Chapter 6

Research to inform health policy

In the 1990s more than at any other time in recent history, health has been forced to the top of the political agenda. Spiralling costs and rising demand are putting health systems under strain in many countries. Health care absorbs a very substantial 8% of the entire world's output, yet millions of people—mostly poor people—still receive inadequate and unsatisfactory services. Meanwhile governments are realizing that the health sector, for all its expense, is only one of many players that determine whether a population is sick or well. Some of the biggest threats to people's health, such as tobacco, and some of the greatest potential benefits to it, such as a decent income and education, are outside the control of the conventional health sector.

If governments are to develop "healthy" policies that will help to reduce disease burden in their countries' populations, they must have reliable information. They must know what people need—and want—their health services to be. They must know how to organize and deliver those services fairly and efficiently. And they must weigh the expected impact of a range of potential interventions—both policies and technologies—involving other sectors, such as agriculture, education and transport, as means to promote health and prevent disease.

Yet the necessary information is often not available. Many countries are reforming their health systems today without the benefit of comparative data to tell them which policies work and which do not. Many have only the most rudimentary knowledge of resource flows within their health sector—a degree of ignorance which would be inconceivable in any industry or other employer of such size. And many have little or no communication between health, education, agriculture, transport or employment ministries.

The incentives for obtaining more and better information are exceptionally strong. In the United States, where at least a quarter of the total annual health care bill of over US$ 800 billion is judged to be wasted, a reduction in waste of as little as 1% would save the country US$ 2 billion a year. In low-income and middle-income countries, it has been estimated that an increase of just 10% in the efficiency of service delivery could reduce the overall burden of disease by 10% too, and by much more in some low-income countries. Many countries are using precious public funds to finance inappropriate and cost-ineffective services, excessive tertiary care, and inadequate remuneration schemes. Even modest action to reduce adverse external influences on health could bring massive savings in health care costs later. Yet the R&D that could help governments to decide how and where to achieve these improvements has barely begun. Despite the high payoffs expected from this investment, researchers worldwide have neglected health policy. They have made few attempts to measure or compare the performance of different health systems or to develop common currencies for comparing the impact of different sectors on health.

At a time of rapidly changing demographic and epidemiological conditions, health policy research can be neglected no longer. This chapter explores the areas of greatest need for that research. Unlike the three preceding chapters, it does not focus on specific diseases, conditions or risk factors, but on the broader influences, such as inefficiency in health services, or the activity of particular industries, that affect populations' health across the board. The chapter begins with an assessment of why investing in health is vital for economic growth—particularly for the lowest income groups—and assesses ways in which economic policies can affect health for better or for worse. It then identifies priorities for research to assist governments in incorporating health into their multisectoral development plans. The chapter then turns to focus on the health sector. It examines the demand for health services, and identifies priorities for behavioural and epidemiological research to improve knowledge of that demand. Next, it discusses research priorities in improving the supply of health services. It concludes with proposals that would dramatically improve the information available to orient health policies, both within and between governments worldwide.

6.1 Health and the economy

This section discusses both the relation between health and the economy (particularly the impact of poverty on health and vice versa) and the relation between health and other sectors.

6.1.1 Health and poverty

As Chapter 2 showed, economic growth has been fundamental to the general health gains of the past century. Three-quarters of the improvement seen in people's life expectancy in the past few decades can be attributed to the effects of rising incomes. During the 1980s, death rates among children under age five fell by almost one-third; but the rate fell more than twice as much in countries whose average incomes grew by more than 1% per year (World Bank 1993). By the same token, poverty is bad for people's health. Sound macroeconomic policies that increase the incomes of the poorest and invest in girls' education result in better population health. By

contrast, economic policies that make the poor even poorer can adversely affect their health (see Figure 6.1). In some circumstances, poorly designed structural adjustment policies have done this, although the damage can be avoided with compensatory adjustment lending programmes and other carefully targeted protective measures. In other circumstances, failure to engage in appropriate macroeconomic adjustment and stabilization programmes has proved more harmful to the health of the poor than timely and intelligent structural adjustment.

Just as wealth leads to health, the converse also increasingly appears to be true. Health is clearly a highly desirable outcome of development, but it is also more than that. A number of lines of evidence now suggest that health may actually be a precondition for development and particularly for the economic enrichment of the lowest income groups. However, if governments are to invest in improving health as part of their development plans, they need better quantitative information about the impact on health of different approaches and interventions in the economy so that they can put scarce resources to the best use. Research in the health policy sciences including health economics, alongside epidemiology and behavioural studies, will be needed to gather that information.

The evidence that improved health enriches an economy takes several forms. They are discussed briefly here.

- *Better health reduces production losses caused by workers' ill-health*

Diseases and conditions prevalent among the lowest income groups seriously affect worker productivity—not just through days off work but through a permanent reduction in work capacity. In a study of agricultural workers in the Philippines, for example, it was shown that adults who had been stunted through poor nutrition in childhood were less productive and earned lower wages than adults of average height. Overall, the total, worldwide economic loss due to stunting has been estimated at US$ 8.7 billion a year, or about a quarter of the total health expenditure of developing countries. Disability also reduces productivity. For example, it has been estimated that the elimination of deformity in employed lepers in Tamil Nadu, India, would increase their annual earnings more than threefold.

Days off with illness also have a significant impact. In Côte d'Ivoire, wages have been estimated to be almost one-fifth lower for men who lose a day each month through illness than among healthier men. In Sudan, households were found to lose about 40 working hours per year each because of malaria alone. Had malaria been eliminated, these hours would have made up two-thirds of the lost agricultural labour. And in 10 African countries hit particularly hard by AIDS, income growth per capita is expected to fall by 0.6% per year.

- *Better health increases the proportion of children who can enroll in school and the educability of those children; it therefore increases human capital*

Children who are sick, undernourished or disabled are much less likely to go to school or to benefit from schooling. In Nepal, a study found, nutritionally stunted children in one region had only a 1-in-20 chance of attending school, while children of normal height for age had a 1-in-4 chance. Once in school, children whose height is well below average for their age—a marker for the combined effects of inadequate dietary intake and infection—lag behind in class. Those with specific micronutrient deficiencies have also been shown to fare worse than those who are better fed. Iron-deficiency anaemia reduces children's cognitive function. Iodine deficiency causes irreversible mental retardation; and vitamin A deficiency causes blindness and increases the risk of infections. Some studies have shown that children suffering from helminth infestations tend to have lower scores in class than healthier children, while treatment brings their performance into line. Girls are more likely to suffer iron or iodine deficiencies than boys and more likely to miss school because of them. Poor health also affects girls' school attendance because they, more often than boys, have to stay home and care for sick relatives.

