose status.

Although most countries have the resources for collecting data in the first two stages, the third is resource-intensive and not suited for all settings or sites. STEPS is designed to allow flexibility for local adaptation, and also offers expanded modules (such as oral health and stroke) while encouraging collection of standardized data (7).
SPOTLIGHT

ADVOCATING FOR ACTION IN LATIN AMERICA AND THE CARIBBEAN

The WHO Regional Office for the Americas (AMRO) held a series of workshops in collaboration with the International Union Against Cancer to advocate for cervical cancer prevention policies and programmes in Latin America and the Caribbean. More than 300 key stakeholders from ministries of health, nongovernmental organizations, medical and professional associations, and international agencies participated.

The workshops were structured to help build alliances between national governments and other stakeholders and to create a forum for the exchange of technical information. The objectives were to achieve consensus on the need for, and the process by which, cervical cancer prevention and control could be placed on the agenda, and to encourage countries to strengthen or develop their cervical cancer prevention and control programmes.

Following the workshops, more than 10 countries in the region critically assessed their programmes with assistance from AMRO, devised strategic programme plans and received seed funding to implement new strategies for cervical cancer prevention. Through meetings with ministers of health, joint planning and technical cooperation agendas have been established, and in the Caribbean Caucus of Ministers of Health a strategic plan was presented and adopted for a sub-regional approach to screening and treatment.

ADVOCATING FOR ACTION

Information on population need must be synthesized and disseminated in a way that encourages policy action at national level. Policy-makers should be informed of national trends in risk factors, the current and projected problem of chronic diseases in the country, and the existence of cost-effective interventions for prevention and control.

Communication methods for influencing policy-makers include:

- media features, which influence the views of the general public (including, where relevant, voters) as well as policy-makers directly;
- identification and engagement of community leaders and other influential members of society who can spread the message in different forums;
- one-on-one meetings with policy-makers.

MARIAM JOHN wants to be a health minister when she grows up. PAGE 144
The second planning step, after estimating population need and advocating for action, is to formulate and adopt policy. A policy sets out the vision for prevention and control of the major chronic diseases and provides the basis for action in the next 5–10 years. It is accompanied by plans and programmes that provide the means for implementing the policy.

The main goals of a public health policy for chronic disease prevention and control are similar to those of any health policy:

- improve the health of the population, especially the most disadvantaged;
- respond to needs and expectations of people who have chronic diseases;
- provide financial protection against the costs of ill-health.

In all countries, a national policy and planning framework is essential to give chronic diseases appropriate priority and to organize resources efficiently.

At the sub-national level, complementary policies, plans and programmes can be developed at the state, province, district, and/or municipal levels to respond to local circumstances.

GUIDING PRINCIPLES

Chronic disease policy should be based on the following guiding principles:

- comprehensive and integrated public health action;
- intersectoral action;
- a life course perspective;
- stepwise implementation based on local considerations and needs.

For many years the scale of the chronic disease problem in Indonesia had been concealed by a lack of reliable information. Prevention and control activities were scattered, fragmented and lacked coordination. Periodic household surveys later revealed that the proportion of deaths from chronic diseases doubled between 1980 and 2001 (from 25% to 49%). The economic implications and the pressing need to establish an integrated prevention platform at national, district and community levels became clear.

In 2001, inspired by the WHO Global Strategy on the Prevention and Control of Noncommunicable Diseases, Indonesia’s Ministry of Health initiated a broad consultative process that resulted in a national consensus on chronic disease policy and strategy. A collaborative network for chronic disease surveillance, prevention and control was established, involving health programmes, professional organizations, nongovernmental organizations, educational institutions and other partners from both the public and private sectors (including those not directly concerned with health). The WHO STEPS manual was translated into Indonesian and implemented as part of the overall surveillance approach.

A national policy and strategy document was published by the Ministry of Health in 2004. The document recommends targeting major diseases that share common risk factors through surveillance, health promotion, prevention and reform of health services. The need for integrated, efficient and sustainable surveillance, prevention and control efforts has been recognized as a vital component of the national health development agenda.
STEP 2
adopt policy

COMPREHENSIVE AND INTEGRATED PUBLIC HEALTH ACTION
Comprehensive and integrated policies and plans are vital, because they minimize overlap and fragmentation in the health system. They should therefore:

» cut across specific diseases and focus on the common risk factors;
» encompass promotion, prevention, and control strategies;
» emphasize the management of the entire population over the management of specific subgroups;
» integrate across settings, such as health centres, schools, workplaces and communities;
» make explicit links to other government programmes and community-based organizations.

Programme implementation itself should also be comprehensive and integrated because:

» it is both impossible and unnecessary to have specific programmes for different chronic diseases;
» without a national organizing framework, there is a risk that initiatives may be developed or implemented independently of each other, and opportunities for synergies may not be realized.

INTERSECTORAL ACTION
Intersectoral action is necessary because, as reviewed in Part Two of this report, the underlying determinants of the chronic disease burden lie outside the health sector. These include poverty, lack of education and unhealthy environmental conditions. More proximal chronic disease risks, such as unhealthy diets and physical inactivity, are also influenced by sectors outside health, such as transport, agriculture and trade.

An intersectoral committee should be created for policy-making. At the national level, it should be convened by the ministry of health, but with representation from other relevant ministries and organizations.

Different sectors may have different and sometimes even conflicting priorities. In such situations, the health sector needs the capacity to provide leadership, to provide arguments for a win-win situation and to adapt to the agendas and priorities of other sectors.

SPOTLIGHT
CHINA’S NATIONAL STRATEGY FOR CHRONIC DISEASE CONTROL
China’s Ministry of Health, with the support of WHO and the cooperation of relevant sectors, has been developing a national plan for chronic disease prevention and control, which focuses on cardiovascular diseases, cancer, chronic obstructive pulmonary disease and diabetes. It is expected to be applicable to both the medium and long term, and include an action plan for 3–5 years. This follows an earlier Programme of Cancer Prevention and Control in China (2004–2010) developed by the Ministry of Health.

The national plan aims to reduce the overall level of risk factors, to improve early detection and treatment and to provide accessible and affordable health services. It includes the development of a national system of prevention and control, which will require comprehensive financing, multisectoral cooperation and the establishment of expert committees at the national and local levels. It will also involve capacity building and the establishment of a national surveillance system, as well as periodic surveys of nutrition and health (2).
LIFE COURSE PERSPECTIVE
Risk factors accumulate from fetal life through to adulthood. Because risk behaviours are commonly established in childhood and adolescence, prevention strategies should include school health programmes focused on promoting healthy diets, physical activity, and tobacco abstinence. Adolescents who have already adopted risk behaviours such as tobacco use, or who have intermediate risks such as obesity, should be targeted for specialized interventions. Population-wide approaches such as smoke-free environments, advertising bans and taxation of tobacco are also essential to protect child and adolescent health.

Rapid population ageing is another factor to be taken into consideration in policy development. The challenge for health policy-makers is to delay the onset of chronic diseases, and to improve functioning and quality of life.

STEPWISE IMPLEMENTATION
Most countries will not have the resources immediately to do everything implied by the overall policy. Core interventions that are feasible to implement within existing resources in the short term should be chosen first. Other activities are included in the “expanded” and “desirable” steps of implementation.
The following factors have been associated with success in policy formulation and adoption:

- a high-level political mandate to develop a national policy framework;
- a committed group of advocates who may be involved with estimating need, advocating for action, and developing the national policy and plan;
- international collaboration providing political and technical support;
- wide consultation in the process of drafting, consulting, reviewing and redrafting the policy until endorsement is achieved;
- an awareness that the process of consultation is as important as the content in generating support and ownership;
- development and implementation of a consistent communication strategy for all stages of the process;
- clarity of vision on a small set of outcome-oriented objectives.

**SPOTLIGHT**

**TONGA’S INTERSECTORAL POLICY DEVELOPMENT**

During the 1980s and 1990s, Tonga became increasingly aware of the rising number of people with cardiovascular diseases, diabetes and complications of diabetes such as gangrene, kidney failure and blindness. The prevalence of diabetes in the adult population doubled to over 15% in 25 years, although the majority remained undiagnosed and untreated.

