

# **The 10/90 Report on Health Research 2000**

**Overview of the Global Forum**

**Complementary approaches for priority setting**

**Progress in methodological issues**

**Priority areas in health research**

**Advances in selected priority areas**

**Progress in initiatives**

**Capacity development**

This report was prepared by the Secretariat of the Global Forum for Health Research on the basis of the presentations and discussions at Forum 3, held in June 1999 in Geneva, and on the basis of the work of the Global Forum and its partners during 1999. The Secretariat alone is responsible for the views expressed.

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# Global Forum for Health Research

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Global spending on health research by both the public and private sectors amounts to about US\$56 billion per year (1992 estimate). However, less than 10% of this is devoted to diseases or conditions that account for 90% of the global disease burden. The human and economic costs of such misallocation of resources are enormous. The central objective of the Global Forum for Health Research is to help correct the 10/90 gap and focus research efforts on the health problems of the poor by improving the allocation of research funds and by facilitating collaboration among partners in both the public and private sectors.

The Global Forum for Health Research is an international foundation managed by a Foundation Council, representing the partners of the Global Forum, assisted by a Strategic and Technical Advisory Committee (see the Statutes, Annex 1).

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In particular, the Report builds upon the papers and discussions of Forum 3 of the Global Forum for Health Research held in Geneva in June 1999. A list of these papers and their authors appears in Annex 2 (Agenda for Forum 3, 8-10 June 1999). We at the Secretariat of the Global Forum take this opportunity to thank all the authors and all the participants in Forum 3 for their valuable contributions to making progress on the road to improving the 10/90 gap.

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## Glossary

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**10/90 GAP:** less than 10% of global spending on health research is devoted to diseases or conditions that account for 90% of the global disease burden.

**ANALYTICAL WORK:** studies of narrow or broad dimension designed to enlighten an issue in the field of priority setting. The Global Forum currently focuses on burden of disease and health determinants, cost-effectiveness analyses, analysis of resource flows, priority-setting methods and monitoring progress in correcting the 10/90 gap.

**BURDEN OF DISEASE:** an indicator that quantifies the loss of healthy life from disease and injury.

**COST-EFFECTIVENESS** (of a health research intervention): analysis of the net gain in health or reduction in disease burden resulting from a health intervention in relation to the cost of the research which permitted the discovery and development of that intervention. Cost-effectiveness analysis helps identify interventions that are likely to produce the greatest improvements in health status for the available resources.

**DALY:** Disability-Adjusted Life Year, an indicator developed for the calculation of disease burden which quantifies, in a single indicator, time lost due to premature death with time lived with a disability.

**DOUBLE BURDEN:** an epidemic of noncommunicable diseases coupled with the continuing problem of infectious diseases, malnutrition and maternal mortality.

**EXTERNALITY:** a factor that is not taken into account in the decision-making process of any institution or individual but that has important positive or negative effects on the community as a whole.

**FIVE-STEP PROCESS:** a practical framework for priority setting developed by the Ad Hoc Committee on Health Research (see Chapter 2, section 3).

**FORUM:** the annual meeting of the Global Forum for Health Research. Forum 4 is incorporated into the International Conference on Health Research for Development, Bangkok, October 2000. Forum 5 will be held in Geneva on 9-12 October 2001.

**GLOBAL PUBLIC GOOD:** a public good with benefits that are strongly universal in terms of countries (covering more than one group of countries), people (accruing to several, preferably all, population groups) and generations (extending to both current and future generations without foreclosing development options for future generations).

**INITIATIVES:** projects that bring together a wide range of partners, both institutionally and geographically, in a concerted effort to find solutions to key health problems of such magnitude that they are beyond the capacity of any single institution to resolve and require the concerted efforts of a coalition of partners.

**LIFE-CYCLE APPROACH:** examination of adult disease through the study of maternal and childhood risk factors (biological, social and environmental).

**ORPHAN DISEASE:** disease accounting for high burden, for which interventions are limited and not commensurate with the disease burden.

**PRIORITY SETTING:** process by which policy-makers rank health problems and research topics by order of priority and hence the allocation of funds.

**RESEARCH CAPACITY DEVELOPMENT:** the process by which individuals, organizations, institutions and societies develop abilities (individually and collectively) to perform functions effectively, efficiently and in a sustainable manner to solve problems.

**RESOURCE FLOWS:** total funds invested in health research by public or private sources.

**UNFINISHED AGENDA:** the remaining burden of childhood infectious diseases, poor maternal and perinatal health and malnutrition that has been targeted for completion.



## Abbreviations and acronyms

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ACHR	Advisory Committee on Health Research
CIOMS	Council for International Organizations of Medical Sciences
COHRED	Council on Health Research for Development
CVD	Cardiovascular disease
DALE	Disability-adjusted life expectancy
DALY	Disability-adjusted life year
DOTS	Directly observed treatment short course (TB)
EIP	Evidence and Information for Policy (Cluster within WHO)
ENHR	Essential National Health Research
EPI	Expanded Programme on Immunization (immunization against diphtheria, pertussis, tetanus, poliomyelitis, measles and tuberculosis)
GAVI	Global Alliance for Vaccines and Immunization
GBD	Global Burden of Disease
GTRI	Global Tuberculosis Research Initiative
HALE	Health-adjusted life expectancy
HEALY	Healthy life year
HPSR	Health policy and systems research
HRP	UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction
HSSR	Health systems and services research
IAVI	International AIDS Vaccine Initiative
IBDN	International Burden of Disease Network
IDRC	International Development Research Centre, Canada
IFPMA	International Federation of Pharmaceutical Manufacturers' Associations
INCLEN	International Clinical Epidemiology Network
MIM	Multilateral Initiative for Malaria in Africa
MMV	Medicines for Malaria Venture
NCD	Noncommunicable disease
NGO	Non-governmental organization
NIH	National Institutes of Health
OECD	Organization for Economic Cooperation and Development
PAHO	Pan American Health Organization
PPP	Public/private partnership
R&D	Research and development
RCS	Research capability strengthening
SHARED	Scientists for Health and Research for Development
SIDA/SAREC	Swedish International Development Cooperation Agency/ Swedish Agency for Research Cooperation with Developing Countries
STD	Sexually transmitted disease
STRATEC	Strategic and Technical Advisory Committee of the Global Forum for Health Research
TDR	UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases
TFI	The WHO-led Tobacco Free Initiative

<b>UNAIDS</b> . . . . .	United Nations Joint Programme on HIV/AIDS
<b>UNDP</b> . . . . .	United Nations Development Programme
<b>UNESCO</b> . . . . .	United Nations Educational, Scientific and Cultural Organization
<b>UNFPA</b> . . . . .	United Nations Fund for Population Activities
<b>UNHCR</b> . . . . .	United Nations High Commission for Refugees
<b>UNICEF</b> . . . . .	United Nations Children's Fund
<b>UNIFEM</b> . . . . .	United Nations Development Fund for Women
<b>USAID</b> . . . . .	United States Agency for International Development
<b>VHIP</b> . . . . .	Visual Health Information Profile
<b>VINEDE</b> . . . . .	Virtual Network on Descriptive Epidemiology
<b>WHO</b> . . . . .	World Health Organization

# Executive Summary

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## Background

Global spending on health research by both the public and private sectors amounts to about US\$56 billion per year (1992 estimate). However, less than 10% of this is devoted to 90% of the world's health problems – a misallocation often referred to as “the 10/90 gap”. For example, it is estimated that pneumonia, diarrhoea, tuberculosis and malaria, which together account for more than 20% of the disease burden in the world, receive less than 1% of the total public and private funds devoted to health research. The human and economic costs of such misallocation of resources are enormous.

The need for global prioritization in health research was first raised in the 1990 Report of the Commission on Health Research for Development, *Health Research: Essential Link to Equity for Development*. This led to the creation in 1994 of the Ad Hoc Committee on Health Research Relating to Future Intervention Options, which published its Report under the auspices of the World Health Organization (WHO) in September 1996. Among the 17 recommendations made by the Committee to help correct the 10/90 gap was the creation of the Global Forum for Health Research.

This took place in June 1997 (Forum 1) with the participation of about 100 institutions, including government policy-makers, WHO, the World Bank, the Rockefeller Foundation, multilateral and bilateral development institutions, research institutions, NGOs involved in health research, women's organizations and private-sector companies. The Secretariat of the Global Forum for Health Research, located at the headquarters of WHO, started its operations in January 1998. In June 1998, the Global Forum for Health Research was registered as a

Foundation, governed by a Foundation Council of 20 members representing the main partners in the Forum.

*The 10/90 Report on Health Research 2000* is the second annual report of the Global Forum for Health Research. It describes the progress made by the partners in the Global Forum in the past year to help correct the 10/90 gap by focusing on research activities and initiatives that address health problems of middle and lower income countries and generating funds to support these initiatives. It also describes priorities for the years ahead. Its audience is all those who can help change, in whatever way, the imbalance in the allocation of health research funding: those who fund research, those who set priorities, those who influence decision-making, those who provide information and evidence.

**What is new in this year's report, as compared to last year's, is summarized below for each chapter.**

## Chapter 1: The Global Forum for Health Research: an overview

In its first four sections, chapter 1 summarizes the efforts undertaken in 1998-99 by the Global Forum and its partners and the prospects for 2000-2001 under each of the five strategies adopted by the Global Forum to help correct the 10/90 gap, i.e.:

1. Organization of an annual Forum in which the main actors in the public and private sector interested in improving the allocation of health research funds can discuss past achievements and future actions; Forum 2 and Forum 3 were held respectively in June 1998 and June 1999; Forum 4 is integrated into the International Conference on Health

Research for Development (Bangkok, October 2000); Forum 5 will take place in October 2001 in Geneva.

2. Analytical work in priority setting: the objective is to contribute to the definition of a practical framework for priority setting in health research which could be used at both the global and country level.
3. Launching initiatives bringing together a wide range of partners in a concerted effort to find solutions to priority health problems, thus attracting new financing to these areas.
4. Strengthening communication among Global Forum partners and disseminating information regarding the 10/90 gap.
5. Measuring the results of the actions undertaken: progress will be measured in terms of the contribution of the Global Forum to a more widespread knowledge of the gaps in health research, the priority-setting efforts and the development of initiatives bringing together partners in key areas of health research.

Section 5 attempts to describe the overall health research governance in the world and the role that the Global Forum could play in this context.

## **Chapter 2: Complementary approaches for priority setting**

Chapter 2 draws attention to the fact that, with the same resources, we could achieve a much higher level of health in the world, were we able to reallocate some health research funds from lower to higher priority projects, from projects benefitting the few to those benefitting the large majority of people. Attempts have been made to systematize the approach to setting priorities in health research with the objective of making the

process more transparent and helping decision-makers allocate limited research funds in the most productive way.

The chapter reviews the main efforts undertaken in the past decade to systematize the approach to priority setting in health research:

- “Essential National Health Research (ENHR)” of the Commission on Health Research for Development (1990) and the Task Force on Health Research for Development (1991)
- “Five-Step Process” of the Ad Hoc Committee on Health Research (1996)
- “Visual Health Information Profile” of the Advisory Committee on Health Research (1997).

In particular, it makes a comparison of these methods, indicating their common denominators and main differences with respect to their objective, strategies/principles, criteria used for setting priorities, priority research areas selected and implementation tools.

It concludes that these attempts are not contradictory but complementary and proposes a “combined approach” which is undergoing piloting and testing.

## **Chapter 3: Progress in methodological issues: resource flows, burden of disease and cost-effectiveness of health research**

In order to keep the debate on priority-setting strategies well informed, it is critical to develop and improve the tools to collect information, particularly with respect to resource flows, burden of disease and cost-effectiveness of health research. The Global Forum and its partners work towards improving and continuously developing methods to capture and evaluate information required for setting priorities.

Chapter 3 focuses on progress made in the past year. Given the lack of a standardized method to track global spending on health research, the Global Forum and its partners have started to develop such a system. The chapter reviews progress achieved this year in the design and implementation of a categorization system to link resource flows with disease groups, determinants of health, research on health systems and capacity building.

With respect to burden of disease, the chapter reviews activities by the Global Forum and its partners to help access and capture information from groups working in developing countries on their burden of disease. This activity is considered relevant for helping to improve estimates for the Global Burden of Disease 2000 project and for helping build capacity in developing countries to produce their own standardized data. Issues of measurement of burden of disease are also discussed.

A further area of work described is the progress by partners in the Global Forum in the search for standardized methodologies to study the cost-effectiveness of health interventions in developing countries. This area of work is critical to help compare potential interventions and investments in health research across a wide array of conditions, in view of the lack of information available in developing countries.

#### **Chapter 4: Priority areas in health research**

Chapter 4 argues that, in view of the competing priorities for scarce resources, priority setting in health research is as critical as conducting the research itself. A review of figures calculated from WHO's *World Health Report 1999* is presented to depict the impressive differences in health status between high-income and low/middle-

income countries. It concludes that low/middle-income countries account for 85% of the world population but 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; but 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. 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.

The third section of the chapter 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.

## **Chapter 5: Advances in selected priority areas**

The Global Forum recommends routine monitoring of progress in priority areas over time. Chapter 5 reviews progress achieved this year in selected areas of research and presents research recommendations for these areas.

The chapter focuses on 'life cycle' issues, including issues of child health, nutrition and reproduction, and on mental health and disorders of the nervous system. Also presented is an example of the application to epilepsy of the priority-setting matrix proposed in Chapter 2.

Finally the chapter refers to road traffic accidents as an important component of injuries in developing countries and draws attention to the need for developing countries to conduct research on the so-called "double burden for the health services" to accommodate issues resulting from the epidemiological transition.

## **Chapter 6: Progress in initiatives**

Global Forum support to initiatives is a key strategy for encouraging multiple partners to join in concerted research efforts to find solutions for priority health problems. These are generally of such magnitude and complexity that no single institution can resolve them alone. The driving force behind the creation of initiatives is the need to generate the necessary evidence base for action and to mobilize new resources for priority areas. The Global Forum has supported a number of initiatives over the past two years. Progress in the following initiatives is described:

### *Alliance for Health Policy and Systems Research*

Health policy and systems research is a neglected area of research particularly in middle- and low-income countries. The manner in which decisions are taken and policies formulated needs further exploration. Similarly the organization of health systems varies considerably between countries. A 1997 conference brought together collaborating partners with interest in promoting health policy and systems research and recommended the creation of an Alliance to develop a knowledge base of policies and systems that work and those that do not as a basis for advocacy. The Global Forum has worked with many partners – particularly WHO, the World Bank, the governments of Norway and Sweden and the International Development Research Centre – to nurture the Alliance through an interim phase until the final location of its Secretariat within WHO in November 1999. The aim of the Alliance is to contribute to health systems development and the equity of health systems through research on and for policy, focusing on five principal tasks:

- mapping and monitoring health policy and systems research efforts worldwide
- contributing to and collaborating in efforts at building sustainable country-level capacity for health policy and systems research
- developing methodologies and tools for comparative analysis of country experiences
- establishing a competitive small grants programme for research on important and neglected areas to inform policy- and decision-makers
- dissemination and systematisation of information concerning results of research.



### *Global Tuberculosis Research Initiative*

This initiative came into existence as a result of the limited impact of existing tools (DOTS) and the absence of alternative/additional tools in the face of increasing resistance to existing drugs. Health systems in countries with high TB prevalence are weak and incapable of supporting control efforts. Finally there was a limited political commitment on the part of these countries as well as funding agencies to control the disease.

The initiative, born in 1998, brought together partners willing to further the above points. The main partners and donors of WHO's Special Programme for Research and Training in Tropical Diseases (TDR) decided in June 1999 to integrate the research aspects of TB into TDR. The main research thrust is:

- operational research to support the day-to-day implementation of TB control
- development of new anti-TB drugs and exploration and definition of a TB vaccine programme in collaboration with other initiatives including public/private partnerships
- development of appropriate national capacity to support TB research and control efforts.

### *Initiative on Cardiovascular Health in Developing Countries*

Cardiovascular disease has emerged as an important problem with an increasing burden in both developed and developing countries. This burden, along with the burden of communicable diseases, handicaps the middle- and low-income countries. In 1997, the Global Forum, using a World Bank grant, funded a study carried out by the Institute of Medicine of the American Academy of Sciences, focusing on the determinants of cardiovascular diseases and recommending possible R&D investments that would lead to

the development of cost-effective intervention tools and strategies. After a series of consultations involving scientists and experts from high, middle and low-income countries and discussions at Forum 3 in June 1999, six priority areas of research were identified for further exploration to inform policy-makers and field doctors:

- development of a global information network on CVD in developing countries
- establishment of sentinel surveillance systems for monitoring CVD risk factors and mortality, tracking evolving epidemics of CVD and their determinants and evaluating the impact of interventions
- population-based interventions to reduce CVD risks associated with high blood pressure
- evaluation of strategies for identifying individuals at risk
- evaluation of clinical algorithms for management of acute myocardial infarction and congestive heart failure based on the efficacy of existing methods
- assessing the existing capacity of developing countries for initiating and implementing CVD control programmes at different levels of health care.

The Initiative for Cardiovascular Health in Developing Countries was formed in November 1999 to take this forward. Its secretariat is located in the Indian Institute of Medical Sciences. A 12-member Partnership Council and International Scientific Committee have been formed to guide the work of the initiative.

### *Medicines for Malaria Venture*

The Medicines for Malaria Venture is the response of the public and private sectors to the growing crisis of malaria, after several years of preparation by the international development agencies and industry. Initial co-sponsors of MMV were WHO (Special Programme for Research and Training in

Tropical Diseases), International Federation of Pharmaceutical Manufacturers' Associations (IFPMA), World Bank, UK Department for International Development, Swiss Agency for Development and Cooperation, Global Forum for Health Research, Rockefeller Foundation and the global Roll Back Malaria Partnership. It was launched in November 1999 and established as an independent Foundation in Geneva.

MMV is a type of "public venture capital fund". Its objective is to finance and manage a portfolio of R&D projects for the discovery and development of affordable new antimalarial drugs. It has the following specific objectives:

- to register one new antimalarial drug every five years (starting in 2008-10), with the initial emphasis on oral drugs for treatment of uncomplicated malaria
- through partnerships, to ensure the commercialization of these products at affordable prices.

MMV is part of the Roll Back Malaria campaign, a global strategy to fight malaria worldwide launched in October 1998 by the World Health Organization, United Nations Development Fund, UNICEF and the World Bank, with the objective of halving morbidity and mortality due to malaria by 2010.

### *Violence against Women*

Violence against women has been recognized as a serious problem for which insufficient data is available. Since work on the subject has been fragmentary and piecemeal, the Global Forum has supported efforts to bring together partners interested in the problem to discuss and define a common plan of action. A consultation in Melbourne in May 2000 brings together a body of informed persons to discuss the priorities, identify some of the health research issues and draw up a plan of

action. Discussions will focus on the health aspects, consequences and societal costs of sexual violence and make specific recommendations on interventions. The meeting will also discuss policy development and legal reform.

### *Initiative on Child Health and Nutrition Research*

Studies on burden of disease in middle- and low-income countries have shown the important share of child health problems in the global burden of disease. Partners with an interest in improving the health of children through research came together during Forum 3 in June 1999. Their meeting recognized the need to have an initiative specifically focused on child health and nutrition, which would use the five-step process to study the magnitude of the problem, reasons for its persistence, availability of effective tools, their cost effectiveness and current levels of funding. Subsequent efforts would be made to support research activities in child health and nutrition, focusing on the interaction between health and nutrition.

A meeting of those interested in the initiative was held in February 2000 to explore the subject and draw up a workplan. The meeting recommended the creation of the following task forces: (i) criteria for priority setting in child health and nutrition research; (ii) international collaboration and mobilization of funds for research in child health and nutrition.

### *Initiative on Public/Private Partnerships*

A number of major diseases in the developing world, including malaria, TB and HIV/AIDS, are potentially treatable in the longer term. However, scientific obstacles and economic disincentives have resulted in underinvestment in research for new vaccines and medicines targeted at these diseases. As a

result, the solution has to come from joint undertakings of the public and private sectors (together with reinforced “push” and “pull” interventions on the part of the public sector). Based on these considerations, the Global Forum and its partners decided to support a Public/Private Partnerships Initiative to gather information on existing partnerships and promote the development of new ones.

### ***Chapter 7: Capacity development***

Developing countries need to acquire the technical capacity to deal with their own health problems through research, as underlined by the current emphasis on evidence-based decision-making. Individuals and groups need appropriate training to enable them to acquire the knowledge, skills and competence to respond to national and local health problems. At present there is a mismatch between the burden of disease and the technical capacity of developing countries to make use of existing knowledge or to generate new knowledge.

Many partners have been involved in research capacity development in developing countries in the last three decades. Success has been found to depend on a number of key factors: careful selection of trainees, capable scientific leadership, continuity of research funding, good equipment and supplies in the institution including communication facilities and an enabling environment for good research. Funders of research capacity development are now anxious to assess the outcome of their funding in order to justify their investment and to develop the needed indicators.

Chapter 7 describes the progress made by a number of partners in assessing the outcome of capacity development. It presents a matrix framework for the evaluation of research capability strengthening projects based on criteria measuring the process, the outcome and the impact of these projects, distinguishing between the individual, institutional, national and global levels.



**Louis J. Currat**  
Executive Secretary  
Global Forum for Health Research



**Adetokunbo O. Lucas**  
Chair, Foundation Council  
Global Forum for Health Research

# CHAPTER 1

## The Global Forum for Health Research: an overview

### Summary

Global spending on health research by both the public and private sectors amounts to about US\$ 56 billion per year (1992 estimate). However, less than 10% of this is devoted to diseases or conditions that account for 90% of the global disease burden. The human and economic costs of such misallocation of resources are enormous. Among the recommendations made in 1996 by the Ad Hoc Committee on Health Research to help correct this 10/90 gap was the creation of the Global Forum for Health Research, which started its operations in January 1998 and became a foundation on 24 June 1998.

The central objective of the Global Forum is to help correct the 10/90 gap. Its specific objectives are to focus research efforts on diseases representing the heaviest burden on the world's health, improve the allocation of research funds and facilitate collaboration between the Forum's partners (government policy-makers, multilateral and bilateral aid agencies, international foundations, national and international NGOs, women's organizations, research institutions and universities, private-sector companies and the media). The Global Forum believes that solutions to health challenges will depend on the strength of the partnerships created between these constituencies over the years to come.

Chapter 1 summarizes the efforts undertaken in 1998-99 by the Global Forum and its partners and prospects for 2000-2001 under each of its five strategies:

- Annual Forum: Forum 2 and Forum 3 were held in June 1998 and June 1999 respectively; Forum 4 is integrated into the International Conference on Health Research for Development (Bangkok, October 2000).
- Analytical work in priority setting: activities focused on burden of disease, cost-effectiveness, resource flows and the development of a practical framework for priority setting.
- Initiatives in key areas of health research: progress was made under a number of initiatives such as the Alliance for Health Policy and Systems Research, Medicines for Malaria Venture, Global Tuberculosis Research Initiative, Cardiovascular Health in Developing Countries, Initiative on Violence against Women, Initiative on Child Health and Nutrition, and Public/Private Partnerships Initiative.
- Communication and information: work continues on the development of networks of partners in the constituencies of the Global Forum, the development of the website and work with the media.
- Indicators of performance.

Finally, this chapter draws attention to the overall health research governance and the possible role of the Global Forum in this context.