Thus better health translates into economic growth by enabling children to enroll and stay in school and gain more from their schooling. In one study, farmers who had had four years' worth of primary education were found to be 9% more productive than those who had none. Studies in African and Asian countries show that workers who score above average in various cognitive tests are likely to earn between 13% and 22% more than those with average scores.

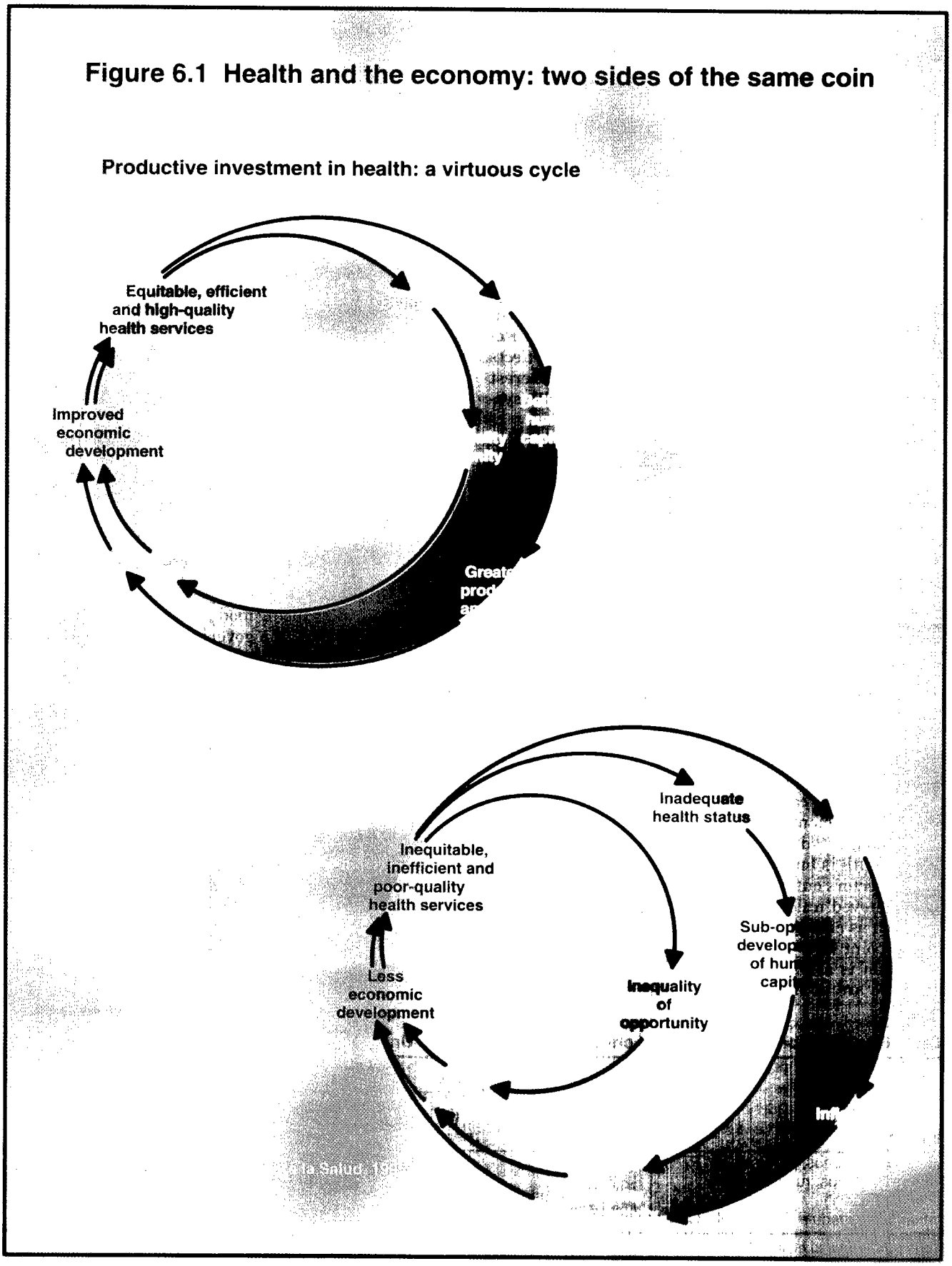
- *Better health frees up resources previously spent on treating illness for other uses*

The costs of medical care are a heavy burden on any economy and the payoff of avoiding ill-health is high, particularly where a disease is expensive to treat. For example, the World Bank has estimated that preventing a case of AIDS saves between two and five times a country's per capita GNP in averting the lifetime costs of caring for that case. In the United States, researchers have calculated that for each US$ 1 invested in childhood immunization, the direct and indirect savings bring high returns, often more than 20-fold (see Table 6.1).

- *Better health increases national wealth by making available natural resources (such as cultivable land) that had previously been rendered inaccessible because of disease*

People whose livelihood depends directly on the availability of natural resources are vulnerable to the

Figure 6.1 Health and the economy: two sides of the same coin



effects of pathogens that prevent them from using those resources. Land laid waste by the presence of disease-bearing vectors such as tsetse flies and anopheline mosquitos is a major barrier to development. Conversely, efforts to make that land usable can result in important gains to the economy.

- *A country's choice of health service financing methods can affect its economic performance*

  In a different way, the economy may also be affected by the way health services are financed. For example, systems that tie the financing of people's health services to their employers, as in China and the United States, can create so-called job lock, discouraging individuals from moving between employers and adversely affecting overall economic efficiency. Research into the nature and magnitude of these effects is a priority whose outcomes will be of acute interest to governments currently reforming their health systems.

As most of the observations above suggest, the greatest beneficiaries of investment in health appear to be the lowest income groups, not only because their health tends to be worse than that of the better-off, but also because they are more likely to rely on their physical health and strength to earn an income. All of the observations suggest that investment in health is likely to benefit development; but more definitive and country-specific analyses remain to be done. The research agenda is clear.

6.1.2 Health and other sectors

Despite the growing evidence that it pays to invest in health and in efficient, equitable health services, few countries have incorporated health goals into their economic development plans. Yet, as the discussion above has demonstrated, sustainable development can occur only if health is built into it. And, given the importance of other sectors outside health, health goals are unlikely to be achieved unless they are integrated in other sectors, such as energy and agriculture. For example, there is little point in trying to restrict tobacco use if tobacco cultivation is a major source of the nation's livelihood and there are no incentives for farmers to switch to alternative crops. Similarly, technologies developed in other sectors may have significant benefit for health—from seat-belts and air-bags to protection against occupational health hazards and controls on air pollutants.

