

Chapter 4

Priority areas in health research

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Summary

In view of the competing priorities for scarce health research funds, priority setting for health research is as critical as conducting the research itself. The use of scant resources has to be weighed against competing priorities. The process of priority setting is an important activity per se in that it engages institutions and individuals to question and evaluate specific interventions.

In a first section, Chapter 4 focuses on a broad comparison of the disease burden between high- and low/middle-income countries, taking into account the following three broad categories of conditions: communicable diseases (including maternal, perinatal and nutritional conditions), noncommunicable diseases and injuries. It concludes that low/middle-income countries, which account for 85% of the world population, represent 92% of the global disease burden. By comparison, high-income countries account for 15% of the world population and 8% of the global disease burden. A second conclusion, based on a comparison of the rates of burden (DALYs per 100,000 population), is equally striking: the rate for noncommunicable diseases is very similar in high- and low/middle-income countries, whereas the rates for communicable diseases (including maternal, perinatal and nutritional conditions) and injuries are respectively thirteen and three times higher in low/middle-income countries than in high-income countries.

In a second section, the chapter focuses on the identification of health research priorities based on the conclusions of the four approaches to priority setting described in Chapter 2. Insert 4.3 shows that the priority areas identified in the four approaches are largely similar, reflecting the high disease burden and the persistence of these conditions. The priority research areas most often mentioned are the following:

- child health and nutrition (including diarrhoea, pneumonia, HIV, TB, malaria, other vaccine-preventable diseases and malnutrition)
- maternal and reproductive health (including mortality, nutrition, STDs, HIV, family planning)
- noncommunicable diseases (including cardiovascular, mental health and disorders of the nervous system)
- injuries
- health systems and health policy research.

Finally, the third section identifies poverty as a key determinant of health. The section argues that relevant research areas applicable to poor and non-poor segments of the population should include communicable diseases, noncommunicable diseases and injuries, with priority given to research projects with the lowest estimated cost per healthy life-year saved.

Introduction

Health research helps define and quantify the key determinants that affect health. Strategic research, for example, identifies, explores and describes factors which contribute to disease or good health, and which can help define health interventions. Epidemiological methods help quantify the potential impact of planned interventions, while costing can determine their sustainability. Biomedical research varies in scope from the development of new tools to the adaptation and implementation of known tools in the field. Behavioural research uses quantitative and qualitative techniques to examine behaviour at the individual and the community level. Meanwhile, research can explore determinants of health both in the health and non-health sector, as well as the impact of macro-decisions at the global level. All these levels are explored and described in the framework matrix described in Chapter 2.

In view of the competing priorities for scarce health research funds, priority setting for health research is as critical as conducting the research itself. The process of priority setting is an important activity *per se* in that it engages institutions and individuals to

question and evaluate different assumptions. A continuous review of priorities and priority-setting mechanisms is essential since research priorities change over time as a result of epidemiological, demographic and economic changes. Investment in priority setting for health research should be seen as complementary to the implementation of interventions to improve health status. However, the relevance of research, especially health research, is frequently not recognized. Funding for health research is all too often seen as a luxury and as an easy target for budget cuts at a time of financial stringency.

A number of approaches for setting priorities were described in detail in Chapter 2. Chapter 4 focuses on recent estimates of the burden of diseases, both as proportions and as aggregate rates, and relates them to the lists of priorities emerging from these approaches to priority setting. It then outlines the activities of the Global Forum and its partners in the light of these priorities, leading on to a description of research activities under Analytical Work (Chapter 5) and Initiatives (Chapter 6).

Section 1

Burden of disease 1998 in low- and middle-income and in high-income countries

1. Introduction

Estimates of disease burden are an indication of unfilled health gaps in each country around the world. By following burden of disease estimates, it becomes clear that health needs in the developing world are changing over time, and that the demographic and epidemiological transitions have changed the profiles of population and health structures in most developing countries.