## Chapter 1. The Global Forum for Health Research: an overview

### Section 1. The central problem in health research: the 10/90 gap

Global spending on health research by both the public and private sectors amounts to about US\$ 56 billion per year (1992 estimate). However, less than 10% of this is devoted to 90% of the world's health problems<sup>1</sup> as measured by the number of DALYs<sup>2</sup> lost. The human and economic costs of such misallocation of resources are enormous.

The most recent work by WHO on the global disease burden is summarized in Insert 1.1, and the burden of disease due to selected risk factors is shown in Insert 1.2.

The 1996 Ad Hoc Committee on Health Research made 17 recommendations designed to help correct the 10/90 gap. These recommendations are summarized in *The 10/90 Report on Health Research, 1999*<sup>3</sup>; one of them was the creation of the Global Forum for Health Research.

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<sup>1</sup> This problem was first highlighted by the Commission on Health Research for Development in its 1990 Report *Health Research, Essential Link to Equity in Development* (referred to hereafter as the 1990 Commission Report). This report was followed by the 1996 Report of the WHO Ad Hoc Committee on Health Research *Investing in Health Research and Development* (referred to hereafter as the Ad Hoc Committee Report), which confirmed the findings of the Commission Report.

<sup>2</sup> The DALY (Disability Adjusted Life Years) is an indicator developed for the calculation of the burden of disease which quantifies, in a single indicator, time lost due to premature death with time lived with a disability. A number of explicit choices about age weighting, time preference, and preference for health states are made in the calculation of DALYs. Other indicators have been developed in recent years (HEALYs, QALYs for example) based on the same model. The results of the various models however lead to similar conclusions about the burden of disease and risk factors in the world and their likely evolution in the coming 20 years.

<sup>3</sup> Global Forum for Health Research, *The 10/90 Report on Health Research, 1999* (pages 30-32).

**Insert 1.1<sup>45</sup>****Global estimates of disease burden for major diseases in 1998 and 2020**  
(measured in DALYs)

Cause (as a percentage of total burden of disease)	Burden of disease			
	1998 Low- income countries	1998 High- income countries	1998 World	2020
Lower respiratory infections	6.4	1.3	6.0	3.1
Perinatal conditions	6.2	1.9	5.8	2.5
Diarrhoeal diseases	5.7	0.3	5.3	2.7
HIV/AIDS	5.5	0.9	5.1	2.6
Unipolar major depression	4.0	6.5	4.2	5.7
Ischaemic heart disease	3.3	8.8	3.8	5.9
Cerebrovascular disease	2.9	4.8	3.0	4.4
Malaria	3.1	0	2.8	1.1
Motor vehicle accidents	2.7	4.2	2.8	5.1
Tuberculosis	2.2	0.1	2.0	3.1
Chronic obstructive pulmonary disease	2.1	2.3	2.1	4.1
War	1.7	0.1	1.5	3.0

**Insert 1.2<sup>4</sup>****Burden of disease due to selected risk factors, 1995 (as percent of global DALYs)**  
[will be in tabular form]

Outdoor air pollution	0.4%
Illicit drugs	0.5%
Physical inactivity	1.0%
Hypertension	1.5%
Occupational hazards	2.6%
Tobacco	3.1%
Indoor air pollution	3.3%
Alcohol	3.3%
Unsafe sex	3.7%
Water/sanitation	6.7%
Malnutrition	15.8%

<sup>4</sup> Julio Frenk and Christopher J.L. Murray, WHO, *Overview of the Health Situation in the World and Perspectives for 2020*. Presented at Forum 3 of the Global Forum for Health Research, 8-10 June 1999, Geneva.

<sup>5</sup> World Health Report, WHO, 1999.

## **Section 2. Creation, objectives and strategies of the Global Forum for Health Research**

### **1. Creation**

The Global Forum for Health Research started its operations in January 1998 and became a legal entity (an international foundation registered in Switzerland) on 24 June 1998. The Global Forum aims to bring together a wide range of partners including:

- government policy-makers
- multilateral organizations
- bilateral aid donors
- international foundations
- national and international NGOs
- women's organizations
- research-oriented bodies and universities
- private-sector companies
- the media.

The Global Forum believes that solutions to current health challenges will depend on the strength of the partnerships created between members of these nine constituencies over the years to come.

The Global Forum is managed by a Foundation Council of 20 members representing the above constituencies and a small Secretariat located in the offices of the World Health Organization in Geneva. Basic decisions are made by the Foundation Council. The Statutes of the Foundation appear as Annex 1. Within the Foundation, there are no "members" as such, but "partners", each supporting the objectives and activities of the Forum in very different ways. Some may be able to come to the Annual Meeting of the Forum, others may not; they all remain equal partners in the pursuit of the Forum objectives – united in the belief that, by joining forces, they can help improve the 10/90 gap. Any person or institution actively supporting the objectives of the Global Forum is a partner in the Global Forum and may be selected to become a member of the Foundation Council. Foundation Council members are nominated for a period of three years, with appointments staggered in order to provide a rotating membership.

The Foundation Council is assisted by a Strategic and Technical Advisory Committee (STRATEC). The members of STRATEC are selected from among members of the Foundation Council. They are nominated for a two-year term, with appointments staggered to provide a rotating membership.

### **2. Objectives**

The central objective of the Global Forum is to help correct the 10/90 gap. Specific objectives are to help focus research efforts on diseases representing the heaviest burden on the world's health, seek to improve the allocation of research funds and facilitate collaboration between partners in both the public and private sectors.

### 3. Strategies

In pursuit of its central objective, the Global Forum has adopted the following five strategies:

#### **Annual Forum**

Throughout the year, and particularly at its annual meeting, the Global Forum acts as a “marketplace” where health problems and priorities can be examined by a variety of decision-makers, policy-makers and researchers. Presentations at the annual meeting address the latest thinking on the 10/90 gap and act as a catalyst for action during the following year.

#### **Analytical work for priority setting**

In the field of analytical work and in line with its central objective of helping to correct the 10/90 gap, the Global Forum currently concentrates its efforts on the following:

- methodologies for priority setting
- burden of disease and health determinants, particularly in the Forum priority areas
- cost-effectiveness analyses
- analysis of resource flows and monitoring progress in correcting the 10/90 gap.

#### **Initiatives in key health research areas**

Initiatives bring together a wide range of partners in a concerted effort to find solutions to key health problems. The magnitude of these problems is such that they are beyond the capacity of any single institution to resolve and require the concerted efforts of a coalition of partners. By acting together, the probability of finding solutions increases markedly.

#### **Communication and information**

One of the cornerstones of the work of the Global Forum is the Communication/Information Unit, which has responsibility for collecting and disseminating information about the 10/90 gap and measures taken to help correct this gap.

#### **Evaluation and monitoring**

The Global Forum seeks to measure progress in terms of its contribution to the correction of the 10/90 gap.

### 4. Collaboration between the Global Forum and other institutions: partnerships

In the Global Forum for Health Research, partnerships are defined as groups of allies sharing the goals, efforts and rewards of a joint undertaking. To be effective, potential Global Forum partnerships should meet the following criteria:

- have clearly defined objectives and strategies
- bring together a diverse group of players and their unique ideas
- recognize the strengths of each organization
- use synergies between institutions on behalf of strategic issues
- agree upon a programme of complementary work and avoid duplication



- recognize the contributions of each partner
- acknowledge the importance of an organizational framework
- ensure effectiveness, efficiency and accountability
- build a critical mass of support for each of the efforts supported by the Forum.

On the basis of the above criteria, collaboration can take very different forms, including:

- collaboration between governing boards, such as those of the Global Forum for Health Research, the Council on Health Research for Development (COHRED) and the International Clinical Epidemiology Network (INCLLEN)
- joint research projects, such as burden of disease, cost-effectiveness and resource flows analyses
- joint initiatives, such as the Alliance for Health Policy and Health Systems Research, Public/Private Partnerships for Health Research, or the Initiative on Child Health and Nutrition, with representatives from multilateral and bilateral aid agencies, foundations, NGOs, research institutions and pharmaceutical companies
- joint conferences, such as the International Conference on Health Research (Bangkok, October 2000).

### **Section 3. Review of the main Global Forum activities in 1998-99 and prospects for 2000-2001**

#### **1. Annual Forum**

The first annual meeting (Forum 1, June 1997) had two major objectives: to launch the Global Forum for Health Research and define its objectives, strategies, partners and organization; and to review the first initiatives, aimed at improving the allocation of research funds to better address the health problems of the poor.

Forum 2 (June 1998) and Forum 3 (June 1999) focused on the work undertaken by many Global Forum partners over the past two years in the following fields:

- analytical work in priority setting and its main components (framework for setting priorities, burden of disease, cost-effectiveness of health research, resource flows in health research)
- progress in a number of health research initiatives aimed at redressing the 10/90 imbalance.

Forum 3, in particular, provided an opportunity to discuss the latest developments in the following initiatives supported by the Global Forum: Alliance for Health Policy and Systems Research, Child Health and Nutrition, Public/Private Partnerships for Health Research (including the Medicines for Malaria Venture), Initiative on Violence against Women, Global Tuberculosis Research Initiative, and Cardiovascular Health in Developing Countries. It also included discussion of progress made under two major WHO-led initiatives (Roll Back Malaria and the Tobacco Free Initiative) as well as the preparatory steps for the launching of future initiatives, particularly in the field of mental health and disorders of the nervous

system in developing countries, road traffic injuries and research capacity strengthening. The Agenda for Forum 3 appears as Annex 2 to this Report.

Forum 4 will be incorporated in the International Conference on Health Research for Development which will be held on 10-13 October 2000 in Bangkok under the leadership of WHO, the World Bank, COHRED and the Global Forum for Health Research. The major objectives of the Conference are to review past achievements in health research and develop a vision and health research action plan for the coming decade.

Forum 5 will be held in Geneva on 9-12 October 2001. Its objective is to continue to measure progress on the way to correcting the 10/90 gap and to identify the actions necessary for the efficient and effective pursuit of this objective.

## 2. Analytical work in priority setting<sup>6</sup>

The main activities of the Global Forum in the field of priority setting in 1998-99 and prospects for 2000-2001 are:

### (i) *Burden of Disease*

Financial support for the following studies, projects and/or networks:

- The WHO-coordinated Global Burden of Disease 2000 Project (GBD 2000) and its Virtual Network on Descriptive Epidemiology (VINEDE). This project involves the updating of some of the GBD 1990 estimates.
- The International Burden of Disease Network (IBDN), which seeks to promote the best use of the burden of disease methodology and to train investigators.
- Research groups in developing countries working on burden of disease studies.
- Studies on the relationship between poverty and health and, more specifically, studies on the burden of disease among the poor.
- A study of the burden of neuro-psychiatric disorders in developing countries with a view to identifying research priorities, key elements of mental health policies and cost-effective treatments.
- In 2000-2001, continuation of the above activities and support for burden of disease studies in the field of reproductive health, child health and nutrition, violence against women and road traffic injuries; a key focus of these studies will be the issue of poverty and equity.

### (ii) *Cost-effectiveness*

Cost-effectiveness analysis helps identify interventions that are likely to produce the greatest improvements in health status for the available resources. The main activities of the Global Forum in this area are:

- Financial support for a project to develop and publish a standardized methodology for the assessment of the cost-effectiveness of health research interventions.
- Financial support for the analysis of interventions against anti-microbial resistance
- In 2000-2001, continuation of the above activities and review of lessons learned.

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<sup>6</sup> Detailed information is provided in chapter 3.

*(iii) Resource flows*

- In 1998-99, creation of an international Core Group to develop an institutional mechanism for the monitoring of global resource flows into health R&D.
- In 2000-2001, presentation of the first results and further improvements in the methodology.

*(iv) Practical framework for priority setting*

- In 1998-99, development of a practical framework for setting priorities (Chapter 8 of the 10/90 Report, 1999).
- In 2000-2001, testing of the practical framework with a number of Global Forum partners in the field of tropical diseases, mental health and disorders of the nervous system.

**3. Initiatives supported by the Global Forum<sup>7</sup>**

Initiatives are concerted efforts involving a large number of partners interested in working together to find solutions to critical health problems. The main activities of the Global Forum in supporting the development of such initiatives in the past two years and prospects for the future are summarized below (additional information is provided in chapter 6):

*(i) Alliance for Health Policy and Health Systems Research*

Over the past two years, the Alliance has focused on the definition of its objectives and strategies, the recruitment of a person to head a small Secretariat located at WHO in Geneva and the launching of the Secretariat's activities. Planned activities for 2000-2001 include the mapping of health policy and health systems research efforts, the identification of gaps and the definition of a longer-term plan of action in collaboration with all the partners. This initiative of the Global Forum and its partners is of key importance in the strategy to fight poverty and inequities.

*(ii) Medicines for Malaria Venture*

Following discussions in the public/private Strategic Planning Group since 1997, a new international foundation, the Medicines for Malaria Venture (MMV), was established in November 1999. Its aim is to bring public- and private-sector partners together to fund and provide managerial support for the discovery and development of new medicines for the treatment and prevention of malaria. This initiative is part of the Roll Back Malaria programme led by WHO. The Global Forum also channels World Bank funds to the Multilateral Initiative on Malaria in Africa (MIM).

*(iii) Global Tuberculosis Research Initiative (GTRI)*

The second meeting of GTRI was held in June 1999 with a particular focus on the definition of a TB research agenda for future drug development and TB control, including capacity strengthening in developing countries.

*(iv) Initiative for Cardiovascular Health in Developing Countries*

This initiative was launched at the International Heart Conference in Delhi in October 1999, following several meetings over the past two years involving a broad range of

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<sup>7</sup> Detailed information is provided in chapter 6.

interested partners. The global objective of the initiative for 2000-2001 is to measure the burden of disease and the role of the major risk factors for cardiovascular disease in developing countries, and to define and initiate cost-effective control measures.

*(v) Initiative on Violence against Women*

Following the discussions which took place during Forum 3 (June 1999), a consultation is planned for May 2000 to develop a suitable framework for generating data that will lead to measurement of the scale of the problem and a better understanding of the determinants and consequences of violence against women.

*(vi) Initiative on Child Health and Nutrition*

This initiative, launched during Forum 3 (June 1999), aims to bring partners together to coordinate research studies that will lead to improved and cost-effective interventions for child health and nutrition. A plan of activities for 2000-2001 was defined by the main actors at a meeting in Geneva in February 2000.

*(vii) Public/Private Partnerships*

Following the launch of MMV, the Foundation Council of the Global Forum decided to finance a small Public/Private Partnerships unit within the Global Forum Secretariat. The work of this unit will involve: tracking public/private partnerships, analysing best practices, identifying private and public non-OECD capabilities and facilitating the development of new partnerships. First activities were begun in January 2000.

The Global Forum is strongly supporting the WHO-led Tobacco Free Initiative, although in less direct ways. Further initiatives are under preparation, particularly in the field of mental health/disorders of the nervous system and road traffic injuries in developing countries.

#### **4. Communication and Information**

The main activities of the Communication/Information Unit of the Global Forum Secretariat over the past two years and prospects for the next two years include:

*(i) Development of a network of partners in the constituencies of the Global Forum*

This work is actively pursued to facilitate synergies and partnership possibilities.

*(ii) Publications*

The first *10/90 Report on Health Research 1999* was published in March 1999. Copies were distributed to the main partners, including ministries of health, national medical research councils, bilateral and multilateral aid agencies, UN specialized agencies, foundations and NGOs active or interested in health research, medical schools and universities, research institutes and the media.

*(iii) Website*

The Global Forum's website ([www.globalforumhealth.org](http://www.globalforumhealth.org)) was launched in early 1999 and will continue to be developed, with a focus on the 10/90 gap, health research priorities and initiatives/projects/studies which contribute to a narrowing of the gap. Continuously updated information is also provided on the preparation of the International Conference for Health Research and Development which will be held in Bangkok on 10-13 October 2000 (incorporating Forum 4 of the Global Forum for Health Research).

*(iv) Working with the media*

Information on the 10/90 gap (and actions to help correct it) is distributed to the media and specialized press.

*(v) Research and decision-makers*

The Global Forum seeks to understand the processes that influence decision-making in health research through sharing experiences with its partners around this key issue.

## **5. Indicators of performance**

Internal and external evaluation of results is an integral part of the work of the Forum. Progress will be measured in terms of more widespread concern and knowledge of the gaps in health research and how priorities are set; the number and strength of initiatives which bring partners together in key areas of health research; improvements in the flow of resources and information; and effectiveness in bringing solutions to the health problems of the large majority of the world's population. An external evaluation is planned for 2001.

## **Section 4. Global Forum policies on cross-sectoral issues**

### **1. Poverty and health research**

Poverty is broadly defined as the lack of resources to satisfy basic needs. It is a condition which encompasses various forms of deprivation, including inadequate income, lack of education, poor health status and lack of access to health care, poor housing, lack of access to sanitation and safe drinking water, poor nutrition and lack of control over the reproductive process.

Data from the Global Burden of Disease Study (GBD 1990) have been used to examine the burden of disease among the global poor. The study revealed that:

- although the poor represent a quarter of the world's population of six billion people, they account for a disproportionately higher share of its disease burden
- an evaluation of the poorest 20% of the world's population indicates that they suffer more from all causes of ill-health, especially communicable diseases, than the richest 20%.<sup>8</sup>

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<sup>8</sup> Davidson R. Gwatkin and Michel Guillot, *The Burden of Disease among the Global Poor, Current Situation, Future Trends, and Implications for Strategy*, World Bank and Global Forum for Health Research, November 1999.

These data confirm that poverty is a cause, an associated factor, a catalyst and a result of ill-health. The Global Forum and its partners pay particular attention to the health/poverty interface as it is integral to its mission of helping to correct the 10/90 imbalance.

## **2. Gender and health research**

The Global Forum is committed to achieving gender sensitivity in its work in an effort to promote progress towards social justice and ensure valid and reliable research outcomes. In the implementation of this policy, the Global Forum considers how health issues and risk factors differ between males and females and assesses the significance and policy implications of those differences.

The following indicators highlight the extent of the problem and the impact on women themselves, on their children and families and, ultimately, on national development as a whole:

- In many countries, infant girls are far less likely to receive medical attention than infant boys.
- About 40% of all women of reproductive age are anaemic (a level significantly higher than the estimated level for males).
- It is estimated that more than 60% of the world's poor are females.
- In many low-income countries, primary school enrolment for females is about 50% lower than for males, and secondary school enrolment about 35% lower.

The impact of this on the families concerned and on society as a whole is underscored by the importance of the social and economic role of women. According to World Bank sources:

- Women provide 70%-80% of health care in developing countries.
- At least 20% of all households in Africa and Latin America are headed by women.
- In some African countries, 80% of food for domestic consumption and at least 50% of export crops are produced by women.
- Women earn 40%-60% of household income, if home production is taken into account.

The Global Forum believes that a systematic approach to gender issues in all its activities is an important instrument to help correct the 10/90 gap.

## **3. Research capacity strengthening**

Strengthening research capacity in developing countries is a powerful, cost-effective and sustainable means of advancing health and development. It aims to improve the capacity of individuals and institutions in middle- and low-income countries to address their health problems through research. There is a convergence of views among Global Forum partners for a review of the current situation and development

of a strategy for accelerating research capacity development.

Although substantial capacity exists, efforts must be focused on the identified needs of the countries concerned and on measurement of results. Such needs include policy formulation, burden of disease studies, analysis of determinants, analysis of cost-effectiveness of interventions and capacity for translating results of research into action.

The role of the Global Forum in capacity development is to:

- focus on the identified needs of developing countries
- provide a platform for a critical analysis of the strategies for capacity development and draw attention to best practices emerging from the exchange of views
- measure the results using clearly identified performance indicators.

Research capacity strengthening will continue to be supported as an important cross-cutting issue that underpins all activities of the Global Forum.

### **Section 5. The role of the Global Forum for Health Research in overall health research governance**

It is more and more broadly recognized that global health is a global public good,<sup>9</sup> not only because infectious diseases can rapidly affect millions of individuals around the globe or because the burden of noncommunicable diseases is passed on to the national community through medical insurance charges, but also because higher health levels lead to higher productivity and production and have a positive impact on development in general, through an increase in savings and investments, for the benefit of all.

Like other global public goods, global health and global health research suffer from insufficient investment – both overall and particularly for specific diseases, as underlined by the 10/90 gap. This is the result of what have been termed “externalities”, i.e. factors that are not taken into account in the decision-making process of any institution or individual but that have important or negative effects on the community as a whole. The problem is that, in allocating resources, decision-makers take mostly national and local considerations into account and not a world view of needs for health and health research. As a result, opportunities to provide important benefits for all are foregone. Although the leading UN agencies for health take a global view on health and health research, they cannot alone sufficiently influence decisions at the national level to ensure the integration of a global perspective. It is therefore the role of what might be called the “world health research governance”, with its multitude of actors, to study the problem and ensure that externalities are gradually integrated into the decision-making process.

It is possible to represent “world health research governance” as in Insert 1.3. The outer ellipse represents the extent of health problems to be solved in order to attain perfect health for all in the world. The institutions responsible for solving these

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<sup>9</sup> Inge Kaul, Isabelle Grunberg, Marc A. Stern, *Global Public Goods, International Cooperation in the 21<sup>st</sup> Century*, UNDP, Oxford University Press, March 1999. See in particular the article by Lincoln C. Chen, Tim G. Evans and Richard A. Cash, *Health as a Global Public Good* (pages 284-304).

problems are the World Health Organization and its Advisory Committee on Health Research, WHO Member States, research institutes and universities, the World Bank and other UN organizations, multilateral and bilateral aid agencies, NGOs, foundations and the private sector. But their efforts cannot solve all the problems represented by the outer ellipse: individual institutions only cover a limited amount of space in the overall ellipse.

The objective is gradually to reduce the space between these actors, as they integrate more and more of the world's health research needs. There are two ways to do this:

- Each actor/institution can take measures to internalize some of the “externalities” within its immediate sphere of influence. In Insert 1.3, this would correspond to an enlargement of the small blue-shaded capsules representing the activities of each institution.
- Through networking, the different actors can link their activities, thereby extending their sphere of influence. In Insert 1.3, this is shown by the grey-shaded ellipses (Global Forum, COHRED, the Alliance for Health Policy and Systems Research and the many other networks).

As pointed out by Chen, Evans and Cash,<sup>10</sup> “Progress may come from the recognition that health as a global public good can be most effectively advanced not by a single top-down system but by the many actions of many actors. Conceptually and practically, many subsystems together could constitute a mosaic system of global health.”

The Global Forum for Health Research (and other networks with similar characteristics) must play a key role in the overall governance of health research, contributing to the integration of the whole. Its specific functions include the following:

- **The Global Forum as a network linking the efforts of key institutions in health research**  
In order to find a solution to global problems (i.e. the integration of externalities), a large number of actors will be required to join forces. The role of the Global Forum is to help link the efforts of all the partners (inclusiveness principle) in the pursuit of its central objective: to help correct the 10/90 gap.
- **The Global Forum as a catalyst**  
The Global Forum cannot and must not substitute for the efforts of others. Rather, it seeks to act as a catalyst for the efforts undertaken by its partners.
- **The Global Forum as a promoter of equality among partners**  
Experience has shown that, in order to encourage the participation of all partners in a joint effort, it can be important to demonstrate equality among partners and provide a neutral ground for presentation and discussion.

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<sup>10</sup> Lincoln C. Chen, Tim G. Evans and Richard A. Cash, *Health as a Global Public Good*, *op.cit.*



- **The Global Forum as an informal contact point between partners and promoter of debate on contentious issues**  
Informality of contacts is useful for creativity, brainstorming and exploring new solutions.
- **The Global Forum as a light decision-making process**  
In line with the small size of its Secretariat, the Forum's decision-making mechanisms are light and non-bureaucratic. They enable the Forum to respond rapidly to developments: bringing together key people, for example, or taking advantage of unexpected research or funding opportunities.