In 2003 clinicians, concerned public health staff and representatives of overseas development agencies met and conceived a national chronic disease strategy. Extensive consultations with stakeholders were held, and a survey was conducted to identify ongoing interventions.

The Government, churches, nongovernmental organizations and development agencies participated in a follow-up workshop. They produced the National Strategy to Prevent and Control Noncommunicable Diseases, based on the stepwise approach. A multisectoral committee was formed to coordinate the implementation of the strategy and advise the government, and four sub-committees on Physical Activity, Healthy Eating, Tobacco Control and Alcohol Misuse took responsibility for operational planning and implementation.

The strategy was officially launched with national media coverage in March 2004 and later endorsed by cabinet.

Important achievements include:

- completion of a national survey on chronic diseases and risk factors, revision of the tobacco control act;
- development of a complete proposal to parliament for the establishment of a Health Promotion Unit funded by tobacco tax;
- inclusion of chronic disease control in the Millennium Development Goals for Tonga.

The strategy document has proved to be important in channelling external support and focusing resources on key interventions.
The third planning step is to identify the best means by which policy can be implemented. The comprehensive approach requires a range of interventions to be implemented in a stepwise manner, depending on their feasibility and likely impact in the local conditions and taking into account potential constraints and barriers to action. Some of the selected interventions are primarily under the control of the health ministry, for example realigning health systems for chronic disease prevention and control. Others are primarily the responsibility of other government sectors or the legislative branch. In these cases, the ministry of health, as the primary steward of population health, should ensure coordination in cooperation with government partners.

A key decision – whether at global, regional, national or local level – is on how, where and when to proceed with different steps of implementation. This requires a blend of evidence, experience, judgement and advocacy. The most feasible activities should be selected first. Selecting a smaller number of activities and doing them well is likely to have more impact than tackling a large number and doing them haphazardly. Countries should also try to ensure that any new activities are complementary with those already under way locally, at state or province level, and nationally.
HEALTH FINANCING

Health financing is an important mechanism by which policies and plans are translated into reality. Financing decisions based on principles of equity and effectiveness ensure adequate health-care access and coverage for all. Various financing components (funding, resource allocation, contracting and reimbursement) should be used to encourage the implementation of chronic disease prevention and control policies and plans.

<table>
<thead>
<tr>
<th>Implementation step</th>
<th>Suggested milestones</th>
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<tbody>
<tr>
<td><strong>STEP 1  CORE</strong></td>
<td>» A line item for chronic disease prevention and control is included in the annual health budget.</td>
</tr>
<tr>
<td><strong>STEP 2  EXPANDED</strong></td>
<td>» Tobacco taxes are implemented and revenue is earmarked for population-wide interventions to reduce risk and promote health.</td>
</tr>
</tbody>
</table>
| **STEP 3  DESIRABLE** | » The health financing system is reviewed and harmonized across diseases and levels of care, and designed to maximize equity and effectiveness.  
» The health benefit package includes preventive treatments and long-term care for chronic diseases. |

As a first step, it is important that a line item for chronic disease prevention and control is included in the annual health budget. This will ensure that these activities are not lost among competing priorities.
As reviewed in Part Three, an effective policy instrument for reducing the use of tobacco products is to tax them. Taxation also influences the consumption of food and drinks. Revenue from dedicated taxes can be earmarked for specific purposes. These taxes do not necessarily become part of consolidated revenue but can be allocated directly to a specific purpose such as population-wide prevention interventions.

A number of country and state governments have dedicated part of their tax revenues for particular health promotion initiatives. One innovative model to administer these tax revenues is the health promotion foundation (see spotlight, left).

The benefit package for chronic diseases should allow for preventive interventions as well as covering appropriate management of acute symptoms and long-term care (including rehabilitation and palliative and hospice care).

Financing long-term care is a major and growing challenge, as it is a major cost to health systems. Some countries use special premiums and general taxation funding, alone or in combination. Home-based care should also be included in financing schemes.
LEGISLATION AND REGULATION

As reviewed in Part Three, legislation and regulation are fundamental elements of effective public health policy and practice.

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<tr>
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<tbody>
<tr>
<td><strong>STEP 1</strong> <strong>CORE</strong></td>
<td>Tobacco control legislation consistent with the WHO Framework Convention on Tobacco Control is enacted and enforced.</td>
</tr>
</tbody>
</table>
| **STEP 2** **EXPANDED** | Food standards and food labelling legislation are enacted.  
Action is taken to limit and control food marketing and advertising to children, to discourage availability of high fat, high salt and high sugar foods for children, and to promote eating of fruit and vegetables. |
| **STEP 3** **DESIRABLE** | Legislation is enacted to protect the rights of people with chronic disease and disability. |

**SPOTLIGHT**

COUNTRIES WITH SMOKE-FREE WORKPLACE LAWS

Smoke-free workplace legislation is being enacted in many countries to protect workers from being forced to breathe tobacco smoke.

- Bhutan has imposed a nationwide ban on smoking in all public places, including restaurants and bars.
- Cuba has passed legislation to ban smoking in offices, stores, theatres, buses and taxis, schools, sports facilities, and air-conditioned public areas.
- India has passed legislation to ban smoking in public places, tobacco advertising in the media, and sales to minors.
- Ireland has a nationwide smoke-free workplace law, including pubs, bars and restaurants. Polls show high rates of acceptance and compliance.
- New Zealand has smoke-free workplace legislation that applies to pubs, clubs, restaurants, and school grounds.
- Norway has smoke-free workplace legislation that applies to bars and restaurants.
- Italy has implemented smoke-free workplace legislation in all enclosed public spaces, including restaurants and bars.
- Hundreds of localities in Australia, Canada and the United States have implemented smoke-free workplace laws.

Specific legislative and regulatory policies that enhance prevention and control of chronic diseases include measures that:

- ban tobacco smoke in all indoor places;
- enforce bans on sales of tobacco products to youth;
- incorporate mandatory health warning labels on tobacco products;
- enforce tobacco advertising bans (including sponsoring of sports and cultural events);
- mandate appropriate labelling for foods sold in the domestic market, including warning statements, nutrient claims and nutrition information profiles;
- ensure that people with chronic disease and disabilities are accorded full human rights.
**IMPROVING THE BUILT ENVIRONMENT**

As reviewed in Part Three, built environment interventions have considerable potential to increase physical activity patterns. Urban design can positively influence walking, cycling and other forms of active transport.

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<th>Implementation step</th>
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<tbody>
<tr>
<td><strong>STEP 1 CORE</strong></td>
<td>Leaders and decision-makers in urban design and transport sectors are informed of the impact that design and transport can have on physical activity patterns and chronic diseases.</td>
</tr>
<tr>
<td><strong>STEP 2 EXPANDED</strong></td>
<td>Built environment and transport planning, design and construction decisions incorporate physical activity components.</td>
</tr>
<tr>
<td><strong>STEP 3 DESIRABLE</strong></td>
<td>Future urban planning, transport design and construction of new buildings are conducive to active transport and physical activity.</td>
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</table>

**SPOTLIGHT: IMPROVING THE BUILT ENVIRONMENT IN INDIA**

In Chennai, India, the prevalence of diabetes is particularly high among middle income residents and people who undertake little physical activity. Realizing the importance of physical activity, residents mobilized resources from philanthropists and collected donations from residents to construct a park. A piece of land was identified and the local municipality was approached for building permission. The construction of the park was completed in 2002, with bushes, trees, fountains and a play area for children. The residents contribute a nominal annual fee for maintenance of the park.

A follow-up survey showed that there was a threefold increase in people undertaking regular physical activity (from less than 15% to 45%). Based on this success story, which was extensively reported in the local newspapers, another community in Chennai has also built a park (4).

Specific built environment interventions, such as the following, have considerable potential to increase physical activity patterns:

- provision of easily accessible, well-lit stairs in multi-story buildings;
- provision of cycle and walking paths in urban and rural communities;
- provision of accessible sports, fitness and recreation facilities;
- increased compact urban design rather than urban sprawl.
ADVOCACY INITIATIVES
As reviewed in Part Three, advocacy initiatives can support the initiation of national policies for chronic disease prevention. Advocacy includes a range of strategies for communicating risk, increasing motivation to change, and disseminating ideas through communities and societies.