A growing number of bodies and institutions are identifying intersectoral policies and technologies as a key step to achieving better health. For example, the WHO Commission on Health and Environment recommended a range of actions, from fuel policies that reduce air pollution to agricultural policies that increase food security (Veil 1992). The WHO Healthy Cities, Villages and Islands Project has provided cost-effective models for intersectoral action at local level to deal with slum conditions, poor sanitation and other problems that impact health. So far, however, there has been relatively little research to establish *how* such policies can most effectively be achieved. In practice, governments may not have the incentives to invest in developing such policies unless their health ministers can furnish them with data to demonstrate the scale of particular health problems, the benefits of investing in preventive measures rather than expensive treatments, or the relative cost-effectiveness of different interventions. For example, if a government is to be motivated to improve child health in its population, it will help it to know the impact of current childhood diseases on human capital and projected income per capita, and to be able to compare the relative cost-effectiveness of a range of policies such as investing in girls' education, making specific infrastructural improvements, introducing food pricing policies, and school health programmes. If a government is to improve occupational health legislation, it will help it to know the impact of implementing safety policies and technologies in workplaces, investing in staff education for safety, and so on. Some key examples of the type of intersectoral research question that governments need answers to are set out below.

Example 1: Health and the infrastructure

The quality of a country's infrastructure—energy, water supplies, sanitation, telecommunications and transport facilities—is likely to affect its population's health. Data in Chapter 3 show, for example, how unsafe water and poor sanitation are significant risk factors for disease. How can the health sector work with the utilities to maximize health gains from improvements in in-

Table 6.1 The economic benefits of child immunization in the United States

Vaccine	Direct medical saving (in U.S. dollars) per US$ 1 invested	Direct and indirect saving (in U.S. dollars) per US$ 1 invested (including averted work loss, death and disability)
Diphtheria, tetanus, pertussis (DTP)	6	29
Measles, mumps, rubella (MMR)	16	21
Oral polio (OPV)	3	6
Integrated schedule (DTP, MMR, OPV combined)	7	26

Source: Hatziandreu et al. 1995

Box 6.1 Electrification and health: an example of the importance of infrastructure

Health economists have shown that investment in a nation's infrastructure—in utilities such as energy, water, sanitation and telecommunications—can deliver major benefits to the economy, help to reduce poverty and ensure sustainable development by enabling human settlements to operate efficiently (World Bank 1994b). There is now growing evidence that investment in infrastructure also benefits health.

The South African Medical Research Council (MRC) has identified health and development as one of its key R&D priorities. It has been involved in a three-year project concerning electrification, a component of the nation's Reconstruction and Development Programme. In 1995, about 60% of the population were still without electricity. By the end of the decade, 2.5 million homes are expected to have access to it, with the majority of the population connected within 10 years.

Electrification is expected to benefit health by reducing air pollution, reducing the number of house fires and burns to children, and reducing the number of cases of paraffin poisoning in young children in the many homes that currently rely on this fuel. The research demonstrated that the health sector alone could save more than US$ 200 million through these benefits in savings on the cost of treating respiratory diseases, burns and poisoning.

The MRC's research on this issue has focused on providing data that can be used to devise and implement policy. Its aim has been to increase collaboration between policy-makers and service providers in the energy sector to ensure, for example, that primary health care settings and schools receive reliable electricity supplies that will help them to function efficiently and maximize their potential for improving people's health. Drawing on the principles of Essential National Health Research, the project has paid particular attention to vulnerable groups within the population, such as the ultra-poor and the elderly, and neglected areas, such as rural and informal settlements.

The research has also investigated, at household level, the impact of electrification on people's ownership of appliances such as refrigerators, and in turn the effects on household diet and nutrition; the increased opportunities for health promotion through increased TV ownership; and the impact on the status of women within the household. Such projects not only help to provide vital information but also increase R&D capacity in the intersectoral area.

frastructure, and ensure equity in their distribution? This question is of critical importance to governments and in some countries, such as South Africa, health workers, health researchers and policy-makers are already beginning to work to ensure that health needs are considered as part of infrastructural development in areas such as transport and electrification (see Box 6.1).

Example 2: Health and industry

The private sector's impact on health has been relatively neglected. The industrial base is a *source* of jobs and wealth and therefore, at the income level, an important component of a nation's health. But the *products* of industry also have an impact. Some, such as pharmaceuticals and diagnostics, are largely beneficial, though not always equitably so. The health sector has yet to tap much of the potential for effective collaboration with the private sector to increase the availability of products for better health—an issue we shall discuss in the next chapter. In the present context, however, we focus on some activities of industry that have a major negative impact on health.

The tobacco and alcohol industries in Britain alone last year exported an estimated US$ 3.6 billions' worth of products to the rest of the world—almost half the value of the nation's proudest export, pharmaceutical products. The tobacco industry in particular is seeking new markets among adolescents and women in low-income countries. As Chapter 5 mentioned, a number of governments in industrialized countries have successfully introduced cigarette pricing policies to reduce the uptake of smoking, and in some contexts, education programmes have been shown to reduce the uptake of smoking in adolescents by as much as 50%. But how should the harmful behaviours promoted by the tobacco industry best be discouraged among populations whose experience of the *consequences* of those behaviours for health is as yet limited? Some researchers question whether simply importing the strategies applied in the established market economies, whose epidemics of smoking-related diseases are well established, will be effective. What are household beliefs about the effects of tobacco in a range of different socioeconomic groups? Is education cost-effective or are price increases a more powerful instrument? Studies of fiscal measures show clearly that price increases reduce demand for cigarettes: a 10% increase in price will result in a reduction of about 4% in demand (Stanley 1993). But there is little information available about the elasticity of demand among the very poor.

Example 3: Health and transport policies

Road-traffic accidents are a large and growing source of the world's burden of injuries (Annex 1). Cars also increase people's risks of ill-health in less direct ways:

physical inactivity is a major risk factor for cardiovascular disease, and vehicle emissions contribute to the air pollution that compounds respiratory disease. A "healthy transport" policy that would reduce the use of cars in cities and encourage safe alternative means of transport involving physical activity, such as bicycles, could thus, in theory, reduce risks for multiple health problems. Could it be made to work? How could researchers quantify the potential impact of each contributory factor in a multisectoral strategy of this kind, and demonstrate its impact on overall disease burden or specific conditions?