# Chapter 2

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## ***Complementary approaches for priority setting in health research: review and perspectives***

### *Section 1*

*Deficiencies in priority setting*

### *Section 2*

*The approach of the Commission on Health Research for Development:  
Essential National Health Research (ENHR)*

### *Section 3*

*The approach of the Ad Hoc Committee on Health Research:  
the Five-Step Process*

### *Section 4*

*The approach of the Advisory Committee on Health Research (ACHR):  
the Visual Health Information Profile*

### *Section 5*

*Comparison of the ENHR, Ad Hoc Committee and ACHR approaches*

### *Section 6*

*The Combined Approach proposed by the Global Forum for Health Research*

### *Section 7*

*Perspectives for 2000-2001*

## Summary

Chapter 2 draws attention to the fact that, with the same resources, we could achieve a much higher level of health in the world, if we were able to reallocate some health research funds from lower to higher priority projects, from projects benefitting the few to those benefitting the large majority of the world's population.

How could this be done? Attempts have been made, particularly in the last 10 years, to systematize the approach to setting priorities in health research. The objectives were to make the process more transparent and to help decision-makers, particularly in the public sector, make more informed decisions, thus allocating limited research funds in the most productive way from a world perspective.

Major efforts to systematize priority setting include:

- Essential National Health Research (ENHR) of the Commission on Health Research for Development (1990) and the Task Force on Health Research for Development (1991)
- Five-Step Process of the Ad Hoc Committee on Health Research (1996)
- Visual Health Information Profile of the Advisory Committee on Health Research (1997)
- Combined Approach of the Global Forum for Health Research (1999-2000).

These attempts are not contradictory but largely complementary. This chapter outlines the main characteristics of each of these efforts and the perspectives for the coming years.

Although the various approaches tackle the problem from very different angles and with different terminologies and methodologies, there appears to be at least implicit consensus that the central objective is **to have the greatest impact on the health of the greatest number of people in the community concerned (world or country level) for a given investment.**

Whereas the Ad Hoc Committee and the Combined Approach propose to measure this impact in terms of DALYs averted as a result of health research outcome, the other two approaches are not specific regarding the actual measurement of the impact of health research, but both underline the importance of the burden of disease. On strategies and principles, most approaches stress the importance of ensuring that priorities are set by all stakeholders (participatory approach) and of applying a multidisciplinary approach.

The most frequently used criteria under the various approaches include the following:

- severity (degree of incapacitation) and magnitude of the problem (number of persons affected)
- expected cost-effectiveness of the interventions researched
- effect on equity: i.e. likely impact of the research on the poorer segments of the population
- probability of finding a solution
- scientific quality of the research proposed: this is a pre-condition in all approaches
- feasibility of the research proposed (availability of human resources, funding and facilities)
- ethical acceptability: this criterion is explicitly mentioned only in the ENHR approach
- impact on capacity strengthening of the research proposed: this is explicitly mentioned only in the ENHR approach; the other approaches are not specific on this criterion, but it could be integrated in the cost-effectiveness calculation.

## Section 1

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### Deficiencies in priority setting<sup>1</sup>

Failure to establish a process for priority setting or serious deficiencies in this process have led to a situation in which only 10% of research funds from both the public and private sectors are devoted to 90% of the world's health problems (as measured by DALYs<sup>2</sup>). This extreme imbalance in research funding has a heavy economic and social cost for society as a whole. To make matters worse, the 10% of research funds available are not being used most effectively within areas that would ensure the greatest gains in health. In other words, the 10% of funds available for priority problems also need to be better prioritized.

Far more could be achieved with the same resources if some health research funds were redirected from lower to higher priority projects, from projects benefitting the few to those benefitting the large majority of people.

There are numerous reasons for this imbalance in research funding:

#### **In the public sector:**

- Over 90% of research funds are in the hands of a small number of countries which, understandably, have given priority to their own health research needs.
- Decision-makers are unaware of the magnitude of the problems outside their own national borders and, in particular, of the impact on their own country of the health situation in the rest of the world, both directly (increasing travel, re-emerging diseases, development of antimicrobial resistance due to the misuse of antimicrobial drugs) and indirectly (lower economic growth, migration).
- The decision-making process is influenced by factors including the personal preferences of influential scientists or decision-makers, competition between institutions, donor preferences, tradition and local circumstances.
- There is insufficient understanding of the role the public sector could play in supporting the private sector in the discovery and development of drugs for “orphan” diseases.

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<sup>1</sup> This chapter is based on the discussions held at Forum 3 (June 1999) and a number of documents published by the Commission on Health Research for Development, the Council on Health Research for Development (COHRED), the WHO Advisory Committee on Health Research, the WHO Ad Hoc Committee on Health Research and the Global Forum for Health Research.

<sup>2</sup> DALY (Disability Adjusted Life Year): indicator developed by Christopher J.L. Murray and Alan D. Lopez for the calculation of the burden of disease combining time lost due to premature death together with time lived with a disability. The results are published in *The Global Burden of Disease and Injury Series, Volume I, The Global Burden of Disease, A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020*, Harvard University Press, 1996.

### **In the private sector:**

Decision-makers in the private sector are responsible for the survival and success of their enterprise and for the satisfaction of shareholders. Their decisions are largely based on profit perspectives, which inevitably limit investment in “orphan” diseases.

Efforts have been made, particularly over the past decade, to systematize the approach to setting priorities in health research. The aim is to make the process more transparent and help decision-makers, particularly in the public sector, make more informed decisions and take a global approach to health problems. These efforts have included:

- Essential National Health Research (ENHR) of the Commission on Health Research for Development (1990) and the Task Force on Health Research for Development (1991)
- Five-Step Process of the Ad Hoc Committee on Health Research (1996)
- Visual Health Information Profile of the Advisory Committee on Health Research (1997)
- Combined Approach of the Global Forum for Health Research (1999-2000).

These efforts are not contradictory but largely complementary. The following sections summarize the main characteristics of these efforts and prospects for the future.

## **Section 2**

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### **The approach of the Commission on Health Research for Development: Essential National Health Research (ENHR)<sup>3</sup>**

The concept of Essential National Health Research (ENHR) was advanced by the Commission on Health Research for Development (1990) and its successor, the Task Force on Health Research for Development (1991). While recognizing the major advances made in health in developing countries over recent decades, the Commission identified “a gross mismatch

between the burden of illness, which is overwhelmingly in the Third World, and investment in health research, which is overwhelmingly focused on the health problems of the industrialized countries”. In its findings, the Commission was the first to draw attention to the 10/90 gap in health research. To help correct this gap, one of the Commission's main recommendations was

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<sup>3</sup> This section was written on the basis of the following documents:

- Commission on Health Research for Development, *Health Research, Essential Link to Equity in Development*, 1990
- Task Force on Health Research for Development, *Essential National Health Research, A Strategy for Action in Health and Human Development*, October 1991
- Council on Health Research for Development (COHRED), *Essential National Health Research and Priority Setting: Lessons Learned*, June 1997
- Mary-Ann Lansang, *Research Priority Setting Using ENHR Strategies*. Paper presented at Forum 3, June 1999, Geneva.
- Marian Jacobs, *Priority Setting for Health Research, The Case of South Africa*. Paper presented at Forum 3, June 1999, Geneva.

the establishment in each developing country of an appropriate health research base: Essential National Health Research. This was strongly endorsed by the 1990 World Health Assembly, which started a worldwide movement for the promotion of ENHR in developing countries. To finance the development of this research base at the country level, the Commission recommended that developing countries invest 2% of national health expenditures for research and capacity strengthening, and that development agencies earmark at least 5% of their financing in the health sector for the same purposes.

This concept has been further developed by the Council on Health Research for Development (COHRED) during the past eight years through its practical application in a number of countries. The main characteristics of the ENHR effort are summarized below.

### **1. Global and specific objectives**

ENHR is a systematic approach for organizing and managing country-specific and global health research in order to promote health and development on the basis of equity and social justice, thus helping to correct the 10/90 imbalance. In the words of the Task Force, it is a critical tool for developing countries “to understand their own problems, to enhance the effectiveness of limited resources, to improve health policy and management, to foster innovation and experimentation, and to provide the foundation for a stronger developing country voice in setting international priorities.”

The Task Force Report states that the ENHR objectives are to :

- update the scientific knowledge base required for the establishment of priorities
- ensure the best use of available resources (efficiency), i.e. help decision-makers make rational choices in their investment decisions
- tackle unsolved problems and develop new drugs, vaccines and diagnostics; the situation analysis at country-specific level will highlight the residual problems which should be studied at the global level.

### **2. ENHR strategies and principles**

In pursuit of the global and specific objectives outlined above, ENHR has identified the following strategies and principles:

- Priorities are set by all stakeholders: these include research managers, policy-makers and health-care providers (the so-called “ENHR loop”, linking research, policies and actions); community representatives; and donors. In this way, both the supply and the demand side of health are represented in the process.
- The process should be inclusive, participatory, transparent and iterative.
- Priority setting should involve a multidisciplinary approach. Since the determinants of health are multifaceted, the strategy is to mobilize researchers in a variety of research disciplines, in health (biomedical research, clinical research, community-based public health research) as well as in sectors other than health (behavioural and social research in addition to research in environment, agriculture, education and economic policies). The strategy highlights the important benefits of overcoming the disciplinary barriers.

## Insert 2.1

### *ENHR: the case of Tanzania (1999)*<sup>4</sup>

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#### Objectives, criteria, process and main health research priorities

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##### Objectives of the priority-setting process

To allocate the limited research resources to priority problems so that the joint efforts result in positive and significant health changes and reduction in health problems.

The process should have the following characteristics:

- inclusiveness: community representatives, researchers, health service providers, decision-makers
- broad-based national and local consultations
- using both quantitative and qualitative methods
- steered by a small technical committee (National Forum for Health Research).

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##### Objectives of the workshop

- share experiences and outline problems
- discuss and identify obstacles to effective health planning and implementation
- develop together national health priorities based on feedback from regions and districts
- outline future plans to maintain and update health research priorities.

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##### Criteria for identifying priority research areas

- magnitude of the problem
- avoidance of duplication
- feasibility
- focused
- applicability of results
- add to new knowledge
- political and ethical acceptability
- urgency.

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##### Steps in the preparation of the health research priorities and agenda

- Step 1: Situation analysis in the field of priority setting, identifying the weaknesses and strengths of the present system, and the opportunities which present themselves.
- Step 2: Consultation of the 113 District Medical Officers, asking them to list the top 10 disease problems, the top 10 health systems problems and the top 10 socio-cultural problems.
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<sup>4</sup> National Institute for Medical Research, ENHR Secretariat, *Tanzania Essential National Health Research, Priority-Setting Workshop*, Arusha, 15-21 February 1999.

## Insert 2.1 (continued)

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- Step 3: Arusha Workshop with 40 stakeholders from key institutions (15-21 February 1999):
- presentation by six Tanzanian institutions of their experiences/lessons learnt in past priority-setting exercises
  - identification and agreement on the criteria for priority setting
  - ranking of diseases, health service problems and sociocultural problems
  - identification of researchable issues in each of the top problem areas
  - definition of the priority research areas by iterative process
  - overall assessment of the identified priorities by government, health research institutions and NGO representatives.
- Step 4: At a later stage, updating of results on a regular basis and monitoring of results.
- 

### Priority research areas

#### A. Top 10 priority disease problems:

Malaria, upper respiratory tract infection (URTI), diarrhoeal diseases, pneumonia, intestinal worms, eye infections, skin infections, STD, anaemia, injuries (then: schistosomiasis, tuberculosis).

#### B. Top 10 health service problems:

Lack of trained personnel, lack of equipment/drugs, lack of transport, underfunding, low level of health education, impassable roads, lack of infrastructure/buildings, lack of water supply, poor environmental sanitation, inadequate health facilities (then: cultural beliefs and taboos, poor cooperation with local leaders).

#### C. Top 10 socio-cultural problems:

Food taboos in pregnancy, poor latrine usage, alcoholism, polygamy, illiteracy, gender inequality, witchcraft, inheritance of widows, low use of family planning, use of local herbs.

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### Lessons drawn by the National Institute for Medical Research

- importance for ownership of identifying and adopting the criteria for priority setting by consensus
  - importance for ownership of identifying and adopting the priorities by consensus
  - ownership is probably the most important element in ensuring proper implementation of the national health research priorities.
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## Insert 2.2

### *ENHR: the case of Indonesia (2000-2005)*<sup>5</sup>

#### Objectives, criteria, process and main health research priorities

##### Objectives of the priority-setting process

- to develop the national health research priorities and the national health research agenda for policy-makers in Indonesia for the period 2000-2005
- to promote social accountability, ownership and shared responsibility for implementation of the research agenda
- to help strengthen national research capacity.

##### Criteria for identifying priority research areas

- burden of disease: how big and urgent is the problem?
- avoidance of duplication: what research has previously been done?
- feasibility of the research
- expected impact of the research on the health status of the population
- political acceptability of the research
- applicability of the research
- ethical acceptability of the research.

##### Steps in the preparation of the health research priorities and agenda

- Step 1: Collection of data relevant to the national health status and health-care system.
- Step 2: Situation analysis on: (i) trends in disease and risk factors/determinants; and (ii) health care, health personnel, health programmes, health facilities, health research systems and funding.
- Step 3: Situation analysis sent to all stakeholder representatives.
- Step 4: Round table discussions around the following eight health-related areas: health behaviours, health system, communicable diseases, demography, pharmacy/medicine, environmental/occupational health, food and nutrition and noncommunicable diseases.
- Step 5: Preparation by each discussion group of a preliminary list of priority research areas.
- Step 6: Discussion of the preliminary priority lists in a national meeting of 100 stakeholder representatives at Carita on 2-4 February 1999.
- Step 7: Preparation of a problem statement and a conceptual framework by each technical group and identification of the proposed research areas in successive voting rounds until the number of proposed areas is reduced to those of highest priority.
- Step 8: Identification (by each technical group at the Carita meeting) of policy- and decision-makers who will use the information generated by the research. The impact of the research must also be clearly demonstrated through the identification of its expected outputs.

<sup>5</sup> ENHR Focal Point in Indonesia and National Institute of Health Research and Health Development, *The Development of National Health Research Priority and National Health Research Agenda for Indonesia, 2000/01-2004/05*.

## Insert 2.2 (continued)

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### Priority research areas

#### A. Health behaviour research agenda

Priorities are defined with respect to main health behaviours (level of exercise, eating/nutritional habits, smoking, alcohol consumption, drug abuse, driving safety and safe sexual practices) and their main determinants, i.e. regulatory aspects (policy and regulations, socioeconomic factors, cultural and psychological factors, standards for risk factors) and operational aspects (epidemiology of behaviour, information/education/communication, technology of communication for behaviour change and supply/demand factors for health information).

#### B. Health system research agenda

Priorities are defined with respect to the four pillars of the Healthy Indonesia 2010 plan, i.e. decentralization (what is the best structure for an efficient and effective operation at national, provincial, district and sub-district levels?), professionalism, health paradigm (giving central importance to prevention) and managed care (most appropriate guidelines).

#### C. Communicable diseases research agenda

The following disease categories are identified as research priorities: acute respiratory infections/pneumonia, tuberculosis, gastro-intestinal and liver infections (cholera, typhoid fever, viral hepatitis, etc.), malaria, dengue fever, STD, HIV/AIDS, emerging infectious diseases, food poisoning, vaccine-preventable diseases.

#### D. Demography research agenda

Areas of greatest need are identified as follows: a managed system for reporting of mortality and its causes; measurement of the demographic and epidemiologic transitions (fertility; mortality; morbidity; disability; contraceptive prevalence; impact of economic crisis on fertility, mortality, morbidity, disability); changes in mortality and morbidity; mobility (epidemiologic patterns in urbanized areas; burden of road traffic injuries; changes in health behaviours; accessibility of services for refugees).

#### E. Pharmacy and medicine research agenda

Priority research questions focus on the three primary pharmaceutical sectors: production (availability of raw materials, quality control standards, safety and efficacy norms, cost/benefit ratios for raw materials, availability of traditional medicines, norms for locally manufactured products, etc.); management (requirements to ensure provision of effective and efficient pharmaceutical services, procurement practices, equitable distribution of drugs, appropriate segmentation between the public and private sectors, improvement in the cost-effectiveness of drugs, rational utilization of drugs, etc); pharmaceutical services (drug regimens for selected diseases, effective surveillance method, etc.).

#### F. Environmental and occupational health research agenda

Priority research questions: human settlement (model for low-cost healthy housing); public places/sanitation (maintenance of basic sanitation; standards for indoor air pollution; model for solid waste disposal; model for safe water supply; standards for air pollution); working environment (model for improvement of working environment for targeted groups such as fishermen, farmers, home industries); occupational health (standards for prevention of accident in the workplace); fauna (appropriate strategies for vector and rodent control); flora (model for preservation of biodiversity, etc.).

#### G. Food and nutrition research agenda

Priority research areas: epidemiology of nutritional deficiency (prevalence, causes and consequences of protein energy malnutrition; micronutrient deficiencies, obesity, cataract); biomedical aspects of nutritional deficiency; nutrition technology (micronutrients, quality control, food supplementation); food technology (food security, control of toxic substances, appropriate surveillance and standards).

#### H. Noncommunicable diseases research agenda

Priority research areas: cardiovascular diseases; cancers (breast, cervical, lung, prostate, colo-rectal, nasopharyngeal, liver, ovary, pancreatic); injuries (traffic accidents, poisoning, violence against women and children); mental disorders (schizophrenia, dementia, drug abuse, depression, neuroses).

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## Insert 2.3

### *ENHR: the case of South Africa*<sup>6</sup>

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#### Objectives of the priority-setting process

- to develop the national health research priorities with a focus on equity and development
  - to promote the integration of efforts in the field of health research and promote the development of the necessary human resources.
- 

#### Characteristics of the priority-setting process

- be user driven and include participants from all sectors
  - be continuous, innovative and guided by the burden of disease analysis
  - address the needs of the poor and meet their basic needs
  - contribute to the development of human resources
  - include indicators of performance to track the impact.
- 

#### Steps in the preparation of the health research priorities and agenda

- Step 1: Rank health status (trends, morbidity, mortality)
- Step 2: Identify research areas by discipline (current interventions, research focus areas, need for new interventions)
- Step 3: Discuss research opportunities (human resources, chances of success, funding of of life, equity impact).
- 

#### Criteria for identifying priority research areas

- burden of disease
  - avoidance of duplication
  - feasibility of the research
  - expected impact of the research on the health status of the population
  - political acceptability of the research
  - applicability of the research
  - ethical acceptability of the research.
- 

#### Priority research areas

- injury/trauma/violence
  - tuberculosis
  - nutrition
  - HIV/AIDS
  - sexually transmitted diseases
  - cancer
  - diarrhoeal diseases
  - respiratory infections
  - mental health
  - malaria.
- 

#### Lessons learned from the Priority-setting Conference and the work of the ENHR Commission

- drew attention to the importance of involving local communities
  - helped strengthen linkages between various research efforts
  - helped focus the research efforts on bringing solutions to people's health problems
  - helped ensure accountability.
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<sup>6</sup> Marian Jacobs, *Priority Setting for Health Research, The Case of South Africa*. Paper presented at Forum 3, June 1999, Geneva.

### 3. Criteria for setting priorities

In the documents listed in footnote 3 above and in the national ENHR priority-setting exercises undertaken in a number of countries, the following criteria appear most often for the selection of priority research areas:

- economic impact, including both the severity of the problem (urgency, seriousness, degree of incapacitation) and the magnitude/prevalence of the problem (number of persons affected)
- cost-effectiveness of potential future interventions
- effect on equity and social justice
- ethical/political/social/cultural acceptability
- feasibility of the research: probability of finding a solution
- avoidance of duplication
- contribution to capacity strengthening.

It should be emphasized that not all these criteria have been systematically applied in ENHR priority-setting exercises in all countries. However, basic criteria such as economic impact (including severity and magnitude of the problem), effect on equity, and acceptability are present in most cases.

### 4. Lessons learned

A number of countries have started implementing the ENHR strategy by setting priorities for health research. A 1997 COHRED publication<sup>7</sup> summarizes the main lessons learned from the first four years of ENHR priority-setting exercises as follows:

- Broad consultation is possible but usually needs reinforcement. In many cases, it has been possible to bring together the various stakeholders for consultation, dialogue and decision-making, leading to a better allocation of health research resources. However, more substantive participation is still needed, particularly from representatives of the local communities and the private health sector.
- The demand side of the equation must not be overlooked: analysis of the health situation in the country on the supply side (analysis of the burden of disease and of the health care delivery systems, for example) must be balanced with analysis on the demand side, including health needs, people's expectations, societal trends and values.
- Priority setting is a political process that requires transparency and accountability. This can be achieved through inclusiveness and mutual respect, a common understanding of criteria, consensus on the selection process and skilful synthesis of research priorities.
- International aid agencies must pay close attention to the nationally defined priorities.
- Many issues must be treated at the global level as well as the national level. New mechanisms must be created to address issues relevant to the global and national levels, such as: resource flows, intellectual property rights, "brain drain" and subsidies for social pricing of biomedical products. The "upward synthesis (from the national to the global level) is achievable but still an elusive goal and can be achieved only with more systematic and credible priority-setting exercises".

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<sup>7</sup> *Essential National Health Research and Priority Setting: Lessons Learned*, COHRED, June 1997.

## Section 3

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### The approach of the Ad Hoc Committee on Health Research: the Five-Step Process<sup>8</sup>

In response to the key issue of how to allocate limited resources between a large number of possible research projects so as to have the greatest impact on the health of the largest possible number of people, the Ad Hoc Committee on Health Research proposed the following five steps to help decision-makers make a rational decision in the allocation of the limited resources:

#### **Step 1: Calculate the burden attributable to each main disease or risk factor in the country**

This can be measured in DALYs (disability-adjusted life years) or similar methods, indicating the number of years of healthy life lost due to premature death or to disability of one kind or another.

#### **Step 2: Identify the reasons for the persistence of the burden of the disease (i.e. identify the main determinants of the disease)**

This requires an analysis of whether the problem persists mainly because of:

- lack of knowledge about the disease and its determinants (in which case more strategic research is needed)
- lack of tools (in which case more operational research is needed)
- failure to use the existing tools efficiently (requiring both more operational research

and more health policy and systems research).

Based on this analysis and using data on the efficacy of the available interventions and information from field experts on the proportion of the population receiving effective interventions, the Ad Hoc Committee on Health Research designed an analysis box (Insert 2.4) to help identify the following elements:

- the portion of the total burden of each disease currently being averted in a given country
- the portion of the total disease burden which could be averted with better use of existing cost-effective interventions (thus requiring more research on health policies and systems)
- the portion of the total burden which could be averted but only with interventions which are not cost-effective (thus requiring more biomedical research to reduce the cost of these interventions)
- the portion of the total burden which could be averted only with new interventions (thus requiring more biomedical research to identify new interventions).

#### **Step 3: Judge the adequacy of the current knowledge base, including the cost-effectiveness of current interventions**

If current interventions are very expensive,

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<sup>8</sup> This section has been written on the basis of the Report of the Ad Hoc Committee on Health Research, *Investing in Health Research and Development*, WHO, September 1996.

this will strengthen the case for research into more cost-effective interventions. However, if the interventions available today are already highly cost-effective, the case for developing new interventions will be weaker.