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<th>Implementation step</th>
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<tr>
<td><strong>STEP 1 CORE</strong></td>
<td>» Opinion leaders are identified and engaged systematically to inform others about the growing burden of chronic diseases, the existence of effective interventions, and the comprehensive response that is needed.</td>
</tr>
<tr>
<td><strong>STEP 2 EXPANDED</strong></td>
<td>» Advocacy initiatives are strengthened to promote risk factor reduction among target populations.</td>
</tr>
<tr>
<td><strong>STEP 3 DESIRABLE</strong></td>
<td>» Comprehensive and integrated advocacy initiatives are implemented and incorporate multiple communication methods.</td>
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SPOTLIGHT
PROMOTING FRUIT AND VEGETABLE INTAKE IN ENGLAND
Current average consumption of fruit and vegetables in the United Kingdom is around three portions per day. The 5 A DAY Programme aims to increase this to the recommended daily level of around five portions, thereby contributing to the achievement of national targets on reducing mortality rates from cardiovascular disease and cancer, halting the year-on-year rise in obesity among children, and reducing inequalities in life expectancy.

The programme consists of several areas of work underpinned by an evaluation and monitoring programme. The 5 A DAY communications programme provides information and advice for consumers through television and radio advertising, leaflets, posters, booklets, a website and magazine adverts and articles, and a 5 A DAY logo has been developed. Local and national partners include industry, government departments and other agencies. The School Fruit and Vegetable Scheme has led to nearly 2 million children aged four to six years receiving a free piece of fruit or vegetable each school day. A survey in October 2003 found that over a quarter of children and their families reported that they were eating more fruit at home after joining the scheme, including in lower socioeconomic groups. Research from December 2004 indicated that 37% of people claimed to have eaten “a lot more” or “a little more” fruit and vegetables over the previous 12 months. There was a year-on-year increase in awareness of the 5 A DAY message from 43% in October 2000 to 58% in October 2004.
COMMUNITY MOBILIZATION
Community mobilization, as illustrated in Part Three, is fundamental to creating and implementing successful and sustainable chronic disease prevention and control policies and programmes.

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<tbody>
<tr>
<td><strong>STEP 1  CORE</strong></td>
<td>» Networks of community members and organizations, health professionals and policy-makers are established for information sharing, consultation and collaboration.</td>
</tr>
</tbody>
</table>
| **STEP 2  EXPANDED** | » Community-based programmes for chronic disease prevention are formed, and then implemented and evaluated.  
» School health programmes for chronic disease prevention are systematically implemented. |
| **STEP 3  DESIRABLE** | » Communities assume responsibility for ongoing implementation and monitoring of chronic disease prevention programmes.  
» Employers implement chronic disease prevention and self-management activities in the workplace. |

USING SCHOOLS TO PROMOTE HEALTHY DIETS AND PHYSICAL ACTIVITY
Large-scale school-based projects are being implemented in developing countries to reduce obesity, improve nutrition and increase physical activity. Brazil has recently required that 70% of the food offered through its national school meals programme should be minimally processed. Chile has included more fruits and vegetables in the national school meals programme. The Ministries of Health and Education in China have been fostering the health-promoting school concept (see spotlight, opposite). Malaysia, Mexico, the Republic of Korea, South Africa and Thailand have initiated similar programmes. In the Republic of Korea a healthy traditional diet was preserved through the joint efforts of dietitians and the government. The most promising programmes use culturally appropriate methods and messages (5).
WORKPLACES
Workplaces provide unique points of access for interventions to reduce chronic disease risk factors and promote effective management of chronic conditions. A detailed analysis of workplace roles and functions is presented in the following chapter, in the section addressing the private sector.

SPOTLIGHT

SCHOOL-BASED PROJECTS IN CHINA

Since 1995, the Ministry of Health and the Ministry of Education in China have been collaborating with other domestic agencies and WHO to foster the concept of the “health-promoting school” as a means of improving health.

In Zhejiang Province, unhealthy diet is a major cause of both undernutrition and obesity among school-age children. In 2000, a health-promoting school project to improve nutrition was launched by the Provincial Education Commission and the Health Education Institute of the Centers for Disease Control and Prevention. The education sector was responsible for the management of schools, including improvements to the school environment as well as to the school health education curriculum. The health sector was responsible for issuing and supervising public health guidelines, monitoring the prevalence of disease, and prevention measures.

Zhejiang Province’s health-promoting school project improved nutrition among 7500 students and their families and 800 teachers and school staff personnel. It actively engaged the target groups in planning, implementing and evaluating the interventions. Survey results revealed improvements in nutrition knowledge, attitudes and behaviour among all target groups (6, 7).

Chapter One. Providing a unifying framework – the role of government
HEALTH SERVICES ORGANIZATION AND DELIVERY

As Part Three demonstrated, reorientation of health services away from the traditional focus on acute health care, as well as a shift in budget allocation, are needed in many countries to respond adequately to chronic disease prevention and control.

PROMOTE THE USE OF EVIDENCE-BASED GUIDELINES

The introduction of integrated, evidence-based guidelines is one important method for promoting evidence-based care. Treatment guidelines should be approved at the national level, endorsed by local professional societies, and tailored to fit local contexts and resource constraints. Guidelines should be incorporated into assessment tools, patient registries and flowsheets in order to increase the likelihood of their use.

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<tr>
<td><strong>STEP 1 CORE</strong></td>
<td>» A standard set of integrated clinical management guidelines is drafted and adopted at national level for implementation.</td>
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<tr>
<td><strong>STEP 2 EXPANDED</strong></td>
<td>» Clinical guidelines are integrated into everyday tools, for example visual prompts and chart reminders to help health-care workers provide evidence-based care.</td>
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<tr>
<td><strong>STEP 3 DESIRABLE</strong></td>
<td>» Ongoing monitoring and feedback regarding the implementation of clinical guidelines is provided at national, local, health centre and individual health-care provider levels.</td>
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</table>
EMPHASIZE PREVENTION AND MANAGEMENT BASED ON OVERALL RISK

As reviewed in Part Three, disease onset can be prevented through the identification and reduction of elevated risk, and complications of established disease can also be addressed using prevention strategies.

Risk prediction derived from multiple risk factors is more accurate than making treatment decisions on the basis of single risk factors. In most cases, a combination of interventions is required to realize the full potential of risk reduction.

Access to essential drugs should be a key component of the policy framework, focusing on rational selection, affordable prices and sustainable financing. For effective implementation of these drug policies, supply management systems need to be integrated into health system organization.

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<tr>
<td><strong>STEP 1 CORE</strong></td>
<td>» Tobacco use is routinely assessed and tobacco cessation services are provided.</td>
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<td>» Affordable first-line chronic disease medications such as aspirin, as well as blood pressure and cholesterol-lowering drugs, are made available in primary health care.</td>
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<tr>
<td><strong>STEP 2 EXPANDED</strong></td>
<td>» Patients’ levels of overall risk are systematically assessed and monitored during health-care visits.</td>
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<td>» Treatment interventions are based on locally tailored guidelines and on overall risk, rather than arbitrary cut-off levels of individual risk factors.</td>
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<td></td>
<td>» Second-line and third-line medications for chronic disease are made available and affordable.</td>
</tr>
<tr>
<td><strong>STEP 3 DESIRABLE</strong></td>
<td>» Comprehensive prevention programmes are available in primary health care.</td>
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</table>
ESTABLISH EFFECTIVE CLINICAL INFORMATION SYSTEMS

Clinical information systems assist in coordinating the overall operation of the health-care centre, organizing patient information, tracking and planning patient care and facilitating patient self-monitoring, as well as prompting health-care providers to schedule patient follow-up. Effective systems can be created regardless of resource level; they range from computerized registries to pencil-and-paper schemes, and they can be written or pictorial.