Example 4: Health and education

The effect of ill-health on education has been discussed above. The effects of better education on health are understood and clearly important. While more research in this area is not a priority—given the substantial existing knowledge base—there will be value in occasional country-specific investments.

Example 5: Health and fertility

Again, as with education, fertility patterns both affect and are affected by health outcomes. This is a sensitive and important area for policy, and one where additions to the existing knowledge base would be valuable.

As long as there are insufficient data to assess, even in the broadest terms, the potential cost-effectiveness of such specific intersectoral policies in reducing disease burden, governments will lack the incentives to implement them. But the need for action is now clearly recognized. The Committee considers it a high priority that governments and other donors invest in feasibility studies and other initial projects to assess the potential for building comparable data sets between countries on the impact and cost-effectiveness of different interventions involving other sectors within the economy. In this way intersectoral policies can be developed to incorporate health into development. Initial work may take the form of a series of meetings between health ministries and other sectors to draw up agendas for R&D, to set common targets, and to agree on common measures of outcome.

6.2 The health system: in pursuit of effective policies

Demand for health care is growing worldwide, and costs are rising at unprecedented rates. However, there are sharp differences between countries in the amounts spent: an inefficient system may consume as much as 5% more of a country's GNP than an efficient one (World Bank 1993). The United States, notorious for the excessive costs of its health system, spends 15% of its GNP on health care—more than its combined spending on education and the military. Data from the member countries of the Organization for Economic Cooperation and Development (OECD) (see Table 6.2) vividly illustrate the international variation in expenditure. It is important to stress that greater expenditure does not necessarily equal better health. At any level of income and education, health care spending should, in principle, yield better health. But it does not: the relationship between health care spending and life expectancy varies widely.

Before discussing the health system and options for making it more equitable and more efficient, it will be helpful to define it. The health system has been defined as a complex web of supply, demand and mediating organizations, which includes not only the providers of health services (the supply side) and the people who use those services (the demand side) in any given country, but the state, and the organizations that generate resources, both human and material (Frenk 1994). Broadly defined, the health system may also include other sectors such as agriculture and the others discussed in section 6.1 above, whose actions affect health. Table 6.3 sets out the elements of the health system and shows its complexity and heterogeneity.

For all the complexity of the system, however, there are a number of broad measures that can be used to monitor its performance. Its *efficiency* can be gauged in terms of the share of the country's GNP it consumes and the health outcomes for the population. Efficiency can also be measured in terms of the cost-effectiveness of the interventions used by a health system to reduce disease burden. The *equity* of the system can be gauged, at least in part, in terms of the extent to which services are accessible to the population in need of them: that is, the population coverage of the services. And the system's *quality* can be gauged in two dimensions: its technical dimension, through the extent to which it is effective and achieves the health gains expected; and its interpersonal dimension, through the satisfaction of users, their perceptions of the appropriateness, quality and amenities of the services provided and its degree of respect for personal dignity.

In the following two sections we look at important policy questions facing governments as they attempt to make health services as responsive to their populations' needs and as efficient as possible. We have divided the analysis, for convenience, into studies of the "demand" side—the needs and behaviours of the households and population—and the "supply" side—the providers of services and the organizational, legal and political framework within which they operate. Clearly, however, there is continuous interaction between the two sides.

6.2.1 Disease burden, human behaviour and the demand for services

How do governments plan or develop health services without knowing what their populations need? Research has largely neglected the demand side of the health ser-

Table 6.2 Per capita health spending in OECD countries, selected years, 1980–92 (in U.S. dollars)

										Growth rate (%)	
	1980	1985	1986	1987	1988	1989	1990	1991	1992	1980–92	1991–92
Australia	663	998	1 072	1 112	1 170	1 234	1 314	1 393	1 451	6.7	4.2
Austria	683	984	1 046	1 109	1 191	1 318	1 401	1 492	1 576	7.2	5.6
Belgium	571	879	931	992	1 082	1 156	1 246	1 380	1 485	8.3	7.6
Canada	727	1 207	1 322	1 409	1 500	1 599	1 720	1 861	1 949	8.6	4.7
Denmark	582	807	818	890	978	1 018	1 051	1 154	1 163	5.9	0.8
Finland	517	855	911	979	1 043	1 150	1 292	1 415	1 363	8.4	-3.7
France	698	1 083	1 135	1 193	1 299	1 422	1 539	1 651	1 745	7.9	5.7
Germany	811	1 175	1 215	1 287	1 402	1 412	1 519	1 658	1 775	6.7	7.1
Greece	184	282	323	321	336	371	395	415	452	7.8	8.9
Iceland	581	889	1 073	1 220	1 331	1 373	1 372	1 457	1 456	8.0	-0.1
Ireland	449	572	580	597	622	653	749	847	879	5.8	3.8
Italy	571	814	849	955	1 064	1 153	1 300	1 419	1 497	8.4	5.5
Japan	517	792	840	954	1 025	1 099	1 190	1 274	1 376	8.5	8.0
Luxembourg	632	930	978	1 135	1 222	1 270	1 392	1 476	1 550	7.8	5.0
Netherlands	696	933	990	1 046	1 101	1 176	1 283	1 359	1 449	6.3	6.6
New Zealand	562	747	806	871	889	948	995	1 053	1 079	5.6	2.5
Norway	549	846	1 066	1 043	1 114	1 129	1 203	1 342	1 468	8.5	9.4
Portugal	238	387	350	361	440	409	447	544	585	7.8	7.5
Spain	325	452	472	522	600	683	774	826	895	8.8	8.4
Sweden	855	1 157	1 173	1 248	1 310	1 397	1 463	1 425	1 317	3.7	-7.6
Switzerland	839	1 291	1 355	1 443	1 558	1 695	1 760	1 956	2 068	7.8	5.7
Turkey	64	66	89	100	110	118	133	166	156	7.7	-6.0
United Kingdom	458	685	739	795	862	908	977	1 033	1 151	8.0	11.4
United States	1 068	1 761	1 871	2 013	2 214	2 433	2 686	2 882	3 094	9.3	7.4
OECD average	577	858	917	983	1 061	1 130	1 217	1 312	1 374	7.5	4.5

Source: OECD Health Data File; preliminary unofficial estimates from U.S. Health Care Financing Administration, Office of the Actuary; and the Committee's estimates.

vices industry, especially the development of methods for gauging need. There are two broad levels for measurement. First, at the level of the overall population, the planning of health services must be tailored to match current and projected trends in health status. For example, as we argued in Chapter 5, a sharp rise in the absolute numbers of adults affected by noncommunicable diseases will require massive increases in capacity for dealing with, among other conditions, psychiatric and neurological disease, cancers, heart attacks, strokes and diabetes in ways that low-income countries can sustain. And a steep increase in the number of elderly people will require detailed planning to ensure the equitable use of health care resources.