**Step 4: Assess the promise of the research and development effort: is research likely to produce interventions which will be more cost-effective than the existing ones?**

This step involves the calculation of the cost-effectiveness of the potential intervention (in terms of total costs per DALY averted, including the cost of research and the cost of the intervention itself) and the comparison with the cost-effectiveness of existing interventions. The Ad Hoc Committee

concludes that any research leading to an intervention costing less than US\$150 per DALY averted in low-income countries is “attractive” to “highly attractive”.

**Step 5: What are the present resource flows for that disease/risk factor?**

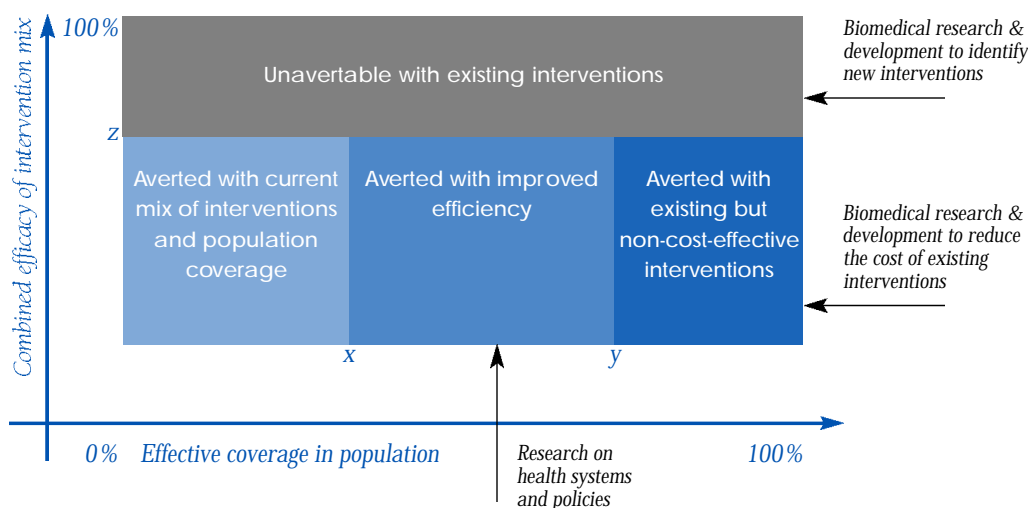
Given the present allocation of resources for this disease/risk factor, should more be invested or would resources be better invested elsewhere in research and development?

The application of the five steps described above should greatly facilitate the work of the decision-maker in identifying key research priorities for the country concerned or globally.

## Insert 2.4

### Analysing the burden of a health problem to identify research needs

#### Relative shares of the burden that can and cannot be averted with existing tools



Source: Ad Hoc Committee Report, p. 7

$x$  — population coverage with current mix of interventions  
 $y$  — maximum achievable coverage with a mix of available cost-effective interventions  
 $z$  — combined efficacy of a mix of all available interventions

## Section 4

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### **The approach of the Advisory Committee on Health Research (ACHR): the Visual Health Information Profile<sup>9</sup>**

#### **1. Global objective**

The global objective of the ACHR Research Policy Agenda is to address the key problems for global health in a systematic way, making use of scientific research networks and partnerships around the world. Its vision is one of global cooperation between the scientific community, governments, nongovernmental organizations, the private sector and all partners in public health.

#### **2. Problems of critical significance to global health**

The ACHR Research Policy Agenda particularly addresses health problems which are “significant” and “global”, and where the need for action is “imperative”. Based on these criteria, the Research Policy Agenda identifies the following problems (also referred to as the underlying common determinants of health status) as having critical significance for the attainment of “Health for All”:

- population dynamics, including population growth and ageing
- industrialization and urbanization, including overcrowding and pollution
- environmental threats (particularly to food, water and air safety)
- shortages of food and water
- new and re-emerging threats to health
- behavioural and social problems such as stress, substance abuse and violence.

#### **3. Multidisciplinary approach**

Because these “problems of critical significance to global health” have multiple contributing factors, solutions correspondingly require inputs from a wide range of disciplines including:

- biomedical sciences
- public health sciences
- environmental sciences
- physical sciences and engineering
- economic sciences
- educational sciences
- social and behavioural sciences
- information and communication technologies.

#### **4. The Visual Health Information Profile (VHIP)**

The VHIP is a computer-based visual display showing the “totality of the health status of a country” in a way that enables comparisons of health status:

- for a given country (or region) over time
- between countries (or regions) at a given point in time.

It contains five main categories of health indicators:

- Indicators of disease conditions and health impairment: life expectancy, death rate, maternal mortality, under-five mortality,

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<sup>9</sup> This section has been written on the basis of the Advisory Committee on Health Research, *A Research Policy Agenda for Science and Technology to Support Global Health Development*, A synopsis, WHO, December 1997.

infant mortality, communicable diseases, noncommunicable diseases, injuries, disabilities, etc.<sup>10</sup>

- Indicators of health-care systems: access to care, total fertility rate, immunization coverage, expenditure on health (% GNP), etc.
- Environmental determinants: GNP per capita, access to safe water, access to adequate sanitation, population growth rate, energy consumption per capita, etc.
- Food and nutrition indicators: daily calorie supply per capita, food production per capita, etc.
- Socio-cultural characteristics: adult literacy, expenditure on education (% GNP), births under the age of 20, tobacco consumption, etc.

One example of VHIP is presented in Insert 2.5.

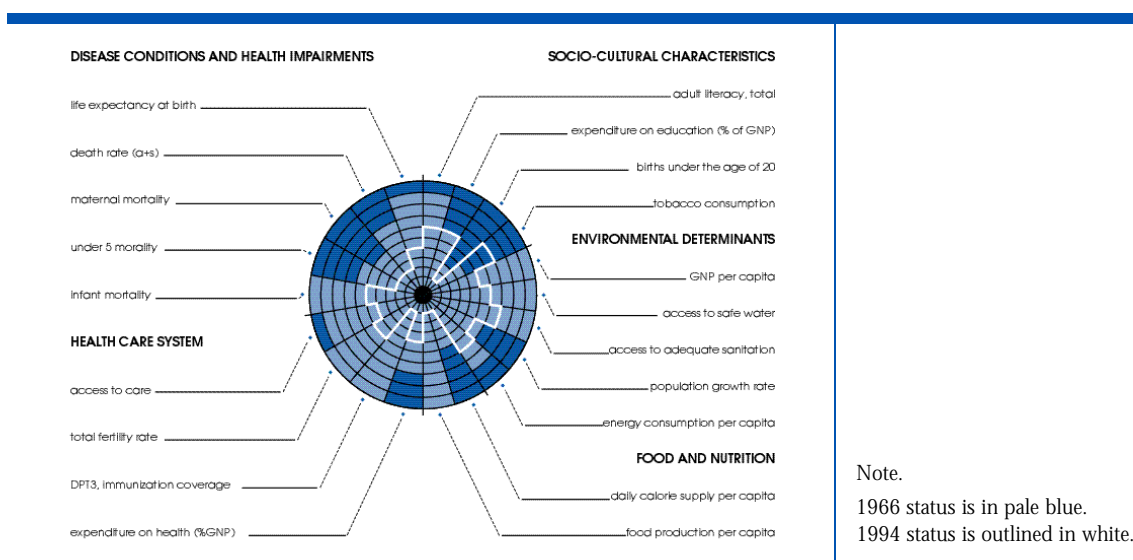
## 5. Priority research areas

On the basis of the above criteria, the following areas are listed high on the ACHR Research Agenda:

- Communicable diseases: acute respiratory infections, tuberculosis, vaccine-preventable diseases of childhood, diarrhoeal diseases, sexually transmitted diseases, HIV/AIDS, tropical diseases.
- Noncommunicable diseases: cardiovascular diseases, diabetes, cancer, violence and injuries, mental health disorders, substance abuse.
- Health policies and health systems research.
- Family, perinatal and reproductive health.
- Environmental health (particularly air, water and land pollution).
- Food and nutrition.
- Research capacity strengthening in the least developed countries.
- Healthy behaviour.

## Insert 2.5

### Visual Health Information Profile: Tunisia 1966-94<sup>11</sup>



<sup>10</sup> Each domain can be further disaggregated as far as the available data will allow.

<sup>11</sup> The Advisory Committee on Health Research, *A Research Policy Agenda for Science and Technology, A synopsis*, WHO, December 1997, page 29.



## Section 5

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### Comparison of the ENHR, Ad Hoc Committee and ACHR approaches

Since the publication in 1990 of the Commission Report,<sup>12</sup> which drew attention to the imbalance in the global allocation of health research funds, a remarkable amount of work has been undertaken to help decision-makers in the public sector set priorities in the allocation of limited resources. The main efforts were summarized in Section 2 (Commission on Health Research for Development), Section 3 (Ad Hoc Committee on Health Research) and Section 4 (Advisory Committee on Health Research) above. The most important conclusion of this review of past approaches is that they are not contradictory but largely complementary.

This section examines the three approaches, indicating their common denominators and main differences.

#### 1. Objective of priority setting in the public sector

Although the various approaches tackle the problem from very different angles and with different terminologies and methodologies, there appears to be at least implicit consensus that the central objective is to have the greatest impact on the health of the greatest number of people in the community concerned (world or country level) for a given investment. In the ENHR approach, this is complemented by a particular emphasis on the effect on equity of the research projects selected.

Whereas the Ad Hoc Committee proposes to measure this impact in terms of DALYs averted as a result of health research outcome (or number of years of healthy life saved), the other two approaches are not specific about the actual measurement of the impact of health research. However, both underline the importance of the burden of disease.

On strategies and principles, most approaches stress the importance of ensuring that priorities are set by all stakeholders (participatory approach) and of applying a multidisciplinary approach.

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<sup>12</sup> Commission on Health Research for Development, *Health Research, Essential Link to Equity in Development*, 1990

## 2. Criteria for priority setting in the allocation of public sector resources<sup>13</sup>

The aim of using explicit criteria is (i) to make the selection process as transparent as possible and (ii) to allocate limited research funds in the most productive way. There is a broad degree of consensus (explicitly or implicitly) on the main criteria to be applied. The most frequently used criteria under the various approaches include:

- **Severity (degree of incapacitation) and magnitude of the problem (number of persons affected):** these criteria are specifically mentioned in the ENHR approach; the ACHR/VHIP approach talks of the need to allocate resources to the problems deemed of “greatest global burden”; the Ad Hoc Committee incorporates these dimensions in the burden of disease measurement.
- **Cost-effectiveness of the interventions researched (estimated benefits accruing to society as a whole from research results as compared to their estimated costs):** this is one of the main criteria of the Ad Hoc Committee approach, where benefits are measured in terms of DALYs saved; it is specifically mentioned in the ENHR (economic impact of the proposed health research project) and is implicit in the ACHR/VHIP model.
- **Effect on equity (likely impact of the research on the poorer segments of the population):** this is one of the main criteria of the ENHR approach and particular attention was drawn to this issue in Forum 3 by the President of the Council for International Organizations of Medical Sciences (CIOMS).<sup>14</sup> In the ACHR/VHIP approach, a number of indicators

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<sup>13</sup> The criteria are somewhat different in the private sector. Being responsible for the survival and success of the enterprise and for the satisfaction of the shareholders, decision-makers in the private sector base their decisions mostly on the following criteria:

- profit perspectives: this corresponds to the cost-effectiveness criterion applied in the public sector; it could be termed the private cost-effectiveness of the proposed research project, i.e. the estimated benefits accruing to the enterprise from research results as compared to their estimated costs (return on capital); this overall criterion includes several other criteria, also present in the public sector calculations, such as the probability of finding solutions, the scientific quality of the research proposed, and the feasibility of the research proposed (human resources, funding, facilities). Although this is the most important criterion for the private enterprise, other criteria may also play a role, such as the ones mentioned below;
- social responsibility of the enterprise: the enterprise may decide to consecrate part of its resources to the correction of social ills locally or worldwide; this is the basis for a number of important drug donation programmes, including some research aspects at the level of development or distribution;
- public image of the enterprise: resources may be invested to promote a positive image of the enterprise, with the hope of reinforcing profit perspectives in the longer term.

<sup>14</sup> John H. Bryant, *Dilemmas in Setting Priorities for Health Research and Development* Paper presented at Forum 3, June 1999, Geneva. This paper draws particular attention to:

- the importance of specifying values and principles as a basis for priority setting; the values do not provide answers to the priority-setting task but provide indications of the trade-offs involved in choosing between different options;
- the fundamental conflict between equity and cost-effectiveness when those most in need are the most difficult to reach;
- the ready identification of equity as a necessary criterion and the difficulty of incorporating it in the policy framework and programme implementation;
- the Norman Daniels “benchmarks of fairness” providing indicators to assess the extent of fairness or justice in different models of health-care reform;
- the need for research to take into account the local cultural values, conditions and traditions when setting priorities.

These are largely ignored when the priority focus is on macro-systems.

## Insert 2.6

### Comparison of various priority-setting approaches

Characteristics	Essential National Health Research Approach	Ad Hoc Committee on Health Research Approach	Advisory Committee on Health Research Approach	Global Forum for Health Research “Combined Approach”
<b>1.Objective of priority setting</b>	<p>Promote health and development on the basis of equity.</p> <p>Help decision-makers make rational choices in investment decisions.</p>	<p>Help decision-makers make rational choices in investment decisions so as to have the greatest reduction in the burden of disease for a given investment (as measured by number of DALYs averted).</p>	<p>Address problems of critical significance for global health: population dynamics, urbanization, environment, shortages of food and water, new and re-emerging infectious diseases.</p>	<p>Help decision-makers make rational choices in investment decisions so as to have the greatest reduction in the burden of disease for a given investment (as measured by number of DALYs averted), on the basis of the practical framework for priority setting in health research (matrix presented in Insert 2.7).</p>
<b>2.Focus at the global or national level?</b>	<p>Focus on situation analysis at country level; residual problems to be studied at global level.</p>	<p>Focus on situation analysis at the global level; method also applicable at the country level.</p>	<p>Priority to “significant” and “global” problems, requiring “imperative” attention.</p>	<p>Method applicable at both global and national level.</p>
<b>3.Strategies/ principles</b>	<p>Priorities set by all stakeholders.</p> <p>Process for priority setting should be iterative and transparent.</p> <p>Approach should be multidisciplinary.</p>	<p>Five- step process.</p> <p>Process should be transparent.</p>	<p>Priorities should be set by all stakeholders.</p> <p>Process should be transparent and comparative.</p> <p>Multidisciplinary approach.</p>	<p>Priorities should be set by all stakeholders.</p> <p>Transparent and iterative process.</p> <p>Approach should be multidisciplinary (biomedical sciences, public health, economics, environmental sciences, education sciences, social and behavioural sciences).</p>
<b>4.Criteria for priority setting</b>				
<i>Burden of disease</i>	<p>Based on an estimate of severity and prevalence of disease.</p>	<p>Measured by DALYs (number of years of healthy life lost to each disease).</p>	<p>Allocate resources to the problems deemed of “greatest global burden”</p>	<p>Measured by DALYs (number of years of healthy life lost to each disease) or other appropriate indicators.</p>
<i>Analysis of determinants of disease burden</i>	<p>Analysis of multidisciplinary determinants (biomedical, economic, social, behavioural, etc.).</p>	<p>Analysis of mostly biomedical determinants.</p> <p>Other determinants implicit.</p>	<p>Analysis of multidisciplinary determinants (biomedical, economic, social, behavioural, etc.).</p>	<p>Analysis of determinants at following intervention levels:</p> <ul style="list-style-type: none"> <li>– individual/family/ community</li> <li>– health ministry and research</li> <li>– sectors other than health</li> <li>– government macro-economic policies.</li> </ul>
<i>Cost-effectiveness of interventions (resulting from planned research)</i>	<p>Some attempts at measurement in terms of impact on severity and/or prevalence.</p>	<p>Cost-effectiveness measured in terms of DALYs saved for a given cost.</p>	<p>Implicit reference to cost-effectiveness analysis.</p>	<p>Cost-effectiveness measured in terms of DALYs saved for a given cost.</p>

## Insert 2.6 (continued)

Characteristics	Essential National Health Research Approach	Ad Hoc Committee on Health Research Approach	Advisory Committee on Health Research Approach	Global Forum for Health Research “Combined Approach”
<b>4.Criteria for priority setting (continued)</b>				
<i>Effect on equity and social justice</i>	Central criterion in ENHR approach (not directly measured).	Inbuilt equity orientation, based on same weights given to year of healthy life saved for poor and rich population (effect on equity not directly measured as yet).	A number of indicators in the VHIP draw attention to the situation of the poorer segments of the population.	Inbuilt equity orientation, based on same weights given to year of healthy life saved for poor and rich population (effect on equity not directly measured as yet).
<i>Ethical, political, social, cultural acceptability</i>	This criterion is present, although in varying degrees, in various approaches, either explicitly (particularly in the ENHR approach) or implicitly.			
<i>Probability of finding a solution</i>	Specifically mentioned in the ENHR approach.	Part of the cost-effectiveness analysis (step 4).	Implicit.	Part of the cost-effectiveness analysis.
<i>Scientific quality of research proposed</i>	Pre-condition in all approaches.			
<i>Feasibility (availability of human resources, funding, facilities)</i>	Specifically mentioned in the ENHR approach.	Implicit.	Implicit.	Feasibility is part of the list of criteria.
<i>Contribution to capacity strengthening</i>	Explicitly mentioned in the ENHR approach.	Not mentioned. Could be integrated in the cost-effectiveness analysis.	Not mentioned. Could be integrated.	Can be integrated in the cost-effectiveness analysis.
<b>5.Critical problems and priority research areas</b>	Will depend on each country's situation.	<p>Infectious diseases, malnutrition and poor maternal/child health.</p> <p>New and re-emerging infectious diseases due to antimicrobial resistance (TB, STD, HIV/AIDS, malaria).</p> <p>Increase in NCD and injuries.</p> <p>Inequities and inefficiencies in delivery of health services.</p>	<p>Infectious diseases: TB, vaccine-preventable childhood diseases, STD, HIV/AIDS, tropical diseases, maternal and child health.</p> <p>Noncommunicable diseases: cardiovascular diseases, diabetes, cancer, injuries, mental disorders, substance abuse.</p> <p>Health policies and health systems.</p> <p>Environment, nutrition, behaviour.</p>	<p>Health system research (efficiency and equity of health systems)</p> <p>Child health and nutrition (diarrhoea, pneumonia, HIV, malaria, vaccine-preventable diseases, nutritional deficiencies, TB)</p> <p>Maternal and reproductive health (mortality, STDs and HIV nutrition, family planning)</p> <p>Noncommunicable diseases (cardiovascular, mental and neurological conditions)</p> <p>Injuries</p>
<b>6.Implementation tools</b>	Essential national health research plans.	<p>Forum for investors in international health research.</p> <p>National agendas.</p> <p>Public/private collaboration.</p>	Under preparation.	<p>Analytical work for priority setting.</p> <p>Research networks (initiatives) for priority diseases.</p> <p>Annual meeting of partners to help correct the 10/90 gap.</p>

summarized in the VHIP diagram draw attention to the particular situation of the poorer segments of the population. In the Ad Hoc Committee approach, the same weight is given to a year of healthy life saved for a poorer or a richer person. Since costs are normally much lower to save one year of healthy life for a poorer person (for example: use of antibiotics, oral rehydration, vaccines) than for a richer person who already has access to these tools, there is an inbuilt equity orientation in the Ad Hoc Committee approach. However, the degree of this inbuilt equity orientation has not yet been measured and much more work is needed in this area to help define cost-effective poverty-oriented policies.

- **Ethical acceptability:** this criterion is explicitly mentioned in the ENHR approach only.
- **Probability of finding a solution:** this is specifically mentioned in the ENHR approach and implicit in the ACHR/VHIP approach. It is also part of the cost-effectiveness calculations in the Ad Hoc

Committee approach under step 4 (how cost-effective could future interventions be?) in the following way: the lower the probability of finding a solution, the higher the costs and the lower the cost-effectiveness.

- **Scientific quality of the research proposed:** this is a pre-condition in all approaches.
- **Feasibility of the research proposed (availability of the necessary human resources, funding and facilities):** this is explicitly or implicitly part of all approaches.
- **Impact on capacity strengthening of the research proposed:** this is explicitly mentioned in the ENHR approach only. Although the other approaches are not specific about this criterion, it could be integrated into the cost-effectiveness calculation.

This comparison of the three approaches is summarized in Insert 2.6.

## Section 6

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### The Combined Approach proposed by the Global Forum for Health Research

This section focuses on the Combined Approach (Insert 2.6), which incorporates the criteria and principles for priority setting defined in the ENHR approach, the Visual Health Information Profile proposed by the Advisory Committee on Health Research and the Five-Step Process of the Ad Hoc Committee on Health Research. These criteria and principles are then linked with the four broad groups of actors and factors determining the health status of a population to form a proposed matrix for priority setting in health research (Insert 2.7). During 2000-2001, the Combined Approach will undergo piloting and testing and must at this stage be considered as work in progress.

Based on this matrix, defining the health research priorities for a given community (at global or country level) would require the following analyses (adapted according to the specific circumstances):

#### **1. Situational analysis: calculating the burden of diseases and collecting the macro-data on the global factors affecting health**

The first efforts of the priority-setting team would be directed at assessing the burden of the main diseases and risk factors globally or for the country concerned (step I of the five-step process).

In parallel, the team would gather the available data to fill the Visual Health Information Profile proposed by the WHO

Advisory Committee on Health Research. This profile would summarize data, on an internationally comparative basis, between countries and over time, on key factors affecting the health status of the country's population (see Section 4.4 above).

#### **2. Filling the matrix table for each major disease (global or national level)**

The team would then fill in one such matrix table for each major disease. This should comprise all available information on the main questions raised by the Ad Hoc Committee on Health Research (steps II to V of the five-step process) for each of the diseases: (i) why does the burden of each disease persist? (ii) what is known today about existing interventions (and their cost-effectiveness) and about possible new interventions? (iii) is research likely to produce more cost-effective interventions? and (iv) what are the resource flows for that disease/risk factor in the country? These four questions should be raised for each of the four main groups of actors determining the health status of a community, corresponding to the following four intervention levels:

- **Individual, family, community:** What is known about the factors which are in the hands of the individual, the family or the community and which have an important impact on the particular disease or risk factor? Are the existing tools cost-effective? Are these tools widely recognized within the community? Are they applied? If not, why not? Are new tools necessary?

- **Health ministry, health systems and services, health research community:** How effective and cost-effective are the existing drugs/vaccines? Are the best policies and practices sufficient for treating the problem at hand? Are they applied? If not, why not? Is there a lack of biomedical knowledge about the disease or lack of tools? Inefficient health systems and services?
- **Sectors other than health with a major impact on health:** Are some of the causes rooted in sectors other than health? What is being done in these other sectors (agriculture, environment, education, etc.) which has an impact on the disease or risk factor at hand? How cost-effective are these interventions? What are promising new avenues for research?
- **Central government and macroeconomic policies:** Are government macroeconomic policies playing a negative role or are they effective for the health status of the population? Can they be made more effective? What research is necessary for making them more effective?

It is essential to look at all possible determinants, not only at the most immediate ones, such as the state of biomedical knowledge or the quality of the health services.

The advantage of the proposed table is that it will help summarize all available information on one disease and facilitate comparisons between the likely cost-effectiveness of different types of interventions. The information will inevitably be partial in the

first year, probably even sketchy in some cases, but it will progressively improve and even limited information is sometimes sufficient to indicate promising avenues for research.