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<tbody>
<tr>
<td>**STEP 1 ** CORE</td>
<td>» Basic paper-based patient registries and medical records for patients with chronic disease are introduced into primary health care.</td>
</tr>
</tbody>
</table>
| **STEP 2 ** EXPANDED| » Computer-based patient registries and medical records for chronic disease patients are introduced into primary health care.  
» Patient information is shared between primary health care and specialty/hospital care. |
| **STEP 3 ** DESIRABLE| » Health-care settings are electronically linked via a common clinical information system. |
**STRENGTHEN PATIENT SELF-MANAGEMENT**

Patients need to be equipped with the tools and skills required to cope effectively with their conditions on a daily basis. A range of health-care workers and lay people can successfully teach these skills to individuals or groups, by telephone or electronically (see spotlight, below).

<table>
<thead>
<tr>
<th>Implementation step</th>
<th>Suggested milestones</th>
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<tbody>
<tr>
<td><strong>STEP 1 CORE</strong></td>
<td></td>
</tr>
<tr>
<td>» Basic information about risk factors and (as appropriate), chronic diseases, is provided to patients.</td>
<td></td>
</tr>
<tr>
<td>» Patients with chronic disease are informed about their role in self-managing, and about community-based resources.</td>
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<tr>
<td><strong>STEP 2 EXPANDED</strong></td>
<td></td>
</tr>
<tr>
<td>» Educational and skill-building workshops/group appointments on chronic disease management are provided to patients.</td>
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</tr>
<tr>
<td><strong>STEP 3 DESIRABLE</strong></td>
<td></td>
</tr>
<tr>
<td>» Computerized patient self-assessment is used to generate individualized self-management plans.</td>
<td></td>
</tr>
<tr>
<td>» Patients with chronic diseases are provided with supplementary self-management support by telephone or through the Internet.</td>
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**SPOTLIGHT**

**A PATIENT-CENTRED APPROACH IN ENGLAND AND WALES**

More than 17 million people in England and Wales have a chronic disease, which has a considerable impact on the National Health Service (NHS) and social care services. People with chronic health problems are more likely to see their general physician, be admitted as inpatients, and stay in hospital longer than those without these conditions.

The NHS Improvement Plan set out the government’s strategy to improve care for people with chronic diseases, by moving away from reactive care based in acute systems, to a systematic, patient-centred approach. The national Public Service Agreement target focuses on improving health outcomes for people with chronic diseases by offering a personalized care plan for people most at risk, and reducing emergency bed days by 5% by 2008 through improved care in primary and community settings.

For the majority of people with chronic diseases, significant benefits follow when they receive increased support for managing their own symptoms and medication. To this end an Expert Patient Programme has been developed in the NHS. The programme has already involved many Primary Care Trusts across the country and has supported many thousands of patients and will be applied throughout the NHS by 2008.
The failure to use available knowledge about chronic disease prevention and control endangers future generations.
MARIAM JOHN IS 13 YEARS OLD and already knows what she wants to be when she grows up – “a health minister can help others and wants everyone to be healthy,” she says. “I have good grades, I know I can make it,” she adds proudly.

In February 2005, soon after her knee started to swell to the point that it became difficult to walk, Mariam was diagnosed with bone cancer. She has been receiving chemotherapy and radiotherapy treatment since then – an almost unbearable experience. “I am willing to have my leg amputated if it can take my pain away,” she concedes.

The day she was photographed, Mariam couldn’t have her radiotherapy treatment owing to a power failure at the Dar es Salaam Cancer Institute. She had crawled painfully out of bed with her grandmother’s help and been sitting crying in a wheelchair for half an hour, with nothing to support her swollen leg, before the news came.

Despite this terrible ordeal and great fatigue, Mariam remembers how to smile. Her best friend and classmate Maria is a fabulous supporter. “What cheers me up is when she writes me letters. She believes that I can be cured. I wish more people would think like her.”
PROVIDE CARE ACROSS THE CONTINUUM
Ideally, health-care settings (primary, hospital or community-based) should provide complementary services that collectively span the care continuum from prevention through to rehabilitation and palliative care.

<table>
<thead>
<tr>
<th>Implementation step</th>
<th>Suggested milestones</th>
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</thead>
<tbody>
<tr>
<td><strong>STEP 1  CORE</strong></td>
<td>» Pain medication is provided as needed as part of end of life care.</td>
</tr>
<tr>
<td><strong>STEP 2  EXPANDED</strong></td>
<td>» Palliative services are provided to allow control of pain and other symptoms, and to permit death with dignity.</td>
</tr>
<tr>
<td></td>
<td>» Community-based rehabilitation programmes are established.</td>
</tr>
<tr>
<td><strong>STEP 3  DESIRABLE</strong></td>
<td>» Multidisciplinary rehabilitation services are available.</td>
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</tbody>
</table>

PROMOTE MULTIDISCIPLINARY TEAMS
Multidisciplinary teams can consist of physicians, nurses, “expert patients” and others. Virtual teams – such as specialists linked to general practitioners by telephone – are increasingly common in rural or remote settings.

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<tr>
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<tbody>
<tr>
<td><strong>STEP 1  CORE</strong></td>
<td>» Primary health-care workers are trained by specialists on chronic disease management and on when to refer to specialty care.</td>
</tr>
<tr>
<td><strong>STEP 2  EXPANDED</strong></td>
<td>» Remote links to specialists are established for rural health centres, and used for both consultation, referral and back-referral.</td>
</tr>
<tr>
<td><strong>STEP 3  DESIRABLE</strong></td>
<td>» Multidisciplinary primary health-care teams are organized, including, where possible, physicians, nurses, allied health professionals, and expert patients.</td>
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</tbody>
</table>
ENSURE THE HEALTH-CARE WORKFORCE HAS THE RIGHT COMPETENCIES

The health workforce is instrumental in stimulating, creating and maintaining improvements. Ministries of health should work with ministries of education and professional societies to ensure that the health workforce is taught the right skills to prepare them adequately for chronic disease prevention and management.

Continuing professional education allows the health workforce to develop skills after completion of training. Educational activities include courses, on-site follow-up and coaching, and regular assessments and feedback on progress. Medical, nursing and other health professional societies are valuable partners in the provision of continuing medical education.

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<tbody>
<tr>
<td><strong>STEP 1</strong></td>
<td><strong>CORE</strong></td>
</tr>
<tr>
<td></td>
<td>» The health workforce, as part of its primary education, receives information and skills for chronic disease prevention and control.</td>
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<tr>
<td><strong>STEP 2</strong></td>
<td><strong>EXPANDED</strong></td>
</tr>
<tr>
<td></td>
<td>» On-the-job educational opportunities are provided.</td>
</tr>
<tr>
<td><strong>STEP 3</strong></td>
<td><strong>DESIRABLE</strong></td>
</tr>
<tr>
<td></td>
<td>» Continuing professional education on chronic disease prevention and management is mandated.</td>
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</tbody>
</table>
The private sector, civil society and international organizations

Any single organization or group is unlikely to have sufficient resources to tackle the complex public health issues related to the prevention and management of chronic diseases. The stepwise framework initiated by governments can be best implemented by working with some or all of the private sector, civil society and international organizations. This chapter outlines the ways in which such cooperation can be put into practice.

- Partnerships among various groups, organizations and sectors are indispensable
- The private sector is a natural partner in chronic disease prevention and control
- Civil society plays a role that is distinct from that of governments and the private sector, and adds human and financial resources to a wide range of chronic disease prevention and control issues
- International organizations and donors have important roles to play in the response to chronic disease
PARTNERSHIPS

Partnerships are collaborative relationships that bring together different parties to achieve a shared goal on the basis of a mutually agreed division of labour. Partnerships for health are indispensable. They offer all sectors new opportunities to work together in order to advance the greater public good. In order to be as effective as possible, they should work within the overall framework for prevention and control determined by the government (see previous chapter).

Working in partnership ensures synergies, avoids overlapping and duplication of activities, and prevents unnecessary or wasteful competition. Partnerships also provide a means of spreading the potential benefits of an initiative beyond what individual partners would achieve on their own, such as in Pakistan (see spotlight, left).