Beyond the broad epidemiological trends a second level of assessment is needed. Health service providers need to know much more about the perceived demand for services by individuals and households. People's knowledge, beliefs, attitudes, choices and actions will decide whether and how they seek care for themselves and their children, and whether they adopt healthy or unhealthy behaviours that increase or decrease their risk of disease. Their choices will in turn affect population health. Many of the R&D priorities we discussed in earlier chapters for specific diseases related to increasing the efficiency of existing services: in order to do so, it is essential to understand household beliefs and behaviours. For example, TB treatments are useless if people do not perceive any value in them and would rather treat themselves or seek alternative therapies.

The importance of research into understanding the determinants and consequences of household and individual behaviours affecting health cannot be overestimated. In almost every country in the world, the household is the place where key health decisions are made. In the high-income countries, people are changing their relationship with the formal health sector and taking increasing responsibility for their own health. This is illustrated by the fact that more and more medicines are now made available over the counter, while many people also choose to use alternative therapies. People in middle-income and low-income countries, meanwhile, have traditionally financed a higher proportion of their own health care costs than people in the industrialized countries (World Bank 1993) and they are being asked to take even more responsibility in many countries as governments seek to shift the burden of financing health services more towards the private sector. As a result, the beliefs, choices and behaviours of individuals and households will become even more important in determining their health.

Research into this aspect of demand has already reshaped the way services are delivered for some diseases and in some communities: for example, studies in low-income countries have shown that most people with symptoms of malaria prefer to treat themselves first rather than attend official health services. The findings have led to efforts in many malaria-endemic countries to educate households to enable them to make appropriate choices about when to seek treatment.

Table 6.3 Elements of the health system

Demand side	
Households and populations	People acting individually or as households who can produce health benefits by individual or collective action and behaviour, as seekers of health care and as purchasers of care. People forming groups (e.g. user groups, village committees, trade unions) can influence the form, cost, quality and content of health services. Behavioural choices influence risk exposure and prevention of disease.
Mediators	
Agencies in sectors outside health	Produce benefits indirectly as a result of the goods or services they provide (e.g. agriculture, education, housing, employment, communications, water supply).
Institutional purchasers	Organizations such as insurance funds, district health authorities or health maintenance organizations which delimit health needs for defined populations and purchase clinical and support services from providers using a variety of contractual mechanisms.
The state	Aggregates resources and interests from the population and channels them to the providers. Many institutional providers are state agencies. Government institutions are responsible for the financing, regulation, purchasing and provision of health care.
Supply side	
Resource institutions	Produce the human and material resources for health care—concerned with basic and in-service training of health personnel and health related R&D. These will include universities, medical schools, schools of public health, R&D departments of private companies, foundations, etc.
Service providers	In the public, private, NGO or traditional sectors. Many individuals give informal unpaid care at home. Others work in some kind of institutional setting such as a hospital, health centre or primary health facility. Services include clinical and support services.

In the preparation of this Report, the Committee requested a set of studies involving behavioural researchers, epidemiologists and health economists, to identify research needs concerned with the demand for health services. For obvious reasons, the methodology for this assessment differs from the quantitative assessment of disease burden that can be applied to specific diseases, as discussed in the preceding chapters. Instead, a consultative process was used. The findings are summarized below. The methods and the more detailed outcomes of the consultation are described in Box 6.2 and in greater detail in Annex 8.

Among the findings, one overriding conclusion emerged: countries need data on the current and projected health status of their populations if they are to develop responsive and effective health services. Crucially, they need affordable and effective means to assemble those data. The current ways of collecting data on mortality, morbidity and disability—vital registration systems, administrative data, censuses and population surveys—are time consuming and costly. Accurate data on mortality by age, sex and major causes are still not available for large parts of the world, and data on disease and disability are even harder to find. The development of rapid, low-cost methods for measuring and monitoring health trends is therefore a priority. These objectives could be achieved through a number of approaches, such as simplifying national health survey methodology or developing cost-effective vital registration methods. Without such data, the ultimate aim of designing and testing interventions that improve the health status of these populations will be impossible, because neither the need for interventions, nor their impact, can be assessed.

The types of data that will be needed to monitor health status include indicators of mortality, morbidity and disability; and measures of the cost-effectiveness of different interventions—particularly packages of interventions. The DALY is obviously a useful "common currency" for this purpose but further work is needed to test its transportability—and that of other indicators—in different cultural settings. In addition, work is needed to reduce the complexity of the measure and the cost of using it at country level. Some relevant research in this direction has begun (see, for example, Box 3.1 on the Tanzanian Essential Health Interventions Project in Chapter 3). Other indicators are also needed, for example, to measure the patterns of use of health services.

Much work needs to be done at national level to develop these data. However there are significant economies of scale and clear logical reasons for international collaboration, particularly in the development of methodologies. Sharing between countries can ensure that critical research is undertaken in a variety of settings and that the results of work done in one country are made available to others.

The consultative process also identified a set of research priorities for behavioural research at the level of households. Despite the difficulties of reaching consensus in an area whose scope is so broad and whose methodologies so diverse, two related themes emerged strongly. The first is that behavioural researchers need to understand more about the societal context in which individuals and households adopt behaviours that increase or decrease their risks of disease. For example, within households, men and women tend to control different domains of responsibility: health interventions

Box 6.2 Research needs for populations and households

The consultative process used to identify the priorities in research concerning populations and households involved three complementary elements. First, opinions concerning the need for research were solicited from selected health policy-makers, systems managers and researchers through the medium of a questionnaire. Respondents were asked to score research areas in terms of need, giving highest priority to those they believed would lead to the greatest improvements in health status, efficiency, equity or consumer satisfaction. Second, background papers were commissioned from authors who were asked to consider both needs and opportunities for research. Opportunities were said to exist where there is an identified need, where questions are amenable to research, and where no (or little) previous research has addressed the problem. The background papers and the results of the questionnaires were fed into a series of consultations with small groups of researchers and decision-makers designed to consider the meaning of the earlier work and to incorporate the results into a final set of research priorities. A fuller description of the methodology and the findings is to be found in Annex 8. The key findings are summarized below.