### **3. Identifying the priority research areas for each disease**

Through an analysis of each table, it will be possible to identify for each disease those areas that are likely to have the greatest impact on the health status of the population. It is important to examine the situation at each of the four intervention levels mentioned above.

### **4. Comparing key factors across tables**

A comparison of the key factors across tables will draw attention to those research areas which will benefit several diseases at the same time.

### **5. Defining the priority research areas (global or national level)**

The priority research agenda, globally or for the country, will then be defined on the basis of the priorities for each disease and across diseases. It will comprise those research projects having the greatest impact in terms of reduction of the burden of disease in the country. Although this is a long-term effort, the tool should demonstrate its usefulness at an early stage by highlighting the most important gaps in the information needed to make evidence-based decisions and by enabling some decisions to be made despite the limited availability of information.

## Section 7

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### **Perspectives for 2000-2001**

Despite substantial progress over the past decade, we are still at the stage of learning how to set priorities for health research effectively and how to transform the acquired knowledge into greater impact of research on people's health.

A number of priority-setting exercises are being planned for 2000-2001, using one

or other of the approaches reviewed above (at the country or global level). Some results will be available in the first part of 2000 and will be presented at the International Conference on Health Research for Development in Bangkok. These results will provide more information on the strengths and weaknesses of the methodologies applied and will permit further improvements in the instruments.



## Insert 2.7

### *The Combined Approach: a practical framework for setting priorities in health research*

<b>Five Steps in Priority Setting</b>	<b>Data and Analytic Requirements</b>	
<b>I. What is the burden of the disease/risk factor?</b>	Health status Assessment of the burden of disease (DALYs, QALYs, etc.)	
<b>II. Why does the burden of disease (BoD) persist? What are the determinants?</b>	Acquisition of knowledge about disease determinants	
<b>III. What is the present level of knowledge?</b>	What is known today about existing interventions? How cost-effective are they?	
<b>IV. How cost-effective could future interventions be?</b>	Is research likely to produce more cost-effective interventions than the present ones?	
<b>V. What are the resource flows for that disease/risk factor?</b>	Assessment of the public and private resource flows	

## Actors/factors determining the health status of a population (intervention levels)

Level of the individual, family and community	Level of the health ministry, health research institutions, and health systems and services	Level of sectors other than health	Level of central government and macroeconomic policies
			Tool of analysis: Visual Health Information Profile (VHIP) proposed by the Advisory Committee on Health Research
<b>Analysis of:</b> <ul style="list-style-type: none"> <li>• Individual determinants</li> <li>• Family determinants</li> <li>• Community determinants influencing the BoD</li> </ul>	<b>Analysis of:</b> <ul style="list-style-type: none"> <li>• Biomedical knowledge</li> <li>• Health policies</li> <li>• Health systems</li> <li>• Health services influencing the BoD</li> </ul>	<b>Analysis of sectoral policies having an impact on the BoD, for example:</b> <ul style="list-style-type: none"> <li>• Education</li> <li>• Environment</li> <li>• Working conditions</li> <li>• Security policies</li> </ul>	<b>Analysis of macroeconomic policies having an impact on the BoD, for example:</b> <ul style="list-style-type: none"> <li>• Budget policies, structural adjustment programmes</li> <li>• Research policies</li> <li>• Good governance</li> </ul>
<b>Knowledge about factors influencing the C/E* of interventions at:</b> <ul style="list-style-type: none"> <li>• Individual level</li> <li>• Family level</li> <li>• Community level</li> </ul>	<b>Knowledge about factors influencing the C/E of interventions in:</b> <ul style="list-style-type: none"> <li>• Biomedical research</li> <li>• Health policies</li> <li>• Health systems</li> <li>• Health services</li> </ul>	<b>Knowledge about factors influencing the C/E of interventions in sectors outside health, for example:</b> <ul style="list-style-type: none"> <li>• School training in hygiene</li> <li>• Nutrition campaign</li> <li>• Pollution control</li> </ul>	<b>Knowledge about factors influencing the C/E of changes in macroeconomic policies, for example:</b> <ul style="list-style-type: none"> <li>• Structural adjustment programmes and health</li> <li>• Research policies</li> <li>• Good governance</li> </ul>
<b>Estimated C/E of potential interventions at:</b> <ul style="list-style-type: none"> <li>• Individual level</li> <li>• Family level</li> <li>• Community level</li> </ul>	<b>Estimated C/E of potential interventions in:</b> <ul style="list-style-type: none"> <li>• Biomedical research</li> <li>• Health policies</li> <li>• Health systems</li> <li>• Health services</li> </ul>	<b>Estimated C/E of potential interventions in various sectors outside health:</b> <ul style="list-style-type: none"> <li>• School training in hygiene</li> <li>• Nutrition campaign</li> <li>• Pollution control</li> </ul>	<b>Estimated C/E of potential changes in macroeconomic policies, for example:</b> <ul style="list-style-type: none"> <li>• Structural adjustment programmes and health</li> <li>• Research policies</li> <li>• Good governance</li> </ul>

\* C/E: cost-effectiveness.

# Chapter 3

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## *Progress in methodological issues*

*Section 1  
Monitoring resource flows and priorities for health R&D*

*Section 2  
Burden of disease and analysis of health determinants*

*Section 3  
Cost-effectiveness analysis and methods to assist resource allocation*

## Summary

Chapter 3 focuses on three main tools supported by the Global Forum for Health Research which are important in any priority-setting approach.

### *Monitoring resource flows in health research*

Information on global spending on health research is critical to evaluate the way funds are allocated and to monitor the 10/90 gap. Yet no estimates of resource flows in health research have been carried out since 1992, and there is no systematic monitoring system in place to measure funding of health research at the global level. The Global Forum has been working with a number of partners to establish an ongoing, standardized system to monitor global investments in health research. The group has advanced steadily towards the establishment of a computerized system for this.

### *Analysis of the burden of disease*

Over the past decade, major progress has been made in the calculation of the burden of disease, particularly through the Global Burden of Disease Study (GBD 1990). This work will be continued with the implementation of the project GBD 2000, presented during Forum 3 (June 1999), which will project estimated disease burden to the year 2030. Forum 3 also included presentations on systems and projects which are expected to help increase the contribution of developing countries on burden of disease studies and help improve estimates of disease burden.

### *Cost-effectiveness analysis of investments in health research*

Cost-effectiveness analysis is a valuable tool to help policy-makers and programme managers decide between different ways of spending their scarce resources to improve population health. The Global Forum for Health Research is supporting a number of cost-effectiveness studies in developing countries with a view to helping develop a standard methodology in this field for broad application to interventions in the developing world.

With the use of these analytical tools, the Global Forum can help monitor and quantify improvements in the 10/90 imbalance in health research investment. The aim is to review the magnitude of current and future disease burden and investments in R&D needed to reduce that specific burden. This information should provide a powerful summary indicator of current funding priorities for health R&D. For instance, this juxtaposition for the world's two biggest killer diseases, pneumonia and diarrhoeal disease, underscores the extreme mismatch between the disease burden and R&D investments. Although these two diseases represent about 11% of total burden, estimated R&D spending is only 0.2% of total R&D spending.<sup>1</sup>

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<sup>1</sup> Ad Hoc Committee on Health Research. WHO 1996.

## Introduction

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The *10/90 Report on Health Research 1999* provided detailed information on the analytical work that the Global Forum is promoting to help the process of priority setting for health research. The Global Forum is involved in efforts to develop analytical tools to help improve the evidence-based decision-making process. It is anticipated that improved methodologies and user-friendly tools will be attractive to agencies and governments in setting priorities for health research. While it is recognized that decisions on the allocation of funds for health research are often influenced by political considerations, the availability of an improved set of methodologies for priority setting at the local and national level would strongly reinforce the argument for a fundamental review of the way research funds are allocated.

This chapter provides a review of critical issues which have been identified over the past year. The Global Forum continues to focus its analytical work on priority setting on the following key analytical tools highlighted in the recommendations of the WHO Ad Hoc Committee Report:

- monitoring resource flows in health research
- burden of disease and analysis of health determinants
- cost-effectiveness analysis of investments in health research.

Through the use of these analytical tools the Global Forum can help monitor and quantify changes in the 10/90 imbalance in health research investments. The aim is to review the magnitude of current and future disease burden and investments in R&D needed to reduce that specific burden. This information should provide a powerful summary indicator of current funding priorities for health R&D.

The building blocks of the analytical work are not static. The tools require methodological improvements and adaptations to specific conditions. Many of these building blocks are still under development and have only recently been implemented in the field. As such, the methodologies require constant incorporation of results from field-testing. It is the progress in the modification of tools carried out by partners of the Global Forum that is described in this chapter. The Global Forum provides a catalyst for this work and helps ensure that these results are disseminated to a wider audience and generate interest and support from a wider range of constituencies.

## Section 1

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### Monitoring resource flows and priorities for health R&D

#### 1. Monitoring resource flows for global health research

The lack of a systematic monitoring of global spending on health research is one of the root causes of the 10/90 gap. There is no ongoing, reliable and retrievable data set of information on global health research funding. As a result, there are no accurate estimates of global spending, nor of the amounts allocated for research on the main diseases or risk factors. Yet this information is vital if the allocation of resources is to be improved at the global and national levels.

Although no regular monitoring system exists, independent estimates of resource flows have been conducted over the years. The Commission on Health Research for Development (1990) estimated that 95% of health R&D resources are spent on health problems affecting people in the industrialized world, while only 5% are spent on health problems in developing countries. Meanwhile, studies conducted by researchers at Harvard University in 1992 identified a similar range of imbalance in which only 5%-10% of global funding for health research was spent on health issues that affect the large majority of the world's population (see 10/90 Report 1999). This imbalance is referred to as the 10/90 gap in health research funding.

#### 2. The Core Group on resource flows measurement of the Global Forum and its partners

The Global Forum and a number of partners have launched an effort to monitor global

spending on health research and development. The approach chosen by the Core Group differs from that used in regular national surveys to collect comparable statistics on R&D in OECD countries. While the former is based on data collection from major funding bodies in the public and private sectors, the latter is based on the response of recipient countries. The Core Group effort has a broader scope in that it extends beyond the OECD countries to include major funding bodies in developing countries.

The aim of the project is to develop a network and an information system to facilitate the systematic collection of internationally comparable statistics on global resource flows for health R&D. The system will serve as a tool for improving priority setting according to disease burden and for tracking the allocation of funds for R&D.

The Core Group was established in 1998 at a meeting entitled "Towards the Better Monitoring of Resource Flows to Health R&D", jointly convened by the Global Forum and the World Health Organization. Participants included representatives of funding agencies in the public and private sector, researchers from developed and developing countries who initiated national studies of health R&D and managers of databases of scientific projects.

Current institutions represented in the Core Group for the monitoring of resource flows for health research include the following:

- Council on Health Research for Development (COHRED)
- Government of the Philippines
- Global Forum for Health Research
- Harvard School of Public Health, USA
- Health Authority of New Zealand
- International Federation of Pharmaceutical Manufacturers' Associations (IFPMA)
- National Institutes of Health (NIH), USA
- Pan American Health Organization (PAHO)
- Scientists for Health and Research for Development (SHARED), The Netherlands
- United States Agency for International Development (USAID)
- Wellcome Trust, United Kingdom
- World Health Organization (WHO).

The Core Group met in January, June and October 1999 to examine the following issues: classification of the information, sources of information, level of aggregation required and use and dissemination of this information.

### **3. International database of health R&D funds**

The first step in tracking funding is the creation of a system to organize the information to be collected. The Core Group has focused on efforts to establish an information system with well defined, mutually exclusive categories.

The international database will be based on information supplied by all major funding agencies on their allocation of funds for global health R&D. Recent major advances in communication technologies offer unprecedented opportunities to facilitate the exchange of information on research projects, on funding opportunities and on financial data on health R&D. The Core Group is taking advantage of these new opportunities by developing a web-based data collection

instrument, which will lead to the full interactivity of various existing websites. This compendium of information will then form the basis for monitoring resource flows over time. Sharing over the Internet and further analysis of this information will allow for an iterative process and gradual improvement of the database. One such initiative is the database on ongoing research projects, launched in 1996 by the Netherlands Organization for Scientific Research under the name of SHARED, to facilitate the exchange of information on research projects among scientists worldwide. It uses state-of-the-art web technology, which has been developed to take into account communication problems in less developed regions. The SHARED technology is to be used as the main system to collect information for the resource flows project.

### **4. Broad classification issues (see Insert 3.1)**

The focus of the January 1999 Core Group meeting was to review options and agree on the choice of the conceptual framework<sup>2</sup>. A major challenge was the need to balance desired inputs, feasibility and relevance for policy. Taking this into account, it was decided that investments for health R&D would be categorized in the database under five main categories:

- R&D on major disease groups, sub-groups and selected diseases – following the categorization developed for the global burden of disease study
- R&D on determinants of health (genetic, environmental, socio-economic, cultural and behavioural)
- R&D on health systems
- capacity building (human and institutional)
- fundamental research (not specific for any category described above).

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<sup>2</sup> Catherine Michaud, Harvard Center for Population and Development Studies. Presentation at Forum 3, June 1999.

These categories are both comprehensive and mutually exclusive. They are also structured following a “tree structure” which moves from aggregate broad categories to more detailed sub-categories. Such a tree structure provides a flexible data collection instrument that can accommodate varying levels of aggregation for any topic of interest (Insert 3.1).

*(i) Research on major disease groups and sub-groups*

The first set of internationally comparable estimates of the global burden of disease in 1990 by age, sex and region were published in 1996 for over 100 diseases, health conditions and injuries.<sup>2</sup> This study was a major breakthrough in the development of evidence-based health policy. In recent years, a rapidly growing number of countries have undertaken and completed national burden of disease estimates. And in 1999, WHO established a new Department of Evidence for Health Policy to further this effort. A study is now under way to estimate the Global Burden of Disease 2000, as described in Section 2 below.

The juxtaposition of the magnitude of current and future disease burden and investments in R&D needed to reduce this burden provides a powerful summary indicator of current funding priorities for health R&D. One striking example of this is the extreme mismatch that exists between the disease burden and R&D investments for the world’s two biggest killer diseases: pneumonia and diarrhoeal disease. Although these two diseases represent about 11% of the total global disease burden, estimated R&D spending is only 0.2% of the total amount spent on research and development. In view of this, members of the Core Group agreed that the GBD classification of health

conditions, diseases and injuries should be adopted for the tracking of resource flows for R&D on major diseases and health conditions.

*(ii) Research on determinants of health: exposures/risk factors that impact on health (within and beyond the health sector)*

This section on risk factors is further subdivided into (i) proximate determinants of ill health and (ii) distal determinants of ill health.

Many diseases or injuries are caused by infection with a single pathogen, or by an isolated violent event without any known precursor. Research on those diseases is well captured by the GBD classification of disease topics. However, numerous cases of disease or injury arise from prior or current exposure to a risk factor of some sort. These cases of diseases and injuries would probably not have occurred without this exposure. Research on some risk factors clearly falls within the health sector: for example, hypertension, physical inactivity, unsafe sex and poor nutrition. However, others fall in other sectors such as environment, water and sanitation and education, or are due to the impact of undemocratic political systems on the health status of populations. It follows that investments to support R&D on risk factors and exposures should include the relevant R&D conducted in non-health sectors as well.

It is important to capture research information to identify and reliably quantify the impact of these risk factors so they receive the same attention as disease or injury in the health policy debates. For each disease or injury, a choice needs to be made between the prevention and treatment of the disease or injury itself, and the prevention or reduction

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<sup>3</sup> Global Burden of Disease, 1990. The Global Burden of Disease and Injury Series. Ed. C. Murray, A. Lopez, 1996.



of exposure to various risk factors that may be the underlying causes of disease or injury (proximate or distal determinant). There is growing awareness of the need to adopt a broader, multisectoral approach in defining priorities for the allocation of resources to tackle complex health problems. Research to provide reliable estimates of the contribution of various risk factors to the overall burden of disease and injury is thus required for a balanced and comprehensive assessment of the causes of ill-health.

#### *(iii) Research on health systems*

Even when tools (drugs and vaccines, for example) are available to reduce it, a large burden of disease may persist because of failures in health systems. For instance, research may be needed to develop and evaluate ways to increase the efficiency of the Expanded Programme on Immunization by simplifying delivery and maximizing use of opportunities for immunization. Another example would be research to evaluate the promotion of insecticide-impregnated bednets, possibly for inclusion in a future Healthy Household package. Research on how health systems respond to unmet needs is therefore a key component of health R&D. Research on health systems has three sub-components: policy, health services and intelligence.

#### *(iv) Capacity building*

Capacity building was described as one of the purposes of health R&D investments. It was further subdivided into “human capacity building” and “institutional capacity building”. Human capacity building includes the training of researchers and research staff in both short-term courses and academic qualifications. “Institutional capacity building” deals with equipment, building, development of management systems and infrastructure networks.

#### *(v) Basic research*

Strategies to define priorities for basic research are based on the selection of promising, high quality projects. Thus there is no need to further categorize generic areas of research. One example would be research on molecules which could lead to parasitic vaccines but with no clear direction as to which parasite it would target. Thus, this research area could not be categorized in any of above health conditions.

In addition, the Core Group recommended the inclusion of the geographic destination of R&D funds spent either within the donor country or “abroad” by country or region. This information is readily available from most funding sources and has important policy implications. Finally, the Core Group decided to leave out attempts to define who the ultimate beneficiaries of research results might be, and to leave out attempts to quantify the expected outputs of R&D (i.e. drugs, vaccines, diagnostics, new clinical algorithms and other interventions). R&D outputs should be the topic of semi-quantitative studies limited to topics of special interest.

Since most developing countries do not have national statistics on health R&D investments, the collection of health R&D statistics still requires a substantial investment of human and financial resources. An important objective is to collect comparable statistics in as many developing countries as possible. To facilitate this effort, the Core Group will define a minimum set of comparable data to be collected in developing countries.

### **5. Audience and users of information on resource flows for health research**

The primary goal of this effort is to assist health R&D decision-makers by providing an objective information base to those who decide on the allocation of funds for health

R&D. The main users of resource flows information include decision-makers in the following key institutions:

- ministries of health and public research institutions
- WHO and other UN agencies
- development banks
- bilateral organizations
- foundations and other non-profit organizations
- private-sector companies.

Most of these categories of users of information on resource flows for health research are represented in the Core Group.

### 6. Future areas of work

The Core Group will collect information from the main agencies funding health research worldwide. In addition, the group will stimulate the implementation of projects both at the local and regional level to obtain more accurate information on resource flows. The use of national as opposed to international funds is of interest for developing countries in

particular. This information will be collected by incorporating more researchers from developing countries in the Core Group.

It is anticipated that the first estimates of the flow of resources towards health research at the global level will be available by October 2000. A report will be presented at the International Conference on Health Research and Development in Bangkok.

### 7. Contribution to correcting the 10/90 gap

The study of resource flows is central to monitoring the 10/90 imbalance. Yet ten years after the 10/90 gap was first identified, there is still no systematic tool in place to monitor health research financing. As a result, it is difficult to gauge how funding allocations are made. It is more likely that an ongoing system will show potential trends in expenditures than a series of cross-sectional surveys. This system is expected to play a central role in advocacy for change.

## Insert 3.1

### Summary data fields for the database on health R&D expenditures

Main topic	Sub-group	Level
Health R&D projects and programmes	Health conditions (preventive and curative / palliative / rehabilitative interventions)	Group I: Communicable / maternal / perinatal and nutritional conditions
		Group II: Noncommunicable diseases
		Group III: Injuries
	Risk factors	Proximate determinants Distal determinants
	Health systems	Policy Health services Intelligence
Capacity building	Fundamental research	No further breakdown
	Human Institutional	

## Section 2

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# Burden of disease and analysis of health determinants

### 1. Introduction

Disease burden is an important measure of the degree of morbidity and mortality in a given population. Over the past decade, information on the global burden of disease has had a powerful influence on policy-makers and proved to be an effective tool for advocacy. The work has informed a large number of national and global initiatives and the accounting of healthy life lost as a consequence of morbidity has led to a renewed interest in a wide range of conditions.

Disease burden is increasingly recognized in both developing and developed countries as an impartial measure of the health status of a given population. This measure uses evidence-based information to provide a quantitative measurement of health status. This methodology relies on public health branches of quantitative disciplines, including epidemiology and demography.

The challenge now is to continue promoting this method as a quantitative tool, and to use the information to guide research priorities and funding allocation.

### 2. The 1990 and 2000 Global Burden of Disease Studies

Probably the largest piece of work undertaken to date has been that of the Harvard University/WHO/World Bank *Burden of Disease 1990 study* (GBD 1990)<sup>4</sup> The GBD 1990 was first presented in the World Bank's *World Development Report 1993*.<sup>5</sup> The data has since been re-analysed and produced a wealth of information on a wide range of health conditions for different regions of the world.

An important focus of this work is the emphasis on standardization of methods for data collection and analysis. One of the objectives of the GBD 1990 was to achieve consistency in global estimates from a wide range of sources and ensure avoidance of double counting of data, especially for mortality estimates. Another key aspect of the study was the investigation of the determinants of health. Estimates were made of the contribution of smoking, alcohol, substance abuse and other lifestyle factors to global ill-health.

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<sup>4</sup> Global Burden of Disease, 1990. The Global Burden of Disease and Injury Series. Ed. C. Murray, A. Lopez, 1996.

<sup>5</sup> World Bank Development Report, 1993.

## Insert 3.2

### *The Latin American experience: a regional example of resource flows monitoring<sup>6</sup>*

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This exploratory study was conducted in 1998 to examine major trends in health research financing in Latin America. The study was conducted in three countries which account for about 75% of health research in Latin America: Chile, Brazil and Mexico. An earlier study (1996) in the area indicated two trends in funding: (i) an increase in the share of private enterprise in science and technology expenditure and (ii) an increase in external financing by the Inter-American Development Bank (IDB) and the World Bank, mainly for technological innovation. In view of the limited sources of data for health research, the latest study was designed to clarify whether the existing private-sector investments in science and technology represented an absolute – or a relative – change in spending.

Information on international funding sources was explored since research resources are included in loans under non-specific allocation items. A systematic study was conducted on the flow of resources allocated to research components as part of loans from the World Bank and IDB. The study analysed 26 IDB projects disbursed between 1992 and 1998, using a specially designed matrix. The studies were quite different and included a variety of themes.

Of the 26 projects, 22 were focused exclusively on health and four on science and technology with a health component. Of the 22 health projects, two were regional efforts while the remaining projects were nationally directed, benefitting 18 countries in the region. Of all IDB health sector loans, 6.7% were dedicated to research and totalled US\$264 million. The proportion of the loans dedicated to research in these countries ranged from 0.05% to 100%. Brazil, with larger loans, received 23% of loan resources for research and Argentina, the second largest recipient, got 5%. Of the 18 countries analysed, 50% of the resources for research was concentrated in eight countries (Brazil, Argentina, Venezuela, Peru, Colombia, Dominican Republic, Uruguay and Jamaica).

A breakdown of the type of expenditure showed that 85% of all resources for staff was accounted for by national consultants/researchers and 15% by international consultants. Again, variation between countries was high. For instance, in Paraguay, none of the resources went to national consultants; in Belize, Honduras and Guyana, national researchers accounted for 20% of the resources; and in the Dominican Republic, Guatemala, Jamaica, Colombia, Panama, Brazil and Uruguay, 93% of the resources went to national consultants.