SUCCESS FACTORS

Partnerships work best when they:

- build on the unique roles of each partner;
- have specific objectives and expected outcomes;
- define clearly articulated roles and responsibilities for each partner;
- are implemented with the full agreement of all parties.

Developing and managing a successful partnership requires an appropriate organizational structure. There are different types of organizational models ranging from a simple affiliation to the creation of a separate and independent legal entity.

SPOTLIGHT
PUBLIC–PRIVATE PARTNERSHIP IN PAKISTAN

In Pakistan, the public–private tripartite collaborative arrangement, led by the nongovernmental organization Heartfile, with the Ministry of Health and the WHO Pakistan Office, has launched a partnership to develop and implement a national strategy for prevention and control of chronic diseases. The partnership has recently released a strategic framework for action, and work is under way on implementation.

Transparent linkages are being established to broaden the scope of this partnership with the private sector, including electronic media production houses, companies involved in the production, transport, storage and marketing of food items, private schools, road marking consultants, and industries with effluent discharge. Possibilities for partnerships with pharmaceutical companies are also being explored (8).
CONFLICTS OF INTEREST
Full disclosure of real or perceived conflicts of interest, both of individual staff and partner organizations, is required at the outset of partnership formation (it is not appropriate to work with some industries, such as tobacco and firearms).

NETWORKS
Networks are groups of individuals or organizations sharing a common interest, and in regular communication with each other to do their individual work more effectively. Two examples of different types of networks are given below.

SPOTLIGHT
CARMEN
The CARMEN (Conjunto de Acciones para la Reducción Multifactorial de Enfermedades No transmisibles) initiative aims to improve health in the Americas by reducing risk factors for chronic diseases. The main focus has been primary prevention of risk factors such as tobacco use, poor diet and physical inactivity.

The CARMEN network began with five countries/territories but has expanded to 16 (Argentina, Aruba, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Curacao, El Salvador, Guatemala, Panama, Peru, Puerto Rico, Trinidad and Tobago, and Uruguay). Each has a national or sub-national action plan for chronic disease prevention and control, a focal point within the ministry of health to lead the activities, and usually a steering group to guide country-level activities. The network serves as a forum for advocacy, knowledge dissemination and management, and technical support and as an arena where directions, innovations and plans are made for continuous improvement of chronic disease prevention initiatives in the Americas.

The WHO Regional Office for the Americas serves as the secretariat for the CARMEN network, which has facilitated intraregional information sharing and collaboration. Similar networks have been initiated or are under development in other WHO regions.

SPOTLIGHT
PROCOR
ProCOR is an ongoing, e-mail and Internet-based open exchange. It aims to create a dynamic international forum where healthcare providers, researchers, public health workers and the general public can share information and participate in raising awareness about the epidemic of cardiovascular diseases in low and middle income countries.

Moderators screen incoming messages and post current research as well as clinical and public health information, thus ensuring the high scientific quality of the discussion (for more information see http://www.procor.org).
Chapter Two. The private sector, civil society and international organizations

THE PRIVATE SECTOR

WORKPLACE HEALTH PROGRAMMES

Workplace initiatives to make healthy behaviour easier to achieve help to reduce people’s risk of developing chronic diseases, while also benefiting employers. Most adults spend a significant portion of their time in a work environment and are often surrounded by peers who may influence their behaviour and attitudes.

Many interventions and programmes can be effectively implemented with limited resources and significant benefits to employees and employers, as illustrated by the Mobility India example (see spotlight, left). Healthy foods can be offered, workplaces and ventilation systems kept clean and tobacco-free, assistive devices installed, and physical activity promoted.

Once basic programmes and options have been implemented or if more resources are available, employers can move on to initiate medium-term and long-term initiatives.

SPOTLIGHT
MOBILITY INDIA

Mobility India was established in 1994 to promote mobility in people with disabilities through awareness creation, advocacy, research, services, and integration of people with disabilities into society. Mobility India created the Millennium Building on Disability – the Mobility India Rehabilitation Research & Training Centre – as a model building to influence other organizations working in the field of disability and chronic conditions, and to increase understanding of accessibility issues. The building is friendly to all types of disabilities, and 40% of the staff have a disability.

Major features of the building include adequate ramps; Braille signs; tile floors with varied surfaces to guide people with visual impairments; accessible bathrooms, switchboards, and washbasins; a lift with auditory signals and an extra-sensitive door sensor; adequate and earmarked parking spaces; highly accessible hallways and workspaces with furniture kept in unchanged locations; and contrasting colour schemes and natural light for people with low vision.

The fact that Mobility India staff with personal experience of disabilities and chronic conditions are working in an accessible building has created a productive environment in which to work with confidence and dignity.
PRODUCT DONATION/PRICE REDUCTION PROGRAMMES

Affordable access to appropriate products is critical. The private sector can donate or offer them at affordable prices as part of a national plan, and help distribute products such as priority medications and medical devices. The success of the Mectizan® donation programme (see spotlight, left) is one example of such a programme.

SPOTLIGHT

RIVER BLINDNESS

Merck Pharmaceutical Company discovered a new application for the drug Mectizan® (ivermectin) to prevent onchocerciasis, or river blindness, in the early 1980s. In 1987, it decided to donate as much as is needed to everyone who needs it for as long as it takes to eliminate the disease worldwide. Some 18 million people are infected with the parasitic worm, and 250,000 people are already irreparably blind from this disease. Mectizan® cannot restore lost sight but if it is taken early enough, it protects remaining vision. It kills the larvae responsible, and eliminates itching and damage to the eyes with just one dose per year, although infected people need to take Mectizan® for around 20 years. The Mectizan® donation programme has been a highly effective public health programme and serves as a possible model for tackling some future problems in international health.

KUZHANTHIAMMAL benefited from the positive actions of civil society. PAGE 156
PRODUCT RESEARCH AND DEVELOPMENT

Many chronic diseases would benefit from the development of new medications or medical devices. The private sector has a significant role to play in closing these gaps, as do public–private partnerships, which can invest strategically to accelerate progress with regard to specific diseases. For example, biotechnology-based diagnostics can provide accurate and less expensive blood sugar and lipid assays, thereby eliminating the need for high technology laboratories and technologically trained personnel in the field. Alternatives to insulin delivery technologies, such as nasal sprays, could reduce the need for trained personnel, injection needles and refrigeration, and could revolutionize the management of diabetes. Affordable hearing aids (see spotlight, left) are another public health priority.

SPOTLIGHT
AFFORDABLE HEARING AIDS

WHO estimated in 2001 that over 90% of the 250 million people worldwide with disabling hearing impairment and deafness (of whom two thirds live in developing countries) would benefit from hearing aids. Current annual production of hearing aids provides approximately 33% of those needed in high income countries, but less than 3% of those needed in low and middle income countries.

Hearing aids in low and middle income countries range in price from US$ 200 to over US$ 500, prohibitive for the majority of people living there. Major companies are also reluctant to provide affordable hearing aids on a large scale because of their perceived lack of a sustainable market, and the lack of infrastructure to provide them.

Providing appropriate and affordable hearing aids and services worldwide would be a highly effective and cost-effective way to make a positive impact. Sustainable provision on a sufficiently large scale in low and middle income countries would also be crucial in terms of improving equity and access.

WHO has developed Guidelines for Hearing Aids and Services for Developing Countries as a tool for such programme development. The guidelines state that public–private partnerships between the governments of developing countries and hearing aid manufacturers are necessary. WHO and key stakeholders recently came together to set up an independent, collaborative network, called WWHearing (World-Wide Hearing Care for Developing Countries), to gather information on provision and need in developing countries, encourage appropriate, affordable hearing aids and services, stimulate public–private partnerships and promote projects for fitting, follow-up, repair and training. Countries in four WHO regions are in the process of setting up pilot studies to test the approach for these partnerships.
PRODUCT RESEARCH AND DEVELOPMENT – FOOD AND DRINKS

Initiatives by the food and drink industries to reduce the fat, sugar and salt content of processed foods as well as portion sizes, to increase choice, and to review current marketing practices could accelerate health gains worldwide. Recommendations of the WHO Global Strategy on Diet, Physical Activity and Health to the food and drink industries include the following:

- limit the levels of saturated fats, trans-fatty acids, free sugars and salt in existing products;
- continue to develop and provide affordable, healthy and nutritious choices to consumers;
- consider introducing new products with better nutritional value.