The most important global research priority in the area of populations identified for this Report involves the development of rapid, low-cost methods for measuring and monitoring population health status. The full agenda for population research is shown in Box Table 6.2.1.

Beyond the need for measuring methods, three more of the priorities identified also concern the development of methodologies: topics 2, 4 and 5. For topic 2, it was agreed, indicators that combine the impact of mortality, morbidity and disability into a single measure of health status are critical for setting priorities for intervention and for measuring the effects of interventions, some of which save lives while others improve the quality of life.

Topic 4 identified the need for research to develop rapid, low-cost ways of monitoring the patterns of health service use. This is important to many forms of behavioural research, while further analysis of the methodologies used in analyses of cost-effectiveness would help to shed light on studies of the impact of combined interventions on multiple diseases. Such combined interventions might include packages, such as a package for healthy schoolchildren involving micronutrients and treatments for helminths and other parasitic infections—all of which together could improve health and cognitive performance. They might also include combinations of approaches to treat single diseases, such as a combination of impregnated bednets and drugs to treat malaria. Until now, cost-effectiveness analyses have been used largely to compare single interventions aimed at single diseases.

The choice of topic 3—on ways to implement research and turn it into action—reflects the frustrations of both policy-makers and researchers that the results of studies in the population sciences are often not made available to policy-makers, and often not translated into action, as discussed above.

Research priorities for households stressed the need for better understanding of the broad societal and economic determinants of behaviour and decision-making within families. The results are summarized in Box Table 6.2.2.

Box Table 6.2.1 Priorities for global research concerning populations

Rank order	Priority area
1	Development of simple, affordable methods of monitoring the status and trends of mortality and morbidity, e.g. through simplification of national health survey methodology or cost-effective vital registration.
3	Development of indicators of population health status that take into account morbidity, mortality and disability.
3	Measurement of the degree to which research findings are implemented; investigation of why implementation fails and how to improve it.
4	Development of cheap and reliable methods of monitoring the patterns of use of health care services.
5	Development and systematic application of methods for analysing the cost-effectiveness of interventions, in terms of improvements in the quantity and quality of life. Particularly important is the assessment of packages or joint interventions, as opposed to single-technology, disease-specific interventions.

(Box 6.2 continued)

Box Table 6.2.2 Priorities for research concerning households and individuals

Individuals, households and communities

a. Individuals
   - Previously neglected groups with particular risks (school-aged children, adolescents, elderly, chronically ill)
   - The influences of males on the health of their children

b. Household and family organization and their impact on decisions affecting health
   - Domains of responsibility
   - Effects of women's education
   - Effects of changes in women's occupation
   - Influences of illness on family organization, health status of other family members

c. Community
   - Impact of household choices, household illness on adjacent households
   - Influence of affiliative groups/networks on individuals and households

Health related risks and perceptions of risks

- Perceptions of physical and social risk
- Decision-making concerning tradeoffs of risk and perceived benefits
- Determinants of response to programmes concerning risk reduction

Responsibility for health care

- Content and effectiveness of home-provided care
- Determinants of choice of care
- Effect of characteristics (status) of sick individual
- Perception of providers and medication
- Prevention; perception of responsibility of self, household, community, state

Expenditure on health

- Who contributes and mechanisms to cope
- Effects of changes in cost

Health services

- Determinants of compliance

Specific interventions

Migration, including refugees

- Effect on access to care and preventive services

Development of methodology

- Application of methodologies from other fields

Note: Eight major research areas and subareas were identified through a process of consultation. Members of the consultation group then listed specific research questions within each area. The experts were unwilling to rank priorities, but the eight topics are listed in descending order of the number of specific research questions identified by the experts under each heading.

that reduce the risk of disease are more likely to succeed if they are targeted at the adult who makes the relevant decisions in the household. Households where domestic spending is controlled by women spend more on food than households whose spending is controlled by men, so nutrition interventions are more likely to succeed if they are developed in consultation with women. The impact of other sectors, such as the fiscal system, on household health related decisions is also critical.

The second major theme that emerged was the need for explicit consideration of the changing nature of the social context and how it influences both the demand for health services at local level and the efficiency of community based services. It is now clear that people's perceptions of the meaning of the word "community"—that is, who actually belongs to their community and who they will cooperate with—will change if those people migrate or move to a city. This means that the traditional models of "community participation" that health workers have relied upon in stable, rural areas need to be reconsidered and reevaluated in urban areas or in areas of rapid population movements. Research aimed at improving the technical or allocative efficiency of health interventions cannot be properly designed without a better understanding of these influences on people's decisions.

Much of the existing research on household behaviour and its impact on the demand for services is specific to a particular context within a particular country, confirming the need for national-level approaches and community consultations such as those used in developing agendas for Essential National Health Research. The issues raised here complement these concerns and involve

broader "generic" questions that cut across diseases and which are often best asked in more than one context and more than one country.

6.2.2 Equity, efficiency and the supply of health services

For a health system to operate effectively, the supply side must be organized to meet need, and provide high-quality, efficient services. But, as we have seen, these goals are not necessarily easily achieved. Here, we identify the key obstacles and discuss an agenda for R&D to address them.

As with the demand side, the lack of information is remarkable. There are almost no data, for example, to enable comparative assessments of the impact on health of different policies for the remuneration of health workers; of a range of financing systems; of the impact of reforms such as decentralization and the introduction of user charges; of the impact of fiscal instruments to promote healthy policies; or of the outcomes of different approaches to priority-setting in the allocation of resources. In the midst of this data drought, countries provide services that are inappropriate or unacceptable and underused. More surprisingly still, perhaps, health workers in most countries still lack a culture of evidence-based practice. The existing efforts to systematically assess evidence for the efficacy of different health care procedures are the first steps towards a more rational culture, but much more work is needed to achieve evidence-based practice on a greater scale. The information vacuum makes it impossible for countries to assess their own performance or to share experience with others and avoid the repetition of mistakes.

In parallel with the investigation of research priorities for populations and households described in section 6.2.1, a second investigation was conducted into priorities for research on this "supply" side of the health system. Once again, a consultative process was used. Its results are summarized below and more detail is given, together with description of the methodology, in Box 6.3, and in fuller detail in Annex 9.

A key conclusion was that countries need strong national and internationally comparable data to enable them to monitor health system performance and standards, set priorities and make effective reforms. It was agreed that countries need to develop mechanisms to decide how to allocate resources and set priorities. This involves the identification of principles for assessing eligibility for services and the content of the essential package of interventions (such as those described in Chapter 3) to which all users should have access. A growing number of countries are now involved in debate over priority-setting for health services, an issue which is intensifying as the age structure of their populations changes.