The Project OFIS (Oportunidades de Financiamiento para la Investigación en Salud, or Opportunities for Health Research Financing) is a response by the Pan American Health Organization to the need to monitor resource flows in the region. It is a group of databases that contain information on public and private, national and international agencies supporting research and human resources development in the area of health research and is accessible to researchers and policy-makers. Training courses are available for researchers in grant writing and negotiating skills. Contacts with funding sources are regularly maintained in an effort to encourage an increase in grants for health research.

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<sup>6</sup> Based on Ulysses B. Panisset, Pan American Health Organization/World Health Organization. Paper presented at Forum 3, June 1999.

## Insert 3.2 *(continued)*

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### **Common trends in three countries that accounted for about 75% of health research in Latin America in 1998: Chile, Brazil and Mexico**

- economic crisis (1998 and worsening in 1999) reverses a tendency for increases in funding from 1990-1997

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  - conflicting data on the same resources, depending on the source

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  - lack of reliable data for private sector

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  - health-specific data rarely available

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  - dispersed data in states (provinces)

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  - government agencies have limited resources to support the analysis of resource flows

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  - lack of funds for major study: low priority and lack of political will

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  - need for advocacy to study resource flows for health research

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  - risk of double counting (recurrent versus capital spending; commitments versus disbursements)

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  - need to monitor resource flows for institutional development

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  - poor communication with decision-makers

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  - need to develop methods and specific indicators

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  - shortcomings in tax incentive legislation

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  - specific studies needed in key areas (at the ministry of health level, for example).
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WHO, the Burden of Disease Unit at Harvard University and other groups with experience in national burden of disease studies, are currently coordinating the task to estimate and update the GBD for the year 2000.<sup>7</sup> The objectives of the GBD 2000 are:

- to develop internally consistent estimates of mortality by age, sex and region
- to develop internally consistent estimates on the epidemiology of 500 sequelae
- to describe and put a value on health states associated with those sequelae
- to calculate summary measures of population health, diseases and injuries
- to estimate the contribution of major risk factors
- to develop alternative projections of mortality and non-fatal health outcomes.

### **3. Contribution towards the Global Burden of Disease 2000 study**

For the GBD 1990 study, numerous groups of experts, using published and unpublished studies, have made estimates of the incidence, prevalence, remission and duration of diseases as well as case fatality and death rates. When no data were available, they made informed estimates. These estimates were critically reviewed for their internal consistency. The process of re-estimation, checking for internal consistency and revision was conducted through three iterations between 1993 and 1996.

However, despite the identification and correction of major inconsistencies, many of the assumptions need to be carefully revised and updated for the GBD 2000. To achieve this, a new process has been initiated to gather local information to describe more accurately the patterns and occurrence of

each condition from each region in selected countries. It is hoped that this effort will lead to the involvement of an increased number of experts in the review of the estimates for selected conditions.

The Global Forum is actively supporting the GBD 2000 study. In addition, the Global Forum provides support to three projects: the Virtual Network of Epidemiology, International Burden of Disease Network and specific country studies described below.

### **4. Virtual Network of Epidemiology (VINEDE)**

As part of the global initiative on GBD 2000, the Global Forum initiated funding for a WHO project designed to improve the epidemiological description, by region, of each condition and sequelae to be included in the study. The project seeks to involve disease experts in each geographic region to review information that may improve disease estimates. This project will, in turn, strengthen the capacity of developing countries to use existing epidemiological data for disease burden assessment.

One of the primary objectives of the GBD has been to focus attention on non-fatal health outcomes and, more specifically, on disability. For some regions, data on the epidemiology of important non-fatal health conditions is extremely limited. Knowledge of the disabling sequelae for even well studied diseases is lacking both in developing and developed countries. And the absence of an estimate is often taken to imply that no problem exists. Therefore, when estimates are made, it is imperative that the assumptions and empirical observations used are made explicit to validate and modify those estimates in the future.

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<sup>7</sup> Rafael Lozano, WHO. Paper presented at Forum 3, June 1999.

The Virtual Network of Descriptive Epidemiology operates on the basis of the following strategies:

- identification of key people in each region to form a core group to orchestrate the work of VINEDE
- core group planning meetings to discuss Guidelines for Epidemiological Assessment (GEA) for the measurement of the global burden of disease and to identify potential participants.

A core group of experts has been established to develop the GEA, select disease experts or groups of experts willing to participate, and organize the launch of the network, follow-up procedures and a time-frame for estimates. In addition, following the launch of the GEA, papers will be commissioned to produce estimates for some diseases. Studies on groups of sequelae will be undertaken in two or three regions, including for malaria in Africa and Asia and for Chagas disease in Latin America.

VINEDE will update the current estimates of incidence, prevalence, case fatality, severity, duration and remission of the disease. Disease experts will use this information to construct the natural history of the disease. The GBD 2000 website will be the appropriate place to have an open and continuous discussion about estimates and standardization.

## **5. International Burden of Disease Network (IBDN)**

In order to plan effective health services that are responsive to the health needs of populations, planners need to be confident that they can reliably assess those health needs. Over the past five years, the use of the global burden of disease methodology for assessing health needs has been adopted

throughout the world. The Global Forum recognizes the need to develop systems for sharing and disseminating information about ongoing research. Without this, efforts can become fragmented. One of the aims of the International Burden of Disease Network is to create a framework for systematic discussion across the whole burden of disease community, including the research community.<sup>8</sup>

The main purpose of IBDN is to provide open access to the methodology used to assess the burden of disease in different populations, as well as exploring other ways of measuring the burden. The network has a large number of users, including researchers and policy-makers, ensuring a broad exchange of information on burden of disease and cost-effectiveness assessments, which are a valuable tool for policy development.

IBDN uses a website for the network to identify current users of technologies on burden of disease assessment. The network then lists network members for contact, incorporates interactive discussion pages and publishes the “grey” literature not available elsewhere. In addition, the network holds meetings at least once a year to discuss, amongst other things, key research topics that have been identified by network members. The focus of network meetings is decided by network members but always has a component of training on the correct use of the methodologies.

## **6. Country studies on burden of disease assessment**

The Global Forum recognizes the limited information available on burden of disease in developing countries. Information from countries and regions is still incomplete and

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<sup>8</sup> H. Seymour, Centre for Health Care Development, Liverpool. Paper presented at Forum 3, June 1999.



there are large gaps in specific geographic areas. In some cases, small but important groups of researchers from developing countries may not be identified to take part in the global initiatives.

With this in mind, the Global Forum Secretariat embarked on a project to identify groups from developing countries working in this area. The aim of the project was to identify and subsequently fund groups of researchers able to carry out burden of disease studies at the national or local level.

The Secretariat invited letters of intent through the Global Forum and WHO websites with a request to a wide range of institutions and universities. The objectives of the project were to:

- strengthen national burden of disease studies by identifying and stimulating groups from developing countries to carry out studies on burden of disease
- identify and encourage the participation of local scientists from developing countries
- build local capacity for GBD methods, data analysis and interpretation.

The 73 letters of intent received were reviewed by a selection committee comprising representatives from the Global Forum's Strategic and Technical Committee, the Secretariat and WHO's Department of Evidence for Health Policy. Eight proposals were selected on the basis of standardized guidelines agreed in advance. The project titles and countries where the field work will take place can be seen in Insert 3.3. Proposals will be funded either partially or totally by the Global Forum.

## **7. Issues on measurement of burden of disease and alternative methods**

It is critical to understand that the summary measures of population health, such as the

DALY, differ from the Global Burden of Disease Project. The GBD attempts to assemble a vast body of epidemiological estimates of diseases, injuries and risk factors, and uses DALYs as a summary measure.

The GBD 1990 was first presented in the World Bank's World Development Report 1993. In addition to generating the most comprehensive and consistent set of estimates of mortality and morbidity by age, sex and region ever produced, the GBD also introduced a new population health metric, the disability adjusted life year (DALY), to quantify the burden of disease. The use of DALYs meant that both years of life lost from premature mortality and years of life lived with disability could be simultaneously described via a single indicator. Detailed assumptions were used to construct this indicator. Some of these assumptions are currently under review in an effort to improve the methodology and the derived estimates.

Over the past two decades, considerable international effort has been put into the development of:

- (i) Measures to define the level of population health or summary measures of population health which integrate information on mortality and non-fatal health outcomes. Two major classes of summary measures have been developed: health expectancies and health gaps, of which the DALY is the best known. A key goal in constructing summary measures is to identify the relative magnitude or burden of different health problems.
- (ii) Ways of measuring the benefits of implementing specific interventions. Measures which are particularly suited to estimating the benefits of health interventions include QALYs (quality adjusted life year), changes over time in HEALYs (healthy life year) and changes in DALYs, DALE (disability-adjusted life



expectancy) and HALE (health-adjusted life expectancy). QALYs differ from DALYs in that they take into account quality of life, and HEALYs are designed to incorporate the consequences of premature mortality and morbidity dating from the year of causation as opposed to the year they first occurred.

A recently published paper<sup>9</sup> raises a number of issues about the current calculations. While agreeing with the approach of measuring burden of disease, the paper argues that the impact of different interventions should be measured more directly. It maintains that the cost of each activity and its effect on people's health should be estimated, and that priority setting should be driven by a comparison of incremental gains with incremental costs. The author concludes that, instead of measuring the global burden of disease, efforts should be redirected to estimating the cost-effectiveness of particular activities. This leads to the recommendation that incremental benefits should be estimated, rather than total burdens, and that "intervention" should replace "disease" as the cornerstone of the system.

In response to this, a discussion paper by Murray and Lopez<sup>10</sup> stresses the difference between GBD and population summary measures and urges researchers to differentiate between the Global Burden of Disease Study and the methodological, ethical and conceptual issues relating to the development of summary measures of population health. The discussion paper underlines the critical relevance of summary measures of population for policy formulation. In addition, the authors highlight the importance of using cost-effectiveness studies in priority setting for

health funding. (The five-step priority-setting method for health research endorsed by the Global Forum includes both disease burden and cost-effectiveness of the interventions.)

A further problem of measurement is the issue of co-morbidity, which deals with the quantification of the effect of more than one disease or condition affecting one individual. The GBD 1990 used a simplistic additive model in which, for the same individual, the average time spent in two different health states were combined. Further, a condition of one individual may affect others. An example of this would be the effect of an alcoholic relative on other family members. The measurement of disease burden would carefully estimate the effect of alcohol on morbidity, disability and mortality. However, it would not estimate the effect of this factor on its immediate surrounding, such as violence at home or accidents induced by the individual under the effects of alcohol. It is now identified that substantive work will be required to improve on the estimation of the prevalence of non-dependent co-morbidity.

A further area of discussion is the incorporation of distributional concerns into summary measures of population health and the estimation of the benefits of health interventions. It is debatable whether distributional values should be incorporated into the design of summary measures or whether separate measures of the distribution of health across individuals should be routinely assessed. It is also debatable whether distributional values should be directly incorporated into assessing the benefits of health interventions or kept as a separate component of the evaluation of health interventions. Both these areas require further research.

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<sup>9</sup> A. Williams, *Calculating the global burden of disease: time for a strategic reappraisal?* Health Econ, 8:1-8, 1999.

<sup>10</sup> Progress and directions in refining the Global Burden of Disease Approach: EIP discussion Paper No.1. WHO, May 1999.

## 8. Future action plan

A key priority for the future of burden of disease studies is to generate high quality information from countries that have not yet done so and to promote the use of this for policy-making. Developing countries often lack information on basic indicators such as mortality, let alone the burden of disease. An important step towards promoting studies on disease burden at the country level is to strengthen national capacity and support local initiatives to measure the disease burden.

The methodology for measuring disease burden is still evolving. A number of groups are involved in efforts to revise the DALY weighting measurements and improvements are expected in this area. In addition, improvement of the methodology will include new research involving the exploration of risk factors, co-morbidity and causality. This developing area is likely to expand over the next few years.

Promoting the use of measures of disease burden for priority setting for health research funding is also crucial. Global studies on disease burden, such as that of the GBD 2000 will have to be supplemented by information from the regions and countries. The design and implementation of projects aimed at

improving the quality of information emerging from regional studies is of paramount importance.

## 9. Contribution to correcting the 10/90 gap

One of the major problems in attracting funds for health research is that health – unlike agricultural research, for example – is seen as a social rather than economic investment, and therefore given lower priority. The economic return from investing in this global public good has not yet been calculated, although it is likely to be much higher than many other projects of national interest. The World Bank set this process under way with the publication of the World Development Report 1993 which emphasized the critical importance of investing in health. The Ad Hoc Committee Report went a step further in arguing that investments in health research are crucial for the overall development effort.

By using evidence-based information on disease burden, the decision-making will be more transparent and selective. Not only will the research priorities be more in line with the range of diseases and conditions that prevail in a particular area, the process will also lead to better informed and more rational decisions.

### Insert 3.3

#### *Country studies on burden of disease (selected from 73 proposals submitted) partially or wholly supported by the Global Forum for Health Research*

Project title	Country of study
South African burden of disease project	South Africa
Community-based valuations of health-related quality life (HRQL) to put a value on the burden of disease	Kenya
Measuring the burden of disease: comparative assessments in developing countries	Ghana, Pakistan, Uganda
Burden of disease among the poor in Tanzania	Tanzania
Projecting burden of disease in Nigeria	Nigeria
Improving methods of measuring burden of disease to take into account social, cultural and environmental factors	Cameroon
Study on burden of disease measurement in India	India
Measuring the burden of major cancers in Korea	Korea

### Insert 3.4

#### *Cost-effectiveness study on health interventions to prevent work injuries in the metal-working industry, conducted by the Mexican Institute of Social Security<sup>11</sup>*

Intervention	Total cost of the intervention in US\$	HEALYs gained	Cost-effectiveness ratio	Ranking
Education	239,742	376.11	637	1
Training	1,567,701	752.22	2,084	2
Inpatient care	856,104	386.56	2,215	3
Helmet	353,690	112.40	3,147	4
Security apron	383,051	107.90	3,550	5
Security gloves	168,468	3.55	47,432	6
Security glasses	147,653	3.09	47,736	7
Lumbar support	737,164	18.62	92,766	8
Security shoes	1,727,072	0.33	1,147,770	9

<sup>11</sup> A.M. Salinas, Epidemiological and Health Services Research Unit. Mexican Institute of Social Security. Paper presented at Forum 3, June 1999.

## Section 3

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### Cost-effectiveness analysis and methods to assist resource allocation

#### 1. Introduction

Cost-effectiveness analysis is a useful tool to help policy-makers and programme managers decide between different ways of spending their scarce resources to improve population health. Cost-effectiveness analysis provides information on which interventions are likely to provide the greatest improvements in health for the available resources, one critical input to decision-making, along with information on factors such as health inequities. Cost effectiveness analysis can help guide the R&D process by showing the possible value of new tools. It can identify whether a new tool or product is likely to be better value for money. As such, it is one important component of the analytical work for priority setting.

There is a growing body of literature which evaluates the cost-effectiveness of health interventions, although many studies do not compare the cost-effectiveness of different interventions. However, there is a lack of the evidence required for these studies, particularly on costs. Very few studies report confidence intervals for cost estimates or for cost-effectiveness ratios, and for many interventions the only data that exist pertain to developed countries. In addition, there is little information on the way costs and effectiveness vary according to the scale of the intervention. For example, it is well known that the costs of immunization against a specific disease are likely to increase dramatically at very high coverage levels when the system has to search for hard-to-reach cases. However, at this stage, the high costs have to be weighed against the

window of opportunity for eradicating the disease. Today, the polio eradication initiative is now at this stage, as it strives to reach the remaining non-immunized children and eradicate the disease.

An additional problem in cost-effectiveness studies is the difficulty of comparing the few published studies due to the lack of methodological consistency. Ideally, policy-makers at the country level would have information on the cost-effectiveness of all competing interventions in their local settings. However, since it will not be possible for studies to be undertaken on every possible intervention in every country, it will be necessary to adapt the results of studies undertaken in different settings.

WHO, the Global Forum, the Center for Pacific Rim Studies (UCLA) and the Harvard Center for Population and Development Studies initiated a series of comparative studies to help develop and apply cost-effectiveness analysis methods in health R&D. The objective of the project was to develop a comparative database showing the cost-effectiveness of interventions that could contribute most to improving health status. In addition, the studies seek to: (i) develop a standard methodology for use in all studies, thus enabling comparison between results; (ii) stimulate a series of studies on priority topics using this methodology (or, where possible, recalculate the results of different studies to make them consistent with the agreed methodology); and (iii) develop a

method for adapting the results. These studies are ongoing and no results of the comparisons are available at present. One completed study conducted in Mexico is presented below.

## **2. Searching for common methodologies to study cost-effectiveness in developing countries: an example from Mexico**

In a paper presented at Forum 3,<sup>12</sup> the Mexican Institute of Social Security reviewed the relevance of conducting a cost-effectiveness study to improve safety in the workplace. In the current financial climate, it is easier to convince employers and regulatory agencies of the need to prevent work-related injuries if there is good evidence of their cost-effectiveness.

All work entails an element of risk and it is the employer's responsibility to ensure safety. Work injuries impact not only on the individual's health (injuries can produce partial or total disablement, permanent or temporary disablement and death) but also on their productivity and that of the industry. In addition, they have a financial impact on the family and on the health-care provider. However, employers are often reluctant to install a safety device or introduce an injury prevention programme unless the installation cost can be offset either by a reduction in the direct costs of injuries or by higher productivity.

The study, based in Northern Mexico in the metal-working industry, covered 82,034 workers registered in this type of industry in 1998. The cost-effectiveness of specific health interventions for work injuries was estimated and these health interventions were ranked in

order of cost-effectiveness (see Insert 3.4). For the purposes of this study, effectiveness was measured through the number of healthy life years (HEALY) gained from each intervention. Information was categorized by anatomical region and type of injury. Case disability ratios, duration of disability and disability cases were established by consensus. Costs were estimated per worker, and by type and quantity of inputs of specific health interventions at 1999 prices. These costs were assessed for the total number of workers in order to determine the cost per health intervention. The cost of medical care was estimated for each type of injury based on the model of budget per capita. This model estimated fixed and variable costs for determining the unit cost, which was related to the level of health care required.

Education was revealed to be the most cost-effective intervention and security shoes the least cost-effective in preventing injuries in the metal-working industry. In this case, cost-effectiveness analysis revealed that the most expensive intervention did not necessarily produce the maximum benefit. This kind of analysis can help decision-makers select the most cost-effective intervention to meet the legal requirements for safety.

## **3. Methodological issues and current thinking on cost-effectiveness analysis studies**

A document prepared by WHO's Department of Evidence for Health Policy<sup>13</sup> reviews the argument on the sectoral perspective. Cost-effectiveness analysis studies generally compare new interventions to current practice. These studies do not compare the cost and effectiveness of all possible

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<sup>12</sup> A.M. Salinas and E. Villarreal, Epidemiological and Health Services Research Unit, Mexican Institute of Social Security. Paper presented at Forum 3, June 1999.

<sup>13</sup> C.J.Murray, D.B.Evans, A. Acharya, R.M.Baltussen. GPR Discussion Paper No. 4. July 1999, WHO.

interventions in order to select the mix that maximizes health for a given investment. The implicit assumption that the required additional resources would need to be transferred from another health intervention or from another sector is rarely discussed. A broader view of cost-effectiveness would explore its use in allocating a fixed health budget between interventions in such a way as to maximize health in a society. If the calculations show that some current interventions are relatively non-cost-effective, and that some which are not fully undertaken are relatively cost-effective, resources could be reallocated across interventions to improve population health.

The paper argues that a choice has to be made between two pathways. The field can develop towards increasingly contextualized analyses or towards more generalized assessments. Cost-effectiveness analyses can become increasingly context specific. This is particularly the case if they directly incorporate context-specific social concerns such as distributional weights or a priority to treating the sick, and ethical and political constraints facing decision-makers. A second pathway of more generalized assessments is preferred by the authors. Studies would focus on the general assessment of the cost and health benefits of different interventions in the absence of various highly variable local constraints on decision-making. A general league table of the cost-effectiveness of interventions for a group of populations with comparable health systems and epidemiological profiles would be a valuable tool for cost-effectiveness analysis to inform health-policy debates. Information on general cost-effectiveness can be used alongside assessment of the effect of different resource allocations on other important social goals such as equity. In view of these benefits, WHO is proposing to modify standard cost-effectiveness methods. By removing the current intervention mix, current allocative

inefficiencies to analysis will be exposed. This will make it easier to transfer results from one population to another.

It is anticipated that the Global Forum, in collaboration with WHO, will explore the strengths and weaknesses of both methodologies in future work.

#### **4. Future action plan**

Cost-effectiveness analysis is an integral part of the analytical work of the Global Forum and its partners. The issues relating to the contextualized or generalized methodologies are critical to the priority-setting activities and comparative studies are anticipated on both approaches.

#### **5. Contribution to correcting the 10/90 gap**

While estimates of the burden of disease and estimates of the resource flows for health R&D are important components of evidence-based priority setting, information about the likely value for money of different investments is also critical. Cost-effectiveness analysis helps identify which research projects are likely to produce the greatest improvements in health status for the available resources, and whether some interventions are likely to be more cost-effective than others. The paper on the Mexican experience referred to above is a good example of the potential of cost-effectiveness studies to help guide policy-makers.

Meanwhile, the issue of contextualized as opposed to generalized studies is crucial to the use of cost-effectiveness studies to help correct the 10/90 gap. In response, the Global Forum will continue to help develop and improve methodologies which are consistent and applicable to a variety of contexts.

# Chapter 4

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## *Priority areas in health research*

*Section 1  
Burden of disease 1998 in low- and middle-income and in high-income countries*

*Section 2  
Recommendation of priority research areas from various approaches*

*Section 3  
Poverty and health research*

## 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

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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

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

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

## Section 2

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### **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 recommendations<sup>1</sup> 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.

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<sup>1</sup> 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

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### 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.<sup>2</sup> 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

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<sup>2</sup> 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 approaches<sup>3</sup>*

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 <sup>5</sup>
	Nutritional deficiencies	✓	✓	✓	✓	✓	✓	
Maternal/reproductive health	Sexually transmitted infections including HIV	✓	✓	✓	✓	✓	✓	Analytical work <sup>5</sup>
	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

<sup>3</sup> 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.

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

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

# Chapter 5

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## *Advances in selected priority areas*

*Section 1  
Child health, communicable diseases and perinatal conditions*

*Section 2  
Reproductive health: the burden and challenges*

*Section 3  
Noncommunicable conditions:  
mental health and neurological disorders in developing countries*

*Section 4  
Road traffic injuries and childhood injuries in developing countries*

## Summary

The 1996 Ad Hoc Committee Report made a series of recommendations for research activities within each of the selected priority areas. The document's projections to the year 2020 indicate that there will be a marked decline in the burden from communicable diseases, maternal, perinatal and nutritional conditions, the so-called "unfinished agenda". However, that decline cannot be taken for granted unless efforts to reduce the disease burden are sustained. An essential component of research on the "unfinished agenda" is to provide the information base for the introduction of health interventions.

Chapter 5 explores current advances in selected priority areas and reviews recommendations for research. It argues for the need to study the impact of reproductive health and nutritional status on child health and the links between child health and the development of diseases in adult life (the "life cycle approach"). The chapter reviews some priority research areas in reproductive health including maternal mortality, HIV and STD transmission, unwanted pregnancy and adolescent health. It highlights the lack of information on the burden of reproductive ill-health and argues that it is difficult to develop and implement the evidence-based health programmes needed to improve reproductive health without baseline information.