Many companies have already made some modifications to product composition by lowering portion sizes and altering contents. Some have introduced low/reduced fat and low salt products, as well as offering fruit and salads in fast food outlets. These actions have been taken voluntarily by companies, although perhaps accelerated by the broader policy environment.

SPOTLIGHT

FOOD INDUSTRY ACCORD IN NEW ZEALAND

In 1999, new research showed that the health of New Zealand’s people was affected more by unhealthy diet and physical inactivity combined than by other risk factors, including smoking. In response, the New Zealand Government developed a Healthy Eating – Healthy Action strategy (HEHA), with a wide range of stakeholders participating.

Members of the food and beverage industry are active HEHA stakeholders, and in September 2004 they launched a Food Industry Accord. All signatory food producers, distributors, retailers, marketers, advertisers and media outlets have acknowledged or publicized the fact that obesity is a major risk to public health, that the food industry has a role to play in tackling obesity, and that they will meet key objectives, such as those aimed at reducing obesity, improving nutrition, and increasing physical activity. Actions and commitments resulting from the Food Industry Accord are being independently evaluated.
Chapter Two. The private sector, civil society and international organizations

At the global level, WHO is convening a series of discussions with food and drink companies, retailers and nongovernmental organizations to encourage more action, although such activities are sometimes best coordinated and more efficiently managed at the regional or sub-regional level. For example, the European Commission recently launched a Platform for Action on voluntary but measurable reductions in salt, sugar and fat content and improved product information for consumers. National regulators and regional organizations have also established guidelines and targets for lowering the fat, salt and sugar content of processed foods. The Food Standards Agency in the United Kingdom, for example, has developed a national plan of action including targets for salt reduction (see spotlight, left).

OTHER ROLES

Other roles for the private sector include information and experience sharing. The private sector possesses essential and specialized skills that are valuable for chronic disease prevention and control. For example, expertise in marketing, advertising and brand promotion could be offered to strengthen public awareness and education campaigns.

Charitable giving is another way in which the private sector can contribute to chronic disease prevention and control.

The media and entertainment industry can use programming, media access and celebrity figures to deliver key messages about chronic diseases.

SPOTLIGHT

REDDUCING SALT INTAKE IN THE UNITED KINGDOM

In November 2003 a “Salt Summit” in the UK brought together departmental health ministers, the Chief Medical Officer, the chair of the Food Standards Agency, food retailers, producers, caterers, and health and consumer groups to discuss plans to reduce salt in foods to meet the government’s target of reducing salt consumption in the population from 9.5 g to an average of 6 g per person per day by 2010.

The summit concluded that reduction programmes were taking place on a broad front with action at different stages between different companies and sectors. However, further work was needed to meet the reduction target. A joint programme of work has been agreed between the Department of Health and the Food Standards Agency, following meetings with industry and the submission of further plans. By February 2005, around 65 key food industry organizations had met government officials to discuss salt reduction plans, resulting in 52 commitments from across all sectors of the food industry.

In September 2004, the Food Standards Agency launched a high-profile consumer awareness campaign on salt. The tracking research is now showing a steady increase in the number of people who recognize that they might have a problem with too much salt in their diet and who are now trying to cut down. Between August 2004 and January 2005 there was:

- a 32% increase in people claiming to be making a special effort to cut down on salt;
- an increase of 31% in those who look at labelling to find out salt content;
- a 27% increase in those who say that salt content would affect their decision to buy a product “all of the time”.

The next stage of the programme of work with industry will include the following:

- Establishing targets for specific categories of foods, especially those making the greatest contribution to population salt intakes; proposed targets have been identified following discussion with the industry and a public consultation is being held prior to publication of the targets in November 2005.
- Obtaining further long-term plans with specific measurable stepwise commitments to salt reduction capable of delivering the Government’s target of 6 g average daily intake by 2010, as well as securing clear data from all relevant organizations to ensure that salt reduction claims can be verified.
- Focusing on securing further salt reductions particularly in the cereal and meat, pizzas, ready meals and sandwich product categories (these make the biggest contributions to adult salt intakes in the UK).
- Developing a clear programme of work for the catering sector and public procurement, including specific guidelines for salt reduction, in consultation with the key stakeholders.
KUZHANDHIAMMAL BEGAN TO WORRY TWO YEARS AGO when a white film clouding her left eye would not clear away. It was keeping her from working on her land and taking care of her teenage granddaughter. As for many poor Indians, a visit to hospital was out of reach, for both economic and geographical reasons.

Soon after the first symptoms appeared, Kuzhandhiammal heard of an eye diagnostic camp that was taking place at a nearby village. She decided to attend, and within a few minutes was diagnosed and registered for free cataract surgery at the Madwai Aravind Eye Hospital the following week.

The programme even covered transport costs. “A bus picked me up with seven other cataract patients and drove us to the hospital,” she says. Some 70% of Aravind’s eye patients are charity cases; the 30% who are paying customers support these free sight-restoring operations. The hospital also sells abroad three quarters of the lenses it produces, to help finance its activities.

Now 67 years old, Kuzhanthiammal successfully underwent surgery on her other eye a few months ago. “These artificial lenses are a miracle. It’s like waking up with your problems gone,” she joyfully explains.
Thanks to the work of civil society, people who have limited access to health care are receiving treatments that would not otherwise be available.
CIVIL SOCIETY
The term civil society refers to a broad array of organizations that are essentially private and outside the institutional structures of government, but at the same time are not primarily commercial and do not exist principally to distribute profits to their directors or owners. Civil society includes organizations such as registered charities, nongovernmental organizations, professional societies and advocacy groups.

These and other organizations add human and financial resources to a wide range of chronic disease prevention and control issues (see spotlight, left). In addition, they occupy a role that is distinct from that of governments and the private sector. In many cases, civil society works parallel to or in partnership with government and the private sector. Sometimes, civil society takes the lead on public health issues. It can stimulate efforts by:

» supporting the wide dissemination of information;
» promoting public debate;
» leading grass-roots mobilization;
» encouraging policy-makers to translate evidence into action;
» organizing campaigns and events that stimulate action by all stakeholders;
» improving health-care service delivery;
» creating partnerships among stakeholders.

SPOTLIGHT
WORLD HEART DAY AND WORLD DIABETES DAY
One of the ways in which nongovernmental organizations draw attention to issues is by means of annual health days. The World Heart Federation, for example, initiated the World Heart Day programme in the year 2000 to increase awareness of cardiovascular disease prevention and control, particularly in low and middle income countries. World Heart Day is celebrated on the last Sunday of September each year. This programme is co-sponsored by WHO and UNESCO and is now recognized by UNICEF. In 2000, 63 countries and 103 World Heart Federation member organizations participated by running national programmes. By 2004, more than 100 countries were involved and 312 members ran national activities. UNESCO distributed the World Heart Day materials to its 175 regional offices and to 7500 schools. WHO's Regional Office for Africa distributed materials to 46 African countries and has been directly involved in building successful national programmes. An audience of 365 million readers, viewers and listeners was reached internationally (in the English language alone).

Similarly, the International Diabetes Federation celebrates World Diabetes Day annually on 14 November. The day is marked worldwide by the 185 member associations of the Federation in more than 145 countries, as well as by other associations and organizations, health-care professionals and individuals with an interest in diabetes. The Federation produces a variety of support materials for its member associations which in turn distribute them to people with diabetes and their families, the general public, health-care professionals and the media, as well as to local and national decision-makers.
INTERNATIONAL ORGANIZATIONS

International organizations, including United Nations agencies, donors and development banks have crucial roles to play. Some of their work is described in this report. Coordinated action is needed among the organizations of the United Nations system, intergovernmental bodies, nongovernmental organizations, professional associations, research institutions and private sector entities.