The study for the Committee also concluded that research is needed to establish the relative effectiveness of different financing options, including national and local taxes, user fees and health insurance, in the organization of health services. For example, what is the optimal mix of private and public funding for service provision? What are the best means of developing regulations and contracts to govern the relationships between public and private agencies in health? Once again, more research is needed at national and regional level to enable international comparisons.

Finally, the study participants considered that the decentralization of health systems (defined as the transfer of functions, resources and authority to peripheral levels of government) was an additional key area for study. What are the most effective ways to decentralize and maximize performance? How can governments and service providers maximize the involvement of local communities in designing decentralized services to ensure their satisfaction?

6.2.3 Translating results into action

The growing appreciation of the potential payoffs from research into the performance of health systems is matched by an understanding that research in these areas must lead to information that health providers and managers can use. The outcomes of research can generate practical products such as databases for evidence-based practice, essential drugs lists and model indicators for monitoring national drugs policies, insurance benefit lists, fee schedules, architectural designs, manuals for employers, and translations of findings into formats accessible to decision-makers. (See Table 6.4.)

An increasing number of countries and a few international networks (such as the Cochrane Collaboration) are investing in systematic efforts of this kind. However, the failure to apply existing knowledge still remains one of the greatest barriers to growth and development.

6.2.4 Current investment in health policy research

This chapter has highlighted the shortage of data to inform health policy, and shown that the payoff from improving the situation is potentially very large. Because of the comparatively broad nature of health policy research, its payoff is also likely to be diffuse, at least at first, and its benefits less sharply visible than the effects of, say, biomedical research into the efficacy of a vaccine or a drug. Yet ultimately, its impact could be much greater in terms of alleviating disease burden across a wide range of conditions.

In preceding chapters, the Committee has identified a number of mismatches between need and the level of ongoing research effort in specific health conditions. However, the most striking deficit of all appears to be here in the fields of behavioural research and health policy research. Certain middle-income and low-income nations (Mexico, the Philippines and South Africa, for example) are conducting high-quality research in relevant areas. However, their contributions alone are un-

Box 6.3 Priorities for research on health systems and health policies

A questionnaire, structured in line with the major components of the health system, was developed and tested with members of the WHO Forum for Health Sector Reform. The responses of this group formed the basis for commissioning a series of expert reviews on major topics of interest. These reviews constitute background papers to the Report. A revised questionnaire was then sent to health policy-makers, systems managers, bilateral and international agencies and researchers worldwide to obtain a range of views on priorities for health system development in general, and for health policy and systems research in particular.

The topics identified as priorities for research are necessarily very broad. Key findings are summarized here and the results are discussed in more detail in Annex 9.

1. Priority-setting

A prime requirement, it was agreed, is for countries to develop mechanisms for deciding how to allocate resources and set priorities within their health systems. This involves, for example, the identification of principles of eligibility for services, the essential package to which all users should have access and the basis for any geographical variations in funding. Almost all countries are now engaged in a political debate over priority-setting; with the aging of populations the debate is likely to intensify. Data to inform that debate are essential.

2. Financing the health system

Research is needed to establish the relative effectiveness of different financing options, including national and local taxes, user fees and health insurance. An expert review (McPake in Supplementary paper 3) analysed existing studies and, where possible, drew broad conclusions. In the area of user charges, these included the need to provide clear information, exemption mechanisms and local rewards for health centres to avoid a steep and prolonged decline in use of health services by the poorest. In the area of health insurance, the reviews concluded that compulsory insurance schemes are likely to be cost-effective only if there are strong incentives to providers to keep costs down.

A related area in need of research is the optimal mix of private and public funding for health systems. There is a particular lack of knowledge about the best means of developing regulations and contracts to govern the relationships between public and private agencies in health. In all these areas of finance, much more research is needed at national and regional level to enable international comparisons.

3. Decentralization

The decentralization of health systems (defined as the transfer of functions, resources and authority to peripheral levels of government) was identified as a key area for research. The consultative process identified five subdivisions of the subject (Collins in Supplementary paper 3). These were (1) the theoretical and conceptual background to understanding decentralization, (2) the conditions for effectiveness, (3) the study of decentralization to hospitals and health centres, (4) the internal organization of hospitals, and (5) the operation of public-sector markets. It was argued that international comparative research on decentralization is well worth undertaking, but stressed that care should be taken to avoid its potential limitations and problems.

4. Standards and quality of care

R&D is needed to compare and refine definitions of standards and quality, to review mechanisms and pro-

Box Table 6.3.1 Priorities for research on health policies and health systems

Rank order	Priority area
1	Setting priorities for the allocation of public resources
2	Health services financing
3	Translating policy into plans and action
4	Health needs assessment and monitoring systems
5	Decentralization
6	The mix of public and private health service provision and financing
7	Standards and quality of care
8	Involvement with community organizations
9	Setting the policy agenda
10	Information management

Note: 43% of all the ranking points went to the first two topics.

(Box 6.3 continued)

cesses for monitoring standards, and to analyse experiences with quality assurance and medical audits.

5. Setting the policy agenda and translating policy into action

Research is needed into the process of developing health policy. This concerns questions about the adoption of policy issues, the identification and appraisal of options, different ways of turning policies into plans, legislation and action, and means of controlling, monitoring and supporting the implementation of policy. Expert review revealed the need to move away from the traditional linear concept of policy formulation, which assumes a unitary rational actor and pays more attention to policy analysis than to policy implementation, to a model where multiple streams of problems, solutions and politics affect policy change (Walt and Foltz in Supplementary paper 3).

6. Involving communities in health policy development

The consultation called for research to consider further the potential for public involvement in the planning, management and monitoring of services, and the means through which civil organizations are able to influence the form, content, cost or quality of care. Such research would be likely to focus on the use of Essential National Health Research processes and the evaluation of their impact on health policy.

able to match the scale of the global need. Even within the established market economies, support is patchy. The government of the United Kingdom has recently announced measures to support R&D within the National Health Service, including health services research, through a levy on the purchasers of health care and a requirement for health service providers to declare their R&D expenditure. The Canadian government's Medical Research Council recently committed itself to increasing the proportion of funding for health systems research to about half of its total grants. However, these are rare steps. Support from the established market economies to the governments of the low-income countries for health policy research is minimal. An analysis conducted for this Report could identify at most US$ 53 million annually invested by the major donors. The largest individual investors to this area are the World Bank, the Canadian International Development Research Centre, WHO and the International Health Policy Programme (see Annex 5).