The demographic transition has changed the “population pyramid”. As mortality declines, a temporary increase in population leads in due course to a decline in fertility rates and a fall in the growth rates of a given population. This results in a shift from high birth and death rates to low ones – with profound repercussions on the structure of society. The epidemiological transition which follows the demographic transition reflects changes in disease burden over time. People live longer and therefore have a higher probability of developing diseases and conditions, including noncommunicable diseases and injuries, which would not otherwise have occurred. These are new challenges that health services have to deal with.

2. Disease rates

Although comparative studies of the data on burden of disease in low/middle-income countries and in high-income countries can be helpful, the use of percentages of total

DALYs as opposed to rates (reflecting disease burden per 100,000 people) is likely to conceal the true magnitude of the problems. Given that the vast majority of the world's population live in low/middle-income countries, even a small change in the percentage of disease burden in these countries will affect a large number of people. Therefore, comparisons between countries should be seen both in terms of percentages and in terms of rates (i.e. DALYs per 100,000 population).

Insert 4.1a provides comparative data on population and disease burden (in thousand DALYs) for low/middle-income and for high-income countries. The insert reflects the following findings:

- Low/middle-income countries include 85% of the world population but account for 92% of the disease burden, reflecting either the population distribution, a higher burden, or both.
- Conversely, high-income countries include 15% of the world population but account for only 8% of the disease burden,

Comparisons of the rates of burden (calculated as the rate of DALYs per 100,000 population) in Insert 4.1b are equally striking:

- The rate for noncommunicable diseases is very similar in high- and low/middle-income countries.

- The rates for communicable diseases (including maternal, perinatal and nutritional conditions) and injuries are respectively thirteen and three times higher in low/middle-income countries than in high-income countries.

3. Disease distribution

Insert 4.2 indicates the distribution of conditions using the classification of the Ad Hoc Committee Report.

Communicable diseases, maternal and perinatal conditions and nutritional deficiencies (referred to as the “unfinished agenda”) continue to account for over one third of the disease burden in low- and middle-income countries. Although tools are available to prevent some of these diseases and conditions, they are not being used. One example of this is Hib vaccine, which protects against pneumonia and meningitis caused by infection with *Haemophilus influenzae* type b. This vaccine was developed, tested and introduced in industrialized countries a decade ago, but is still not widely available in developing countries. However, for other health problems, such as maternal mortality, there is an urgent need to research, develop and implement new interventions at the community level since no single intervention is available to significantly reduce them. In addition, noncommunicable diseases and injuries account for a significant proportion of disease burden in low/middle-income countries, accounting for 40% and 16% respectively.

In developed countries, a high proportion of disease burden is due to noncommunicable diseases, and very little to communicable diseases. Populations in these countries enjoy longer life expectancy and are better able to prevent and treat infectious diseases and malnutrition. However, they experience a higher disease burden from cardiovascular diseases, neuropsychiatric disorders and cancers.

While infectious diseases have been the predominant cause of disease burden in the developing world, the prevalence of noncommunicable diseases has risen with increasing life expectancy. Over the next 20 years, noncommunicable diseases are expected to account for an increasing proportion of disease burden in these countries. In the 21st century, health services in developing countries will have to deal with the so-called “double burden”: an epidemic of noncommunicable diseases coupled with the continuing problem of infectious diseases, malnutrition and maternal mortality.

However, the interventions already in place in developed countries to deal with noncommunicable diseases and injuries may not be appropriate in developing countries due to poor infrastructural development and a variety of cultural, economic and other reasons. The identification of appropriate interventions will become an important challenge in low/middle-income countries for which health services have to prepare.

Insert 4.1a

Population and burden of disease by country income level in 1998 (extracted from the World Health Report, 1999)

	Low/middle income	High income
Population (in millions) (%)	4,977 (85%)	908 (15%)
Total DALYs (in millions) (%)	1,274 (92%)	108 (8%)

Insert 4.1b

Rate of burden of disease (calculated as DALYs per 100,000 population) by disease group and by country income level in 1998

Disease group	Low/middle income	High income
Communicable diseases, maternal, perinatal and nutritional conditions	11,206	863
Noncommunicable diseases	10,200	9,664
Injuries	4,198	1,403

Source of Inserts 4.1a and 4.1b: Calculated from the *World Health Report 1999*.