In particular, the World Health Organization has received several global mandates from its governing bodies to take action on chronic disease prevention and control, such as the Global Strategy for the Prevention and Control of Noncommunicable Diseases, the Global Strategy on Diet, Physical Activity and Health, and the WHO Framework Convention on Tobacco Control. Many relevant mandates have also been adopted by WHO regional governing bodies. These provide the basis for taking international action in support of regional and national efforts to prevent and control chronic diseases and their common risk factors.
CONCLUSION
Taking action to halt and turn back the rising chronic disease pandemic is a pressing challenge for the field of global public health. Fortunately, the effective and feasible strategies for doing so already exist. The global goal of saving 36 million lives by the year 2015 can be achieved with urgent, coordinated action.

A range of effective interventions for chronic disease prevention and control exist, and many countries have already made major reductions in chronic disease death rates through their implementation.

Everyone has a role to play in advancing the agenda. In low income countries, it is vital that supportive policies are put in place now to reduce risks and curb the epidemics before they take hold. In countries with established chronic disease problems, additional measures are needed not only to prevent the diseases through population wide and individual risk reduction but also to manage illness and prevent complications.

Taking up the challenge for chronic disease prevention and control, especially in the context of competing priorities, requires courage and ambition. On the other hand, the failure to use available knowledge about chronic disease prevention and control is unjustified, and recklessly endangers future generations. There is simply no excuse for allowing chronic diseases to continue taking millions of lives each year when the scientific understanding of how to prevent these deaths is available now. The agenda is broad and bold, but the way forward is clear.
REFERENCES

WHO has prepared updated projections of trends for mortality and burden of disease between 2002 and 2015 using methods similar to those used in the original Global Burden of Disease (GBD) study (1). A set of relatively simple models was used to project future health trends under various scenarios, based largely on projections of economic and social development, and using the historically observed relationships of these to cause-specific mortality rates. The data inputs for the projection models have been updated to take account of the greater number of countries reporting death registration data to WHO, particularly developing countries, and to take into account other recently developed projection models on HIV/AIDS and other conditions where appropriate, as well as tobacco epidemics.

A BRIEF OVERVIEW OF THE METHODS AND ASSUMPTIONS

Rather than attempt to model the effects of the many separate direct determinants or risk factors for disease from the limited data that are available, the GBD methodology considered a limited number of socioeconomic variables: average income per capita, measured as gross domestic product (GDP) per capita; average number of years of schooling in adults, referred to as “human capital”; and time, a proxy measure for the impact of technological change on health status. This latter variable captures the effects of accumulating knowledge and technological development, allowing the implementation of more cost-effective health interventions, both preventive and curative, at constant levels of income and human capital (2).

These socioeconomic variables show clear historical relationships with mortality rates, and may be regarded as indirect, or distal, determinants of health. In addition, a fourth variable, tobacco use, was included in the projections for cancers, cardiovascular diseases and chronic respiratory diseases, because of its overwhelming importance in determining trends for these causes. Tobacco use was measured in terms of “smoking intensity” – that component of observed lung cancer mortality that is attributable to tobacco smoking (3).

For the projections reported here, death rates for all major causes excluding HIV/AIDS were related to these four variables using historical death registration data for 107 countries between 1950 and 2002 (4). Death rates were then projected using World Bank projections of GDP per capita, WHO projections of human capital, and smoking intensity projections based on historical patterns of tobacco use and further adjusted for recent regional trends in tobacco consumption where appropriate.

Separate projections for HIV/AIDS mortality were prepared by UNAIDS and WHO, under a scenario in which coverage with antiretroviral drugs reaches 80% by 2012, remaining constant beyond that year, and in which there are no changes to current transmission rates due to increased prevention efforts. Projected tuberculosis mortality rates were modified in regions with high HIV prevalence, owing
to the expected interaction of tuberculosis and HIV. Because a substantial proportion of diabetes mortality is attributable to overweight and obesity (5), a separate projection model for diabetes mortality was developed using WHO projection of trends in body mass index distributions from 2000 to 2010. Similarly, projections of mortality for chronic respiratory diseases were adjusted for projected changes in smoking intensity.

The original GBD projections assumed that the changes in death rates associated with income growth and time in countries with death registration data, mostly medium and high income countries, would also apply in low income countries. The new projections for low income countries were based on the observed relationships for a data set consisting of 3468 country-years of observation where income per capita was less than $10 000 per year. Additionally, observed regional trends in child mortality from 1990 to 2002 were compared with those predicted by the projection model for low income countries. As a result, the regression coefficient for time was set to zero for sub-Saharan Africa, and to 25% of its original value for other low income countries.

The WHO projections of mortality rates to 2015, together with UN medium variant assumptions for fertility rates and migration rates (6), were also used to prepare consistent population projections for all regions. The projected global population in 2015 was 7.1 billion compared to the UN medium variant projection of 7.2 billion, reflecting somewhat higher adult death rates in the WHO mortality projections.

**PROJECTIONS FOR COUNTRIES**

Projections were carried out at country level, but aggregated into regional or income groups for presentation of results, apart from the projections for nine selected countries included in this report. Baseline estimates at country level for 2002 were derived from the GBD analyses published in *The World Health Report 2004* (7). Mortality estimates were based on analysis of latest available national information on levels of mortality and cause distributions as at late 2003. Incidence, prevalence, duration and severity estimates for conditions were based on the GBD analyses for the relevant epidemiological subregion, together with national and sub-national level information available to WHO. These baseline estimates represent the best estimates of WHO, based on the evidence available in mid-2004, rather than the official estimates of Member States, and have been computed using standard categories and methods to maximize cross-national comparability.

Initial WHO estimates and technical explanations were sent to Member States for comment in 2003, and comments or additional information incorporated where possible. Country-specific projections were shared with relevant WHO country offices and Member States in advance of publication.

**LIMITATIONS**

By their very nature, projections of the future are highly uncertain and need to be interpreted with caution. Three limitations are briefly discussed: uncertainties in the baseline data on levels and trends in cause-specific mortality, the “business as usual” assumptions, and the use of a relatively simple model based largely on projections of economic and social development.

For regions with limited death registration data, such as the Eastern Mediterranean Region, sub-Saharan Africa and parts of Asia and the Pacific, there is considerable uncertainty in estimates of deaths by cause associated with the use of partial information on levels of mortality from sources such as the Demographic and Health Surveys, and from the use of cause-specific mortality estimates for causes such as HIV/AIDS, malaria, tuberculosis and vaccine-preventable diseases (8). The GBD analyses have attempted to use all available sources of information, together with an explicit emphasis on internal consistency, to develop consistent and comprehensive estimates of deaths and disease burden by cause, age, sex and region.

The projections of burden are not intended as forecasts of what will happen in the future but as projections of current and past trends, based on certain explicit assumptions and on observed historical relationships between development and mortality levels and patterns. The methods used base the disease burden projections largely on broad mortality projections driven to a large extent by World Bank projections of future growth in income per capita in different regions of the world. As a result, it is important to interpret the projections with a degree of caution commensurate with their uncertainty, and to remember that they represent a view of the future explicitly resulting from the baseline data, choice of models, and the assumptions made. Uncertainty in
projections has been addressed not through an attempt to estimate uncertainty ranges, but through preparation of pessimistic and optimistic projections under alternate sets of input assumptions.

The results depend strongly on the assumption that future mortality trends in poor countries will have the same relationship to economic and social development as has occurred in higher income countries in the recent past. If this assumption is not correct, then the projections for low income countries will be over-optimistic in the rate of decline of communicable and noncommunicable diseases. The projections have also not taken explicit account of trends in major risk factors apart from tobacco smoking and, to a limited extent, overweight and obesity. If broad trends in risk factors are for worsening of risk exposures with development, rather than the improvements observed in recent decades in many high income countries, then again the projections for low and middle income countries presented here will be too optimistic.

THE GLOBAL GOAL

The global goal for chronic diseases, proposed in this report, was modelled in terms of an additional 2% annual decline in chronic disease death rates from 2006 to 2015. Annual rates of change in age and sex specific death rates for all chronic disease causes were calculated for the mortality projections from 2005 to 2015 and then adjusted by subtraction of an additional 2% per annum. Death rates for the years 2006 to 2015 were then recomputed using the adjusted annual trends for age/sex-specific rates. Note that the final death rates for chronic diseases in 2015 under the bold goal scenario will be substantially lower than the base projections, since the additional 2% annual declines are cumulative.