To illustrate the magnitude of the problem of dealing with the "double burden", this chapter also focuses on mental health and neurological disorders in developing countries. The framework for the priority-setting matrix referred to in Chapter 2 is used here to illustrate the five-step priority-setting process as applied to epilepsy. Finally, the chapter refers to road traffic accidents as an important component of injuries in developing countries.

## Introduction

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Chapter 4 identified priority areas for research under the “double burden” of communicable diseases, maternal, perinatal conditions and nutritional deficiencies, noncommunicable diseases and injuries. It concluded that the various approaches reviewed resulted in a very similar list of health problems and conditions, reflecting the disease burden experienced at the global level.

The 1996 Ad Hoc Report identified a series of recommendations for research activities within each of the selected priority areas.

The document’s projections to the year 2020 indicate that there will be a marked decline in the burden from the “unfinished agenda.” However, that decline cannot be taken for granted unless efforts to reduce the disease burden are sustained. An essential component of research on the “unfinished agenda” is to provide the information base for the introduction of health interventions. This chapter explores current advances in selected areas, highlights potential risks and reviews recommendations for research.

## Section 1

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### Child health, communicable diseases and perinatal conditions

#### 1. The problem

Every year, about 11 million children die before they reach their fifth birthday – most of them in low- and middle-income countries. Of these, about 8 million children die from no more than five conditions: pneumonia, diarrhoeal diseases, malaria, malnutrition and measles. Others suffer infections that

are preventable with currently available vaccines or medicines. Among the top ten causes of DALYs in 1998, children largely account for the first three conditions (lower respiratory infections, perinatal conditions and diarrhoeal disease representing over 17% of total DALYs)<sup>1</sup> and play an important role in the fourth one (HIV/AIDS). Malaria is

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<sup>1</sup> C.J. Murray, WHO. Paper presented at Forum 3, June 1999.

estimated to kill over one million children a year in Africa alone, and accounts for 4.5% of DALYs in children aged 0-4 years. In addition, it is estimated that 7.7 million perinatal deaths occur each year (4.3 million foetal deaths and 3.4 million neonatal deaths), 98% of them in the developing world. While in the United States, the rate of neonatal deaths is 5 per 1000 live births, in the developing world 40 newborn babies die for every 1000 live births.

For children who survive, the period of childhood involves exposure to certain risks. And the effect of that exposure can be more detrimental to children than adults. Recent evidence suggests that risk factors for much of adult illness can be traced back to childhood or even to the period in the womb.<sup>2</sup> However, while genetic make-up is important, it may function primarily by making individuals more susceptible to other risk factors relating to behaviour and the environment. Examination of adult disease through the study of maternal and childhood risk factors – biological, social and environmental – is known as the “life cycle approach”. This approach to illness needs to be examined in developing countries, through a series of questions that explore the link between childhood risk factors and adult disease.

#### *Ad Hoc Committee recommendations on child health research*

The Ad Hoc Committee Report went beyond the identification of priority areas, and recommended the following activities for child health research:

- Evaluate and refine the package for the Integrated Management of the Sick Child.
- Understand the relative importance, in different environments, of increased

nutrient intake and controls on infectious disease as a means to reduce malnutrition.

- Evaluate promotion of insecticide-impregnated bednets, possibly for inclusion in a future healthy household package.
- Increase efficiency of EPI.
- Evaluate the efficacy and optimal dosage of vaccines (rotavirus, conjugate pneumococcal and Hib) in low-income countries.
- Develop vaccines for malaria and for HIV.

Since the recommendations made by the Ad Hoc Committee in 1996, there have been varying degrees of progress in each of these areas. This section does not attempt to review progress for each of the priorities but rather looks at current thinking on a few of these priority areas in which little progress has been made. The selected areas include: research activities on the perinatal period; malnutrition and nutritional deficiencies; and environmental risk factors, such as indoor air pollution as a critical risk factor for acute lower respiratory infections.

## **2. Perinatal period**

While infant mortality rates have fallen steadily in most developing countries, neonatal death rates continue to remain high, currently accounting for one third of all deaths among children under the age of five in developing countries. The most important reasons for the continuing high rate of neonatal deaths are demographic factors, health system inadequacies and lack of training for community health workers. In developing countries, most pregnant women do not have access to adequate health facilities and have inadequate diets without the food supplements they need. In addition, they do

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<sup>2</sup> R. Cash. Paper presented at Forum 3, June 1999.

not have access to interventions for the management of pre-eclampsia, or treatment for bacterial vaginosis, malaria and sexually transmitted diseases. Meanwhile, their babies do not receive appropriate care immediately after birth, such as cord and skin care and temperature regulation.

#### *Recommendations for research*

Research on interventions that could reduce perinatal and neonatal mortality fall into two categories<sup>3</sup>:

(i) interventions for which the knowledge base is adequate but which still require research on strategies for implementation:

- prenatal tetanus immunization
- increased maternal education
- increased caloric intake during pregnancy
- iodine supplementation during pregnancy
- umbilical cord care, and management of diarrhoea and pneumonia in the newborn period.

(ii) interventions for which basic information on efficacy is required:

- treatment of bacterial vaginosis to prevent pre-term, low birthweight deliveries and neonatal deaths
- simple regimen for the treatment of malaria during pregnancy
- immunization before and during pregnancy to prevent pneumococcus and *H. influenzae* type b during the neonatal period
- use of simple algorithm for detection and management of sepsis in newborn babies
- use of simplified antibiotic regimen (once a day intramuscular or oral therapy) for the treatment of sepsis

- micronutrient supplementation (zinc and vitamin A) for both mothers and infants
- prevention of neonatal morbidity and mortality through control of organisms other than bacteria, such as toxoplasmosis, cytomegalovirus and herpes simplex virus
- cost-effective methods to train mid-level health workers in the management of pre-eclampsia, neonatal care and appropriate management of labour and delivery.

### **3. Malnutrition and nutritional deficiencies**

An analysis of the burden of disease in 1995 due to selected risk factors revealed that malnutrition – which mainly affects young children in developing countries – accounted for 16% of the total burden.<sup>4</sup> As many as one in two childhood deaths may be related to some degree of malnutrition, a condition which has deep roots in poverty and disease.

An attempt was made to calculate the burden of micronutrient deficiency resulting from malnutrition.<sup>5</sup> Current estimates do not incorporate cognitive impairment, the effect on low birthweight or the impact of the deficiency as a risk factor in deaths. When these factors are taken into account, the current estimates of disability – due to vitamin A deficiency, for example – could be increased as much as tenfold.

The birthweight of an infant is an important indicator of maternal health and nutrition prior to – and during – pregnancy and a powerful predictor of infant growth and survival. The extent of the global burden of low birthweight is not currently available, but indirect estimates indicate that 17% of all

<sup>3</sup> M. Santosham, Johns Hopkins University. Paper presented at Forum 3, June 1999.

<sup>4</sup> C.J. Murray, WHO. Paper presented at Forum 3, June 1999.

<sup>5</sup> R.E. Black, Johns Hopkins University. Paper presented at Forum 3, June 1999.

births worldwide involve low birthweight babies (below 2500g at birth), of which most (90% or approximately 22 million) are born in developing countries.<sup>6</sup>

### *Risks*

Malnutrition is important not only because of its immediate effects on the individual but also because of its long-term impact. For example, studies in The Gambia indicate that people born during the annual “hungry season” are 10 times more likely to die prematurely in young adulthood. There is a close relationship between disease and malnutrition, with high rates of infectious diseases resulting in further losses of nutrients and increasing metabolic demands.

Low birthweight infants are at a higher risk of high rates of morbidity and mortality from infectious disease: growth failure including stunting, abnormal cognitive development, neurological impairment and poor school performance, and premature mortality from cardiovascular disease, hypertension and diabetes.

### *Research recommendations*

- Interventions to reduce low birthweight
- Prompt implementation of interventions for the management of diseases and conditions in low birthweight children
- Improvement of nutritional status of the family and the population through development efforts
- Breaking the vicious cycle of infection and malnutrition
- Rehabilitation and early stimulation of low birthweight infants
- Investigation of the prevalence of micronutrient deficiency and anaemia in young children
- Description of the functional consequences of micronutrient deficiencies

- Interventions involving food fortification or dietary changes
- Operations research to improve implementation of existing interventions
- Cost-effectiveness comparison of interventions
- Evaluation of the long-term consequences of influences in childhood
- Establishment of the role of childhood diets on the development of noncommunicable diseases.

### **4. Environmental risk factors**

Children are exposed to a range of health risks within their environment. In many developing countries, children play, or work, in environments that are detrimental to health. Poverty is perhaps the most important determinant of this exposure to environmental risk. Contaminated drinking water, for example, increases the risk of enteric infections (including *H. pylori*, cholera and shigella) and crowded and substandard housing increases the risk of tuberculosis and other respiratory infections. Lead poisoning from contaminated food products or polluted air contributes to slow growth and learning disabilities. Meanwhile, the long-term effects of pesticide poisoning and the presence of hazardous wastes in the soil where children play are additional risk factors.

About three quarters of the total global burden of exposure to particulate air pollution is experienced indoors in developing countries. Young children are at high risk of exposure because they are usually with their mothers around the cooking area. About 20 observational studies established a two-to-five times higher risk of acute lower respiratory infections in children exposed to indoor air pollution. However, the relationship between exposure to indoor air pollution and the development of acute lower

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<sup>6</sup> G. Fuchs, Centre for Health and Population Research, Bangladesh (ICDDR,B). Paper presented at Forum 3, June 1999.

respiratory infections has not yet been quantified.

#### *Research recommendations<sup>7</sup>*

The use of biomass fuel indoors is an important determinant of exposure to indoor air pollution. New research is needed on a combination of measures: technical interventions (remove smoke, improve stoves, modify house design and review methods of fuel use); behavioural interventions (promoting awareness, infant protection measures); and policy-level interventions (fuel pricing, training). All these interventions will have to be assessed as part of research to

determine the cost-effectiveness of different combinations of interventions.

The burden of disease figures for childhood and nutritional factors are very high, underscoring the importance of the research, development and implementation of new interventions. The health-related issues presented in this section highlight the interaction between child health, nutrition and the environment. Strategic research on this to define new interventions must be accompanied by the implementation of existing cost-effective tools.

## Section 2

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### Reproductive health: the burden and challenges

#### 1. Introduction

Reproductive health encompasses a large group of conditions and interactions. These include maternal morbidity and nutritional deficiencies, HIV and maternal mortality, STDs and HIV/AIDS, maternal health and perinatal outcomes, unwanted pregnancy, unsafe abortion and poor child and adolescent health, amongst others. Linkages between components have been poorly described and the selection and evaluation of interventions to improve the reproductive health status of a population have not yet been fully explored.

Since very little information is available in developing countries, there is an urgent need for countries to step up their research activities in this area.

#### *Ad Hoc Committee recommendations on maternal health*

The Ad Hoc Committee Report recommended the following activities for maternal health:

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<sup>7</sup> N Bruce, University of Liverpool. Paper presented at Forum 3, June 1999.



- Develop, evaluate and refine the mother-baby package for pregnancy, delivery and neonatal care.
- Evaluate the implementation of a range of family-planning packages offering a wide choice of methods.
- Develop new contraceptive methods, particularly to widen the choice of long-term, but reversible methods, post-coital methods for regular and emergency use and methods for men.
- Develop improved methods for the diagnosis, prevention and treatment of STDs.

A number of research groups in both developed and developing countries are conducting research in these priority areas. In addition, there are other critical issues in reproductive health research which are not included in the selected priorities.<sup>8</sup> This section reviews progress in some of the priority areas identified in the Ad Hoc Committee Report. It also identifies risk factors and proposes recommendations for research on the measurement of the reproductive health burden and on challenges to reproductive health programmes. Challenges explored in this section include the increase in the adolescent population, issues relating to maternal mortality and unwanted pregnancy, vertical transmission of HIV and operational research on sexually transmitted diseases.

## 2. Burden and measurement

There is a lack of data on reproductive health issues and inadequate use of available data, as well as continuing ignorance about many of the distal and proximate determinants of poor reproductive health.

A presentation during Forum 3<sup>9</sup> defined two types of research issues related to reproductive ill-health: (i) issues relating to the measurement of burden (broaden the definition, improve disability weights and epidemiological information, explore the relationship between reproductive health and infant health outcomes); and (ii) research directed at reducing the burden (behaviour, vaccines, operations research and programme interactions).

An informal consultation on DALYs and reproductive health<sup>10</sup> identified the following areas of reproductive ill-health which were “neglected” in the GBD 1990 study:

- indirect obstetric conditions (malaria, anaemia, hepatitis, diabetes, epilepsy, cardiovascular disease)
- gynaecological morbidity (viral STD, reproductive tract infections, female genital mutilation and harmful practices)
- contraceptive-related morbidity and side effects
- psychological morbidity including puerperal psychosis
- infertility
- HIV-attributable morbidity
- linkages between STDs and HIV
- stillbirths.

## 3. Incorporating adolescents in reproductive health research

The World Bank estimates that this year the world will experience the largest generation of adolescents ever: about 800 million teenagers. However, the phenomenon of this rapidly expanding adolescent population aged 12-19 years has been largely overlooked.

Adolescents are at a high risk of STDs, including HIV, potentially harmful substances

<sup>8</sup> A. de Francisco, Global Forum for Health Research. Paper presented at Forum 2, June 1998.

<sup>9</sup> R. Sadana, WHO/EIP. Presentation at Forum 3, June 1999.

<sup>10</sup> DALYs and Reproductive Health: report of an informal consultation, April 1998 (WHO/RHT/98.28).

(tobacco, alcohol and other drugs) and violence and sexual abuse perpetrated by adults.

#### *Research recommendations*

Discussions resulting from the session on adolescent reproductive health during Forum 3 recommended the following broad areas of research on adolescence:

- improve the availability of basic data on the reproductive health status of adolescents
- identify effective and sustainable interventions that will have an impact on behaviour or health outcomes
- implement interventions research in the field of adolescent health and development in developing countries
- undertake research on the mediating factors that need to be addressed if interventions are to be effective

#### **4. Pregnancy-related mortality and safe motherhood**

Every year more than half a million women die as the result of complications of pregnancy and childbirth – most of them in developing countries. The differential in the lifetime risk of maternal death is one of the starkest indicators of the 10/90 gap: from an extreme of 1 in 7 in the highest risk developing country to 1 in 9,200 in the lowest risk developed country.

Over 80% of all maternal deaths are due to abortion, hypertensive disorders, haemorrhage, obstructed labour and infections. And for the most part, the interventions needed to prevent such deaths are known and cost-effective. What is lacking, however, is the ability to implement them successfully in resource-constrained settings. Further research is needed in some areas. For example, there is a need for better

information about the incidence, determinants, long-term consequences and prevention and management of hypertensive disorders of pregnancy and intra-uterine growth retardation, which account for a large proportion of morbidity and mortality among women in developing countries. Research should also be carried out to evaluate the determinants of the attitudes and practices of women in seeking health care during pregnancy and childbirth as well as to identify and implement effective approaches for overcoming barriers to use of health-care services.

Unsafe abortion resulting from unwanted pregnancy remains a serious public health problem in much of the developing world.<sup>11</sup> It is estimated that between 40 and 60 million abortions are carried out every year worldwide. Of these, WHO estimates that about 20 million are unsafe, 90% of them in developing countries.

The discussions during Forum 3 on research needs to help reduce the burden of maternal ill-health led to the following recommendations:

- Evaluate the determinants of health-seeking behaviour by women during pregnancy and childbirth and identify and implement effective approaches for overcoming barriers to use of health care.
- Evaluate the biological determinants of key pregnancy-related complications and design interventions to prevent them.
- Estimate the prevalence, health consequences and cost to health services of unsafe abortion in the developing world.
- Evaluate the gender dynamics of sexual behaviour and contraceptive use.
- Identify ways to ensure the availability and use of interventions for the management of

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<sup>11</sup> J. Cottingham, WHO. Presentation at Forum 3, June 1999.

pregnancy-related complications in resource-poor settings.

- Describe the incidence, determinants and long-term consequences of hypertensive disorders of pregnancy, unsafe abortion and intra-uterine growth retardation.

## **5. Integration of reproductive health interventions: pregnancy and HIV transmission**

### *Burden*

Over 33 million people worldwide are infected with HIV – over 95% of them in the developing world. Every day there are an estimated 16,000 new infections, mainly in sub-Saharan Africa, of which 10% are newborns. By the year 2004, it is estimated that an additional 14 million people will develop AIDS and die in this region. In addition, up to one third of babies born to HIV-positive women are likely to be infected if untreated.

The African region also accounts for some of the highest birth rates and levels of maternal mortality. In 1990, the global maternal death rate per 100,000 live births was estimated to be 430 as compared to 980 in sub-Saharan Africa. Meanwhile the estimated death rate from HIV/AIDS per 100,000 women aged 15-44 was 7.7 globally and 78.5 for sub-Saharan Africa. The projections for HIV transmission rates in Asia are projected to surpass transmission rates in Africa over the coming decades.

### *Risks*

Presenting the information for HIV and maternal mortality separately poses two problems, as was argued in a paper presented during Forum 3.<sup>12</sup> Focusing on outcomes solely in the mother conceals the impact on the survival and well being of other

individuals, directly in the case of mother-to-child transmission of HIV and perinatal deaths, and indirectly in terms of orphans and other household members.

### *Research recommendations*

Current research studies that focus on single interventions need to be redirected towards integrated initiatives, delivering effective interventions in pregnancy and childbirth. For example, providing a skilled attendant at delivery is the single most critical intervention for safe motherhood. Recent results from various randomized trials have shown that a short-course of zidovudine given to HIV-infected pregnant women during the later stages of pregnancy and delivery can reduce the risk of transmission of HIV by half in the absence of breastfeeding, and by one third in breastfeeding populations. Research on the combination of these interventions is described in insert 5.1.

## **6. STD management in developing countries and the need for research**

The limited data available show that STDs are an important public health problem in most developing countries. However, most STDs are asymptomatic, and their control requires approaches such as case detection or presumptive/mass therapy.<sup>13</sup> Vaginal discharge is one of the most difficult syndromes to manage. It is not easy to distinguish between the conditions most commonly associated with vaginal discharge and the less common but more serious cervical infections due to gonococcal or chlamydial infections. Unfortunately, appropriate tools for the detection of most STDs are not yet available. WHO recommends the use of the syndromic treatment as the most realistic approach for the management of symptomatic patients presenting for primary care in developing

<sup>12</sup> W.J. Graham, Aberdeen University. Paper presented at Forum 3, June 1999.

<sup>13</sup> C. Soliman, FHI. Paper presented at Forum 3, June 1999.

countries. While the first generation algorithms lacked the sensitivity needed to manage cervical infections, the introduction of risk assessment increased sensitivity at the expense of specificity. Given that risk factors for cervical infection may vary in different settings, the recommendation was to evaluate and adapt the charts.

#### *Research recommendations*

Three types of research are critical to the practical implementation of control measures for sexually transmitted diseases:

- (i) Strategic research, to focus on increasing the understanding of specific pathways and interactions between conditions and risk factors.
- (ii) Identification of new tools to improve package content, such as diagnostics to improve the identification of cases.
- (iii) Operational research aimed at package development and evaluation (adaptation, implementation, improvement and evaluation of the available treatment guidelines).

In the meantime, health managers in developing countries should continue to implement current recommendations pending results from the research described in (i) and (ii) above.

## Insert 5.1

### ***Recommendations for integrating pregnancy and HIV transmission research interventions***<sup>14</sup>

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#### **1. At the physiological level, undertake research on:**

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- The impact of single and repeated courses of short-course antiretrovirals on HIV progression and pregnancy-related complications in mothers and infants.
- The effect of pregnancy and pregnancy-related complications on HIV seroconversion and disease progression.
- The effect of HIV status on pregnancy outcomes and risk of pregnancy-related complications including life-threatening septic abortion.

#### **2. At the individual, family and community level, undertake implementation and interventions research on:**

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- Safe sex during pregnancy and the puerperium.
- Community mobilization to promote the provision and utilization of quality maternity services.
- Acceptability of voluntary counselling and testing provided through maternity services.
- Vaginal lavage to reduce vertical transmission of HIV and puerperal infection.
- Role of micronutrients in maternal health for both HIV-positive and HIV-negative women.

#### **3. At the health sector level, undertake implementation research on:**

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- Integrated initiatives to ensure high quality intrapartum care with skilled attendants.
- Implications of HIV and mother-to-child-transmission for antenatal care provision.
- Impact on quality of care of health-care provider of perceived risks of contracting HIV infection.

#### **4. At the international level, carry out research and development work to identify indicators reflecting the synergy between maternal conditions and HIV. Cost-effectiveness studies comparing the various interventions are critical.**

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Information on the levels described above will be incorporated in the framework for priority setting described in Chapter 2 once the information becomes available.

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<sup>14</sup> W.J. Graham, Aberdeen University. Paper presented at Forum 3, June 1999.

## Section 3

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### **Noncommunicable conditions: mental health and neurological disorders in developing countries**

#### **1. Introduction**

In the face of rapid demographic and epidemiological changes and the growing burden of noncommunicable diseases, developing countries can no longer focus exclusively on communicable diseases. Yet developing countries are not prepared for the coming epidemic of noncommunicable diseases and injuries in addition to the “unfinished agenda.”

Life expectancy at birth, infant mortality and the causes of death remain important health indicators in developing countries. But it is increasingly evident that these indicators are no longer sufficient for the formulation of health-care policy and for monitoring the health of the population. The speed of change and longer life expectancy at birth are important reasons why developing countries need to adopt newly developed indicators such as disability-free life expectancy or healthy-life expectancy.

To illustrate the magnitude of the problem of dealing with the “double burden” for the health services. This section focuses on mental and neurological disorders in developing countries. The matrix referred to in Chapter 2 is used here to illustrate the five-step priority-setting process as applied to epilepsy.

#### **2. Assessing the burden of mental health and neurological disorders**

Mental health and disorders of the nervous system (the brain and optic nerves, retina, spinal cord, peripheral nerves, neuromuscular junction and muscle) account for a large and increasing proportion of the world's disability and mortality. These disorders include the consequences of foetal and childhood malnutrition and other causes of birth defects and developmental disabilities, mental retardation, depression, schizophrenia, epilepsy, brain infections such as HIV encephalitis or cerebral malaria, environmental neurotoxins, head injury, stroke, degenerative disorders such as Parkinson's disease and Alzheimer's disease, chronic pain and a myriad of genetically-determined disorders.

It is projected that mental and neurological disorders could increase their share of the total global burden from 10.5% in 1990 to 15% by 2020. For young adult males in the developing world, alcohol use, depressive disorders and psychoses are among the ten leading causes of ill-health and premature death. For young adult females the most frequent disorders are depressive disorders and schizophrenia. Mental retardation is estimated to have a prevalence rate of 4.6% among children below the age of 18 in developing countries and imposes a considerable burden on the social welfare and educational systems. The treatment and rehabilitation of individuals affected with mental and neurological disorders account for

25% of the health-care budget in established market economies.<sup>15</sup>

In order to provide an example of the practical framework for setting priorities in health research presented in Chapter 2, the proposed matrix is applied to research on epilepsy (Insert 5.2). The matrix can be applied to any mental or neurological disorder to present information on gaps for research. There is a critical need for research to describe the actual burden of mental and neurological disorders in developing countries. The distress caused to patients and their families, the violence against women, marital break-up and the resulting damage to children's development are not reflected in the current estimates. Research on the burden should be coupled with development of cost-effective prevention and treatment and with efforts to create the right environment to implement these programmes, including development of a mental health policy and provision for community-based treatment.