Insert 4.2

Disease burden (in DALYs) by country income level

Group	Sub-group	Major conditions	Country level of income (percentage of total)	
			Low/middle income	High income
Group 1 <i>Communicable diseases, maternal, perinatal and nutritional conditions</i>	Major childhood conditions	<ul style="list-style-type: none"> • Acute respiratory infections • Perinatal conditions • Malaria • Diarrhoea/nutritional • Measles 	24%	4%
	Major adult conditions	<ul style="list-style-type: none"> • Maternal conditions • Tuberculosis • HIV/AIDS 	10%	1%
	Other conditions	<ul style="list-style-type: none"> • Other infectious/parasitic 	10%	2%
		Subtotal	44%	7%
Group 2 <i>Noncommunicable diseases</i>	Neuropsychiatric conditions	<ul style="list-style-type: none"> • Alcohol dependence • Uni- and bi-polar depression • Psychoses • Obsessive-compulsive disorders 	11%	23%
	Cardiovascular diseases	<ul style="list-style-type: none"> • Ischaemic heart disease • Stroke • Rheumatic heart disease • Inflammatory cardiac disease 	10%	18%
	Cancer	<ul style="list-style-type: none"> • All types 	5%	15%
	Other noncommunicable	<ul style="list-style-type: none"> • Other endocrine/metabolic • Other respiratory/digestive 	14%	25%
		Subtotal	40%	81%
Group 3 <i>Injuries</i>	Injuries	<ul style="list-style-type: none"> • All types 	16%	12%
TOTAL			100%	100%

Source: Extracted with modifications from the *World Health Report 1999* and related to the classification used in the Ad Hoc Committee Report.

Section 2

Recommendation of priority research areas from various approaches

This section offers a brief review of the priority research areas recommended under four approaches used in the past decade to set priorities for health research. Several of the recommended priority areas are shared by all approaches, as described in Insert 4.3.

1. Essential National Health Research

A summary description of the Essential National Health Research priority-setting mechanisms was included in Chapter 2. In the examples selected (from Tanzania, Indonesia and South Africa), priorities are set by all stakeholders, representing both the supply and the demand side of health. The process is participatory, transparent, iterative and multidisciplinary in its approach. The selected priority research areas for each of the three countries are summarized in Insert 4.3 for comparison with other approaches.

2. Advisory Committee on Health Research (ACHR)

The ACHR Research Policy Agenda was identified through a process of consultation on problems critical to the attainment of “Health for All” in the areas of population dynamics, industrialization and urbanization, the environment, food and water, new and re-emerging threats to health, and behavioural and social problems. Using a multi-disciplinary approach to priority setting, the

ACHR based the analysis of the health status of a country on the Visual Health Information Profile (VHIP) to allow for comparisons. The selected priority areas are incorporated in Insert 4.3 for comparison with other approaches.

3. Ad Hoc Committee Report

The Ad Hoc Committee produced recommendations on priority research areas based on the burden of disease using the five-step process. The intention was to identify a limited number of areas where R&D was insufficient relative to the magnitude of the problem and to the potential for significant progress. An important aspect of the Ad Hoc Committee work in priority setting was to underline the need for economic analysis in health research.

The Ad Hoc Committee produced a list of 17 recommendations¹ for health research areas ranging from work on the “unfinished agenda” (including child health, nutrition, maternal health and infectious diseases), noncommunicable diseases and injuries and health policy research. The set of recommendations varied in disciplines from biomedical science; epidemiological, demographic and behavioural sciences; and health policy issues. These recommendations are incorporated in Insert 4.3 for comparison with other approaches.