FURTHER INFORMATION

Interested readers can visit the WHO web site at http://www.who.int/evidence/bod, where the following information is available:

» mortality and burden of disease estimates for 2002 for WHO regions and for countries grouped by income level;

» downloadable working papers on the data sources, methodology and tools used in assessment of mortality and burden of disease for 2002;

» a downloadable technical paper giving a detailed description of the data inputs, methods and results for the projections of mortality and burden of disease;

» links to other publications and results relating to the WHO projections.

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For operational and analytical purposes, the World Bank's main criterion for classifying economies is gross national income (GNI) per capita. Based on its GNI per capita, every economy is classified as low income, middle income (subdivided into lower middle and upper middle), or high income.

Categories for this report were based on the income categories published in *World development indicators 2003*, Washington, DC, World Bank, 2003. Economies were divided according to 2001 GNI per capita, calculated using the World Bank Atlas method. The groups are: low income, US$ 745 or less; lower middle income, US$ 746–2975; upper middle income, US$ 2976–9205; and high income, US$ 9206 or more.

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<td>West Bank and Gaza</td>
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Economic analysis methods

For the economic analyses of this report, three approaches were adopted:

1. systematic review on chronic disease costs of illness;
2. elucidation of the human capital impact of chronic diseases through their impact on labour supply – the Solow growth model using the Cobb-Douglas function;
3. elucidation of the impact of chronic diseases on and growth in economic welfare – the full-income approach.

Estimation of the economic impact was based on projections to 2015 for nine countries: Brazil, Canada, China, India, Nigeria, Pakistan, the Russian Federation, the United Kingdom and the United Republic of Tanzania. The focus was on heart disease, stroke and diabetes.

THE GROWTH (COBB-DOUGLAS) MODEL

The Cobb-Douglas function (equation 1) was combined with the capital accumulation function (equation 2) to estimate the long-run impact of chronic diseases on economic growth for these countries.

\[ Y_{it} = r A_{it} K_{it}^{\alpha} L_{it}^{1-\alpha} \]  

Where:
Y = national (production) income – GDP per worker
K = capital accumulation
L = labour inputs
\( \alpha \) = Elasticity of Y with respect to K
1 – \( \alpha \) = elasticity of Y with respect to L
i = countries
t = time period
r = adjustment factor (Cuddington et al., 1992)

Note that \( \alpha + (1-\alpha) = \text{unity} \), i.e. constant returns to scale.

\[ K_{it} = s Y_{it} - x C_{it} + (1 - \delta) K_{i(t-1)} \]  

Where:
Y, K, i and t are as defined in above
s = savings rate
C = cost of treating illness
x = proportion of C funded from savings
\( \delta \) = depreciation

APPROACH TO ELUCIDATION

Three main approaches were initially considered: (1) econometric estimation and projections; (2) econometric estimation and calibration; and (3) straightforward calibration using information on variables from various sources. The third approach was adopted for this phase of work because of data availability issues and time constraints. However, options 1 and 2 will be pursued as part of the ongoing work in this area, and as a follow-up to the report.

DATA AND DATA SOURCES

Projected gross domestic product (GDP) data were obtained from the World Bank and converted to GDP per worker as all other variable input. Capital per worker was obtained from Easterly & Levine (1). Information on the impact of chronic diseases on labour supply was obtained from the population and mortality projections of the Global Burden of Disease Unit of WHO. Costs of treating chronic diseases were obtained from WHO sources. Historical savings rates, depreciation, were obtained from the World Bank Development Index database.

For the base case estimated, proportion of cost of treating illness funded from savings was set at 10%. Region-specific elasticities of Y with respect to K were obtained from Senhadji (2). There was difficulty in obtaining data for capital accumulation in the Russian Federation; this was then set to the average of countries. All these variables were then subjected to sensitivity analysis.
THE FULL-INCOME MODEL

The full-income (FI) approach captures the value of changes in population health in the assessment of “economic welfare” (3, 4). The welfare value of deaths or changes in life expectancy from disease, estimated through the Value of Statistical Life (VSL) (Value of a Life Year (VLY)) nexus is added to changes in annual GDP per capita. For example, if Δp = change in the probability of dying within a given period say 2005–2015, and VSL = 100 times GDP per capita the welfare loss from mortality = (Δp x 100) x GDP per capita x (proportion of adults in the population). Suppose Δp = 0.4% and proportion of adults in pop = 50%, then welfare loss = 0.4 x GDP x 0.5 = 20% of GDP per capita. That is, GDP per capita would have been 20% of the actual GDP per capita. This would correspond to a rate of decrease in economic welfare due to mortality increase of 2% per annum. This approach, which may seem more complete than the previous approaches, does not account for the total value of the changes in health. It is, however, useful in that it demonstrates fuller returns to investment in health compared to the above approaches. Estimation should be of interest to country development strategists and policy-makers in the health and finance sectors, and also useful for international comparison.

MODEL PROGRAMMING AND ELUCIDATION

Microsoft Excel was used to programme the relationships in the equations from 2002 to 2015. The model was programmed to compute output if there were no deaths due to chronic disease (the counterfactual) against output given the projected deaths from chronic disease on an annual basis. This procedure was then repeated for estimating the global goal of an additional 2% annual reduction in chronic disease death rates over and above baseline projections, over 10 years from 2006 to 2015.

All the variables in the Cobb-Douglas model were subjected to univariate and multivariate analysis (Monte Carlo) using Crystal Ball software.

The CHOICE (CHOosing Interventions that are Cost-Effective) project was developed by WHO in 1998. The objective is to provide policy-makers with evidence on which to base decisions regarding interventions and programmes, given the need to provide the best health gains possible with available resources. WHO-CHOICE reports the costs and effects of a wide range of health interventions in 14 epidemiological sub-regions (world divisions made based on geographical location and epidemiological profiles). The results of these cost–effectiveness analyses are assembled in regional databases, which policy-makers can adapt to their specific country setting.

According to the cost–effectiveness results, interventions can be grouped into three categories:

<table>
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<tr>
<th>COST–EFFECTIVENESS CATEGORY</th>
<th>DEFINITION</th>
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<tbody>
<tr>
<td>Very cost-effective</td>
<td>Interventions that avert each DALY at a cost less than gross domestic product per head.</td>
</tr>
<tr>
<td>Cost-effective</td>
<td>Interventions that avert each DALY at a cost between one and three times gross domestic product per head.</td>
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<tr>
<td>Not cost-effective</td>
<td>Interventions that avert each DALY at a cost higher than three times gross domestic product per head.</td>
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Interested readers can visit the WHO CHOICE web site at http://www.who.int/choice where the following information is available:

- cost–effectiveness results of the interventions evaluated for the 14 world sub-regions;
- a list of countries in the 14 sub-regions used for the WHO-CHOICE analysis;
- downloadable background papers on the methodology and tools used in conducting the WHO-CHOICE cost–effectiveness analyses;
- detailed region-specific demographic data and list of input variables, including prices and quantities, exchange rates, price multipliers and other key reference material for conducting cost–effectiveness analyses;
- a brief description on the WHO guide to cost–effectiveness analysis (1), the theoretical and practical compendium on CHOICE methodology.

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Over 40 people with, or affected by, chronic disease were photographed and interviewed by a photojournalist in early 2005. Overall, this set of photographs and stories from five diverse countries demonstrates that chronic diseases are widespread in low and middle income countries and are an underappreciated source of poverty, requiring comprehensive and coordinated responses.

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35 000 000 people will die from chronic diseases in 2005

80% of chronic disease deaths occur in low and middle income countries

Projected global deaths by cause, all ages, 2005

- HIV/AIDS: 2,830,000 deaths
- Tuberculosis: 1,607,000 deaths
- Malaria: 883,000 deaths
- Cardiovascular diseases: 17,528,000 deaths
- Cancer: 7,396,000 deaths
- Chronic respiratory diseases: 4,057,000 deaths
- Diabetes: 1,125,000 deaths

80% of chronic disease deaths occur in low and middle income countries.