With such minimal investment it is perhaps not surprising that, so far, there has been too little activity to generate widely applicable results. Most apparent is the shortage of strong national and internationally comparable data on the outcomes of health system reform; the absence of simple and low-cost methods for obtaining population data on mortality, morbidity and disability; inadequate attention to household behaviours in an era when households are taking increasing responsibility for their health; the absence of national health accounts; a shortage of comparable data on the cost and effectiveness of different interventions for particular health needs in different settings (as, for example, with the malaria interventions described in Chapter 4); and a shortage of data on needs, opportunities and resource flows in health research.

Table 6.4 Overcoming potential barriers between researchers and decision-makers

Sources of potential barriers between researchers and decision-makers	Means to overcome the barriers
Definition of priorities	Presence of decision-makers in governing or consulting bodies of research centres.
Time management	Collaboration between researchers and decision-makers from the early planning stages of a project onwards; identification of intermediate products of the research.
Language and accessibility of results	Executive syntheses; the availability of "translators" to turn research into policy; joint seminars for the analysis of results.
Integration of different findings about the same problems	Meta-analysis of trials; mission-oriented research.
Differing perceptions about the final product of research: discovery versus decision	Definitions of utilization objectives in addition to the scientific objectives of research; greater weight given to relevance in researchers' evaluations.

Source: Frenk 1987.

6.3 A new initiative for research in pursuit of better health policies

The discussion above has pointed strongly to the need for new and focused efforts to improve the information base on which governments can build health into their development plans and monitor the performance of their health systems. Better data at national and international levels would enable governments to understand and quantify the interactions between health and the economy, to share each other's findings on health system reform, and to identify models for high-quality, cost-effective health care. To achieve this, countries will need to agree on indicators of input and output and, as far as possible, common measures of health need such as disease burden. Work on this agenda could simultaneously strengthen national capacity and information, and provide an international public good to enable each country's health system to improve both its organization and practice on the basis of evidence-based analysis of what does—and does not—work and on the basis of comparative performance indicators. The Committee concludes that national, regional and international activities in three broad domains are needed:

Domain 1: Promoting generic and comparative research in health systems and health policy

- Investigate further the links between health and the broader issues of economic and social policy;
- Investigate further issues related to health policy and health reform;
- Optionally select and implement intervention packages (behavioural studies, operational research including into quality of care, technology assessment and cost-effectiveness analysis).

Domain 2: Developing performance indicators and tools

- Develop "outcome indicators"—for demographic and epidemiologic trends, both population-based and facility-based, and for disease burden;
- Develop "input" and "process" indicators—measures of input availability and financial sources; descriptors of processes and policies; and national health accounts;
- Develop tools to assist policy implementation—such as essential drugs lists and model legislation—and tools to improve the quality of policy analyses.

Domain 3: Facilitating national activity

- Advocate and facilitate national programmes of research in health systems and health policy;
- Support national capacity-strengthening (institutional development; individual training).

The best means to achieve work on this agenda should be actively considered by governments and other investors. The range of possibilities includes:

- A network of leading institutions with strong national focus but international overlay, linked by effective mechanisms for sharing data and synergizing activities;
- A Special Programme for Research and Training on Health Systems and Policy, based on the models of other such programmes with proven records of effectiveness and value for money.

At a time when reforms are already under way, the major intellectual challenge is to grasp the opportunities for research now that will lead to action and better health policies.

6.4 Chapter summary and recommendations

Despite rapidly changing health needs and widespread health system reform, the Committee has identified a serious degree of neglect of research to inform health policy in all regions. Yet the incentives for better information are exceptionally strong. Better health, particularly among the lowest income groups, may be a central requirement for economic growth, and investment in health may pay high dividends, while the inefficiencies and inequities of a poor-quality health system are a substantial drain on both the health and the prosperity of economies. In order to incorporate health into their development plans, governments at all income levels need strong national data on the interactions between different sectors of the economy and population health. In order to increase the efficiency, equity and quality of their health services, they require, first, more detailed information on population needs—using epidemiologic and demographic data, measurement of disease burden and studies of health seeking behaviour. Second, they require information to help them to improve their services at the supply level. This may be obtained in part through operational research to develop and implement intervention packages, behavioural studies, research into quality of care, technology assessment and cost-effectiveness analysis. Improvements at national level may also be aided by comparative information between countries on the outcomes of health system reform. Key steps towards achieving these aims will include the development of simple, affordable indicators of input, process and output and the development of tools that help to put policy into practice, such as essential drugs lists and model legislation. Despite the complexity of making international comparisons between health systems, this must increasingly be a goal for health researchers who wish to maximize the use of resources, share findings and enable countries to learn from each other as an international public good. The precondition for achieving this better international collaboration will be the strengthening of national activities, through capacity-building and the facilitation of national health policy research programmes.

Recommendations

1. Researchers and governments should agree on the principles for building strong national knowledge bases and data sets that will enable countries to learn from each other's experience. Among the priorities are studies to quantify the impact on health of economic policies and performance, the contribution of investments in health of the poor to their productivity, and the health impact of activities in other sectors, for example education, agriculture and transport; studies of the efficiency and effectiveness of different financial and organizational structures in health systems; measures of health need and the demand for services at household and population level; and measures of health system performance. The development of packages of essential services and the development of measures for assessing quality of care and intervention cost-effectiveness are also priorities.

2. Investors should devote resources to turning research results into action, for example through the development and evaluation of cost-effective instruments of public policy and practical tools for health workers. These may include essential drugs lists, model legislation, priority intervention packages, insurance benefit lists, pricing and taxation policies, practical manuals for use by health workers and summaries of research results for use by health workers and decision-makers.

3. To facilitate the above activities and to assist in providing the information that could guide health policies, a Special Programme for Research and Training on Health Systems and Policy should be established. The programme's agenda might be grouped into three broad domains: (1) generic and comparative issues of research on health systems and health policy, including the interactions between health and economic and social policies, and the outcomes of health system reform; (2) the development of *indicators* to monitor inputs, outcome and process on the demand and supply sides of the health system, together with the development of *tools* such as essential drugs lists and others listed in recommendation 1 above, that help to put policy into practice; and (3) efforts to facilitate national activities in health policy and systems research, such as supporting national capacity-strengthening through training programmes. A linked network of existing institutions might equally well perform these functions, supported by a staffed and adequately resourced independent unit.