¹ See *The 10/90 Report on Health Research 1999*, pages 30-32.

4. The contribution of the Global Forum for Health Research and its partners

The process for selection of priority areas by the Global Forum was reviewed in Chapter 2.

Priority areas recommended by the Global Forum have been incorporated into Insert 4.3. The actions taken by the Global Forum and its partners are reviewed in detail in Chapters 5 and 6.

Section 3

Poverty and health research

Poverty is one of the key determinants of health. It is both a cause and a consequence of ill-health. Poverty is associated with a large number of factors related to ill-health and is itself frequently highlighted in epidemiological studies as a critical risk factor. Ill-health can lead to poverty by interfering with the individual's capacity to produce. In addition, the poor are less likely to have access to health services or to have savings to get them through the periods when they are sick and unable to work.

While the relationship between ill-health and mortality is well documented, information on the substantial contribution of better health to the reduction of poverty and to development in general is extremely limited. Studies on disease burden, for example, often fail to explore socioeconomic differentials. Likewise, health status is rarely selected as an outcome measure of developmental interventions. As a result, it is not known how the burden of disease differs in poor and in richer societies,

a basic first step for initiating and monitoring interventions.

International and bilateral development agencies are increasingly focusing on poverty-related issues. A recent call for information and knowledge to advance this critical area was voiced through the Bulletin of the World Health Organization, which devoted a whole issue to inequities in health.² The issue calls for action and research.

Relevant research areas applicable to poor and non-poor segments of the population should include communicable diseases, non-communicable diseases and injuries, with priority given to research projects with the lowest estimated cost per healthy life-year saved. Social and behavioural determinants of diseases should be integrated in the research.

Potential areas of work should include: the economic analysis of the contribution of better health to development in general and to

² Bulletin 2000: Inequities in health. Bulletin of the World Health Organization. Vol 78, No. 1, 2000.

the reduction of poverty in particular; the economic burden of diseases and conditions that prevent people from working; the health impact of developmental interventions; mechanisms to improve access to and financing of health programmes; and issues

relating to inequities and inequalities in health service use. Addressing poverty and inequities between and within countries will be one of the challenges over the coming decades.

Insert 4.3

A comparison of the main diseases and conditions identified as research priorities by various approaches³

Topics	Conditions/factors	Priority areas identified						
		ENHR Indonesia	ENHR Tanzania	ENHR South Africa	Ad Hoc Committee	ACHR	Global Forum Areas	Global Forum Actions
Child health and nutrition	Diarrhoea, pneumonia, HIV, vaccine-preventable diseases	✓	✓	✓	✓	✓	✓	Initiative ⁵
	Nutritional deficiencies	✓	✓	✓	✓	✓	✓	
Maternal/reproductive health	Sexually transmitted infections including HIV	✓	✓	✓	✓	✓	✓	Analytical work ⁵
	Maternal mortality	✓	✓		✓	✓	✓	
	Maternal nutrition	✓	✓	✓	✓	✓	✓	
	Family planning	✓	✓		✓	✓	✓	
Other communicable diseases	Malaria, dengue fever and other tropical diseases	✓	✓	✓	✓	✓	✓	Initiative
	TB	✓		✓	✓	✓	✓	Initiative
	Eye/skin infections	✓	✓					
Noncommunicable diseases	Cardiovascular diseases	✓				4	✓	Initiative
	Cancer and endocrine disorders	✓		✓		4	✓	
	Mental and neurological conditions	✓		✓		4	✓	Analytical work
	Violence and injuries	✓	✓	✓			✓	Initiative

³ This table is limited to diseases and conditions/factors. Priority research interventions will be based on an analysis of the determinants using the practical framework matrix (see Insert 2.7). Among the determinants, health systems research was mentioned in all approaches.

⁴ Recommended establishing a programme to review health systems, noncommunicable diseases and capacity development.

⁵ See actions supported by the Global Forum through analytical work in Chapter 5 and through initiatives in Chapter 6.