### **3. Mental health policy and reform**

Most countries are undergoing some degree of reform in their approach to mental health care. This involves a move away from old-style custodial and institutional care in community settings to care which is local, needs-led, and the least restrictive environment that is compatible with the health and safety of affected individuals, their family and the public. Many countries are also contemplating reform of the legislative framework so that it supports appropriate care in the community, enabling professionals to deliver care in flexible settings, with appropriate attention to human rights. Both these movements require reform in other areas: reform of the training for mental health professionals and primary care workers and

reform of the inter-sectoral links that are needed to deliver mental health care: primary care and secondary health care, social care, housing, welfare benefits, the criminal justice system, education and industry.

While each country has special needs, problems and challenges, there are some fairly consistent principles for mental health reforms.<sup>16</sup> It is critical to ensure that decision-making about services is needs-led rather than supply-led. Thus, while it is important to know about pre-existing service use, estimates of need should be based on absolute levels of disease, severity, disability, chronicity and risk.

Research on the essential elements of mental health policy is critical to understand and replicate success stories. As countries move along the path of mental health reform, there is much that can be learnt from the experience of others, whether at national, regional or local level. There is a need for constructive partnerships between institutions for the sharing of research findings.

In summary, the clear articulation of the burden of mental and neurological disorders is an important step but only a first step towards the promotion of mental health in the general population and the provision of services for the mentally ill. The recognition of burden will largely remain an academic exercise if this cannot be translated into interventions. While there is an impressive set of therapeutic methods and even preventive interventions, research on assessing their cost-effectiveness under different socioeconomic and sociocultural conditions remains a high priority. Given the many gaps in the science of mental and neurological disorders, resources should be allocated to well coordinated research on specific areas.

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<sup>15</sup> D. Silberberg, University of Pennsylvania. Paper presented at Forum 3, June 1999.

<sup>16</sup> R. Jenkins, Institute of Psychiatry, London. Presentation at Forum 3, June 1999.

## Section 4

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### Road traffic injuries and childhood injuries in developing countries

#### Introduction

Injuries are increasingly recognized as one of the new global public health epidemics. The epidemic of injuries is also predicted to be one of the most challenging, as health systems are largely ill-prepared to respond to this problem. Evaluations of the burden of disease in developing countries reveal that between 5% and 25% of the overall burden may be attributable to injuries.

Within injuries, road traffic accidents are the leading cause of loss of healthy life at the aggregate level where such estimations are available. Most of those injured, disabled or killed in road traffic accidents are in the younger age groups and very often in the most productive age groups. Practical measures instituted in the developed world, such as seat belt legislation and the use of airbags, are likely to fail in the developing world because of difficulty in enforcing such regulations (see Insert 5.3).

#### Research recommendations<sup>17</sup>

- Describe the magnitude of the problem, the epidemiology and burden of disease of road traffic injuries in developing countries.
- Describe risk factors for road traffic injuries in the developing world, including regional and national profiles in terms of effects on the poor, gender differences and age groups.
- Define effectiveness and cost-effectiveness of both current interventions and interventions not being implemented in developing countries for reducing this burden.
- Describe behavioural determinants.
- Describe legislation required to implement programmes in developing countries.

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<sup>17</sup> From the group on Road Traffic Accidents discussions during Forum 3, June 1999.



## Insert 5.2

### *Epilepsy – risks, obstacles and opportunities for interventions: application of the five steps for priority setting*

Actors/factors determining the health status of a population	
<b>Five Steps in Priority Setting<sup>(a)</sup></b>	<b>Level of the individual, family and community</b>
<b>II.</b> Why does the burden persist? What are the determinants?	Infections during pregnancy <sup>(b)</sup> Birth asphyxia <sup>(b)</sup> Brain injury during labour <sup>(b)</sup> Head injury Exposure to toxic substances (lead, alcohol) Infectious and parasitic diseases Febrile convulsions <sup>(b)</sup> Genetic predisposition
<b>III.</b> What is present level of knowledge? a. Interventions currently available	Health education programmes aimed at: <ul style="list-style-type: none"> <li>• Seeking and accepting preventive care</li> <li>• Seeking, accepting and complying with drug treatment</li> <li>• Avoidance of excessive risk (head injuries through accidents)</li> </ul> Psychosocial support programmes
b. How cost-effective are current interventions?	Cost-effectiveness studies on individual interventions are extremely rare. An overall assessment of the cost-effectiveness of whole intervention "packages", however, is possible (see IVb below).
<b>IV.</b> What is to be expected in the future? a. What types of interventions are under consideration?	Community awareness programmes on epilepsy, aimed at dispelling stigma and at promoting a positive attitude to people with epilepsy in the community.  Programmes to help people with epilepsy to understand their condition and to empower them to seek appropriate treatment and lead fulfilling lives.  Assessment of the relative contribution of individual preventive interventions to reducing the burden of epilepsy.
b. How cost-effective could future interventions be?	The prevalence of epilepsy in the population ranges from 3-5 per 1000 in the This tenfold difference in prevalence provides a measure of what could be
<b>V.</b> What are the resource flows?	A global campaign was launched in June 1997 by the International Bureau for Since then, 27 countries have joined or are planning to join the campaign (14 Resources for this campaign are grossly inadequate.

<sup>(a)</sup> Step I is the burden of disease calculated for epilepsy at 5.1 million DALYs worldwide.

<sup>(b)</sup> These factors are listed under the heading "Individual, family, community" as they refer to the responsibility of the individual, family and community to either seek help or arrange for such help to be available

## Actors/factors determining the health status of a population (intervention levels)

Level of the health ministry, health research institutions, health systems and services	Level of sectors other than health
<ul style="list-style-type: none"> <li>• Inadequate prenatal care</li> <li>• Unsafe delivery</li> <li>• Untreated or inadequately treated fever in children</li> <li>• Exposure to parasitic and infectious diseases</li> <li>• No genetic counselling</li> <li>• No or inadequate drug treatment (in terms of availability and compliance)</li> <li>• Patients and families lack knowledge on appropriate lifestyle</li> </ul>	<p>Accidents, particularly head injuries (in the workplace, traffic-related).</p> <p>Restrictive and discriminatory legislation. Prejudice and stigmatization lead to social handicap, including unemployment.</p> <p>Uncontrolled industrial and agricultural development may entail environmental pollution by toxic agents, e. g. with lead or pesticides (particularly chloride derivatives).</p>
<p>Establishment of an organized community health care system providing:</p> <ul style="list-style-type: none"> <li>• Prenatal care</li> <li>• Safe delivery</li> <li>• Control of fever in children</li> <li>• Control of parasitic and infectious diseases</li> <li>• Immunization</li> <li>• Control of fever diseases such as diphtheria, pertussis, tetanus, measles, tuberculosis</li> <li>• Drug treatment (e.g. phenobarbitone)</li> <li>• Genetic counselling for people with severe forms of inherited epilepsy</li> </ul>	<p>Information programmes about the nature of epilepsy in schools, in the workplace and in the community to prevent social handicap.</p> <p>Anti-pollution programmes to prevent exposure to toxic agents, e.g. in the workplace.</p> <p>Psychosocial and vocational rehabilitation.</p> <p>Removal of restrictive and discriminatory legislation.</p> <p>Measures and legislation to prevent accidents, particularly at work or in traffic.</p>
<p>With early anti-epilepsy drug treatment, 80% of patients go into remission (many permanently) both by suppressing seizures and by inhibiting the evolution of the epileptic process.</p> <p>It has been demonstrated that in developing countries the establishment of an organized community health care system providing prenatal care, maternal and child care programmes, vaccination and nutrition programmes can reduce the prevalence of epilepsy from 37/1000 to 5.3/1000.</p>	<p>Cost-effectiveness studies on individual interventions are very rare. An overall assessment of the cost-effectiveness of whole intervention “packages”, however, is possible (see IVb below).</p>
<p>Training and educating health professionals.</p> <p>Strengthening the health and social services so that they are better equipped to apply preventive, curative and rehabilitative interventions, such as:</p> <ul style="list-style-type: none"> <li>• Reducing the treatment gap</li> <li>• Reducing the physical and social morbidity of people suffering from epilepsy.</li> </ul>	<p>Development of national programmes on epilepsy. Establishment of a platform for general awareness on epilepsy:</p> <ul style="list-style-type: none"> <li>• Announcement of a Global Awareness Day for Epilepsy</li> <li>• Organization of regional conferences on public health aspects of epilepsy.</li> </ul> <p>Development of a model for the promotion of epilepsy control worldwide and for its integration in the health systems of countries.</p> <p>Development of specific programmes designed to:</p> <ul style="list-style-type: none"> <li>• Reduce risks of head injuries (e.g. in the workplace, traffic-related), toxic exposures, environmental pollution</li> <li>• Fight stigma in the workplace</li> <li>• Eliminate discriminatory regulations and legislation.</li> </ul>

industrialized world to 15-20 or even 50 per 1000 in some areas of the developing world. accomplished by a comprehensive programme of prevention in the developing countries.

Epilepsy (IBE), the World Health Organization (WHO) and the International League Against Epilepsy (ILAE). countries in Europe, 8 countries in the Americas, 3 in Africa, 2 in Asia).

## Insert 5.3

### *Burden of road traffic injuries in Latin America and the Caribbean*<sup>18</sup>

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Road traffic accidents are an important problem in Latin America and the Caribbean countries. However, there are very few data on the mortality and morbidity involved, road traffic patterns, or which interventions are most likely to be successful. Even though there is a great deal of variability between and within countries, the scant information available is highly aggregated.

In some countries, mortality rates per 100,000 for injuries (including unintentional and intentional injuries) vary from 53 in Peru and 59 in Puerto Rico to 201 in El Salvador. Among all fatal injuries, road traffic injuries are the most common cause of death for people aged 1-45, and a significant cause of death at all ages in Latin America and the Caribbean countries. According to WHO, in 1990 109,000 people in this region died as a result of traffic injuries, and this number could rise to 143,000 by the end of 2000. The number of deaths peaks in the late teenage years and early twenties and the majority are males aged 15-29. An example of the differences within a country is Mexico, where the overall mortality rate for traffic injuries in 1996 was 16.1 per 100,000 deaths for the country as a whole and 28.4 per 100,000 in the state of Baja California Sur. Research in this field developed in Mexico City, one of the largest cities in the world, showed that in 1996, 13,543 people died from traffic injuries, and that 55% of those deaths were due to fatal pedestrian injuries.

With an increase in the population of young men, the number of DALYs lost to road traffic accidents will also rise even though there may be no concomitant increase in mortality rates. In this sense, the net effect on projected DALYs from injuries in Latin American countries and the Caribbean is increasing.

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<sup>18</sup> M. Hajar, National Institute of Public Health, Mexico. Presentation at Forum 3, June 1999.

# Chapter 6

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## *Progress in initiatives*

*Section 1  
Alliance for Health Policy and Systems Research*

*Section 2  
Global Tuberculosis Research Initiative*

*Section 3  
Initiative on Cardiovascular Health in Developing Countries*

*Section 4  
Medicines for Malaria Venture (MMV)*

*Section 5  
Violence against Women*

*Section 6  
Child Health and Nutrition Research Initiative*

*Section 7  
The availability and accessibility of drugs and vaccines for the poor:  
the role of the Public/Private Partnerships Initiative*

## Summary

Initiatives are one of the key strategies used by the Global Forum for Health Research to involve multiple partners in concerted efforts to help find solutions to intractable health problems through research. The driving force behind the creation of initiatives is the need for concerted action by multiple agencies and partners to generate the evidence base needed and mobilize new funding for priority diseases. This chapter is a review of progress made over the past year by initiatives supported by the Global Forum and of discussions held at Forum 3.

**Alliance for Health Policy and Systems Research.** The creation, structure and plan of action of the initiative was endorsed at a meeting of interested parties in February 1999. The secretariat of the initiative officially started its operations in March 2000 and is located at WHO. A first meeting of the Alliance Board was held in March 2000.

**Initiative on Cardiovascular Health in Developing Countries.** The initiative held the first meeting of its Partnership Council in February 2000. This meeting endorsed the work plan and draft protocol of six priority research programmes that had been approved by members of its international Steering Committee. These projects will be carried out in six low- and middle-income countries.

**Global Tuberculosis Research Initiative (GTRI).** The research activities of this initiative were integrated into the TDR Programme following a decision by the TDR Joint Coordinating Board in June 1999. TDR set up a broad-based Scientific Working Group of leading TB experts, including many members of GTRI, to recommend a future research agenda for TB for the next three years.

**Medicines for Malaria Venture.** This initiative is the response of the public and private sectors to the growing crisis of malaria, after several years of preparation by the international development agencies and the industry. It was launched in November 1999 and established as an independent foundation in Geneva. It is part of the Roll Back Malaria Campaign. Its objective is to register one new antimalarial drug every five years (starting in 2008-10), with the initial emphasis on oral drugs for treatment of uncomplicated malaria.

**Violence against Women.** A consultation on violence against women is to be held in Melbourne, Australia, in May 2000 to discuss priorities, identify some of the health research issues and draw up a plan of action for the initiative. Meanwhile, a consultation was held in April 1999 on the growing problem of child abuse.

**Child Health and Nutrition Research Initiative.** This initiative was launched during Forum 3 in June 1999 and held its first meeting of interested parties in February 2000. The group discussions led to the formation of task forces to work on: (i) criteria for priority setting in child health and nutrition research; and (ii) international collaboration on child health and nutrition research.

**Public/Private Partnerships.** A number of major diseases of the developing world, including malaria, TB and HIV/AIDS, are potentially treatable in the longer term. However, scientific obstacles and economic disincentives have resulted in under-investment in medical research for new vaccines and medicines targeted at these diseases. As a result, the solution has to come from joint undertakings of the public and private sectors (together with reinforced “push” and “pull” interventions on the part of the public sector). Based on these considerations, the Global Forum and its partners decided to support a Public/Private Partnerships Initiative to gather information on existing partnerships and promote the development of new ones. The secretariat, located in the Global Forum secretariat, started its operations in May 2000.

## Introduction

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Initiatives are one of the key strategies employed by the Global Forum to involve multiple partners in concerted efforts to help find solutions to intractable health problems through research. By definition, these problems are of such magnitude and complexity that no one institution can solve them alone. The initiatives currently

promoted and supported by the Global Forum are outlined in Chapter 1. Meanwhile, Insert 4.2 highlights the main issues and diseases that have been identified as priorities. This chapter describes in greater detail the progress made in each of the initiatives and offers a perspective on their future development.

## Section 1

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### Alliance for Health Policy and Systems Research

#### 1. Background

The Alliance for Health Policy and Systems Research Initiative was launched by the Global Forum in collaboration with WHO and several other institutional and donor partners in March 2000. The Alliance was established to fill the gap created by the lack of information on the performance of health systems and the impact of health policies on this. For example, countries concerned by inequities in existing health systems are undertaking health system reforms and other important changes without adequate knowledge of those policies and systems that

work and those that do not. Unlike some of the other priority areas identified by the Ad Hoc Committee, this area is more context specific and process oriented and needs to be linked to the policy-making process and to involve many different actors within society. For this reason, an alliance of research institutions, policy-makers, donors and WHO was selected for this initiative.

The aim of the Alliance is to contribute to health systems development and the efficiency and equity of health systems through research on and for policy. The objectives are to:

- promote national capacity for health policy and systems research on national and international issues with a particular emphasis on countries which currently have limited capacity to participate in this research and which are strongly committed to strengthening domestic capacity
- help develop the essential information for policy decisions in the health sector and other sectors influencing health, as the basis for concerted action at national, regional and global levels
- stimulate and help finance the generation of knowledge which facilitates policy analysis and improves understanding of health systems and the policy process
- strengthen international research collaboration, information exchange and structures for shared learning among countries
- identify influences on health systems which operate at the global level and promote appropriate and responsive policy research.

## 2. Progress

An important landmark in establishing an Alliance for Health Policy and Systems Research was the Meeting of Interested Parties in Geneva in February 1999. At this meeting, participants from approximately 50 institutions in the developing and developed world, including bilateral and multilateral agencies, endorsed the creation of the Alliance as well as its structure and plan of action.

The Interim Board commissioned a series of papers to provide regional overviews of health policy and systems research in Africa (David Harrison), Asia (Sadia Chowdhury) and Latin America and the Caribbean (Miguel Gonzalez-Block). All three papers identified a large number of bodies active in the health policy and systems research field in their respective regions. However, there appeared to be an overall lack of research and skilled researchers in this area. There was also no

clear agenda for promoting the research. Lessons learned from previous capacity-building efforts in this area in all the regions include:

- Insufficient attention has been paid to demand as opposed to supply.
- Many universities still lack critical mass in all the disciplines necessary for health policy and systems research; the few skilled researchers that exist are overloaded.
- There is evidence of duplication of efforts, especially in relation to fashionable research topics.
- Trainees are frustrated when the policy and service environment is not conducive to the implementation of research findings.

It is clear from these papers that the role of the Alliance needs to be tailored to the differing needs and characteristics of individual countries. Those countries with existing capacity are most interested in the Alliance providing a means of sharing information and help in arranging comparative studies on key topics. The Alliance should be helping to improve the relevance and use of health policy and systems research. It should also help develop and disseminate new methodologies and help in developing the skills required for data analysis and preparation of research results for publication. Countries with the least capacity need support to enable researchers, policy-makers and other stakeholders to manage and implement the entire research process, from identification of topics, through carrying out the research, to communication of research results. Measures to increase the supply of trained researchers should be part of these efforts. In countries with a moderate level of capacity there is a need to help existing researchers acquire skills in the design, implementation, analysis and communication of the results of health policy and systems research. In addition, there is a need to help sensitize policy-makers to the value of such research.

### **The structure of the Alliance**

The Alliance structure comprises partners, a board and a secretariat. The Board was created and held its first meeting immediately after the meeting of interested parties in February 1999. The current members are shown as Insert 6.1. The secretariat of the Alliance was officially established within WHO in March 2000 and is located in the Evidence and Information for Policy (EIP) Cluster.

The Alliance partnership is being extended to encourage broader participation and greater involvement at grassroots level. Institutions eligible for membership include those active in health policy and systems research as both producers and users. A Meeting of Partners will be held every two years at which partners will be expected to suggest a broad direction to the work of the Alliance, and review and comment on the work plans. Such a meeting will also provide an opportunity for new initiatives in the field of health policy and systems research to be presented and discussed and for networking between all those involved in this research.

### **3. Plan of Action for 2000-2002**

Five main tasks are envisaged for the Alliance over the next two years:

#### *Mapping and monitoring health policy and systems research (HPSR) at country and regional levels*

Gaps and imbalances will be identified and collaboration between actors will be supported to develop funding priorities and to plan Alliance activities. This will involve close liaison with the Council on Health Research for Development (COHRED).

#### *Advocating and collaborating to build sustainable country-level capacity for HPSR*

A capacity-building programme will be planned, based on a review of current HPSR capacity and capacity development

experience. Partner institutions, country authorities, COHRED and other relevant agencies and regional networks will be consulted.

#### *Supporting the development of HPSR*

In order to address gaps and emerging issues, and translate HPSR results for policy- and decision-makers, the Alliance will establish a competitive small-grants programme, help mobilize funds for research on neglected areas and identify research areas of future importance.

#### *Developing methodologies and tools for comparative analysis of country experiences*

Where research is required and tools and methodologies are unavailable or not standardized, the Alliance will help in their development and dissemination.

#### *Facilitating the systematization, analysis and sharing of information*

The Alliance will publish a newsletter and develop a website; collaborate with clearing houses; and encourage networking and liaison with existing networks. This task will build on the work undertaken over the past five years by the International Clearinghouse of Health System Reform Initiatives.

### **4. The future**

A programme manager and head of the Alliance Secretariat, Miguel Gonzalez Block, has been in post since November 1999. The location of the Alliance within the Evidence and Information for Policy Cluster at WHO headquarters underlines the close collaboration between the Global Forum and WHO. The Alliance was formally launched in Geneva in March 2000. Initial start-up funds are being provided by the International Development Research Centre (IDRC), the Norwegian and Swedish Governments and the World Bank.



## Insert 6.1

### *Members of the Alliance Board*

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**Anne Mills**

London School of Hygiene and Tropical Medicine,  
UK (Chair)

**Sanguan Nitayarumphong**

Ministry of Public Health, Thailand (Vice-Chair)

**Isabel Aleta**

Eastern and Southern Africa Health Systems Network

**Celia Almeida**

Fundacion Oswaldo Cruz, Brazil

**Enis Baris**

formerly of IDRC, Canada

**Lennart Freij**

formerly of SIDA/SAREC, Sweden

**Julio Frenk**

WHO

**Kassem M. Kassak**

American University of Beirut, Lebanon

**Mary Ann Lansang**

University of the Philippines

**Maureen Law**

World Bank

**Liu Xingzhu**

Shandong Medical University, China

**Malaquias Lopez**

National Institute of Public Health, Mexico

**Lindiwe Makubalo**

Department of Health, South Africa

**Gaspar Munishi**

University of Dar-es-Salaam, Tanzania

**Thomas C. Nchinda**

Global Forum for Health Research

**Yvo Nuyens**

COHRÉD

**Mamadou Traore**

Institut National de Recherche en Santé Publique, Mali

**Karl-Olav Wathne**

Ullevol University Hospital, Oslo, Norway

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## Section 2

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### Global Tuberculosis Research Initiative<sup>1</sup>

#### 1. Background

Tuberculosis (TB) accounts for 2% of the total disease burden worldwide and ranks eighth among all causes of mortality. At any one time, over 20 million people are sick with the disease. In 1998, there were an estimated 1.86 million tuberculosis deaths worldwide, of which 365,000 were HIV/AIDS-related

(World Health Report 1999). This interaction between tuberculosis and HIV/AIDS is expected to account for an increasing number of tuberculosis deaths in the future. Although cost-effective interventions are available for controlling the disease, standard regimens require prolonged treatment and depend for success on well organized services.

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<sup>1</sup> Modified from the summary report of the meeting held in Morocco on 28 June-1 July 1999.

The Global Tuberculosis Research Initiative (GTRI) was established in 1998 by the then Global Tuberculosis Programme with the goal of developing a sustainable TB research agenda to address the needs of high-prevalence countries and stimulate the mobilization of resources to execute that agenda. A second meeting of GTRI to evaluate progress, identify bottlenecks to further advancement of those goals and propose solutions was held in Casablanca on 29 June–1 July 1999. This meeting was held immediately after the endorsement by TDR's Joint Coordinating Board (meeting on 25 June 1999) of a recommendation by its Scientific and Technical Advisory Committee for TDR to take on TB research as part of its portfolio. TB will now have the full backing of all the TDR partners which have been collaborating over the last 25 years to support research on new tools and methods for the control of six tropical diseases.

## 2. The challenge

Tuberculosis continues to pose many challenges to the scientific community:

- There is insufficient commitment both on the part of high prevalence countries and funding agencies, creating a need for strong advocacy based on the results of research specifically aimed at improving control policy and practice.
- The development of antimicrobial resistance is further complicated by the rapid spread of HIV/AIDS.
- There is a severe lack of research capacity in TB-endemic countries, especially among TB control personnel.
- The health infrastructure, organization and management to support both research and control activities is weak.
- The currently used methods for assessing the impact of TB control programmes (including case notifications, estimated coverage and cure rates) are inadequate for

measuring the impact on transmission of TB.

- There is insufficient evidence on the economic benefits of good quality TB control.
- There is a need for closer links between researchers and those working on disease control as well as between researchers themselves, particularly those working on policy-relevant research and policy-makers.
- The importance of packaging research findings and recommendations in a form that can be readily understood and acted on by decision-makers is essential and requires close links between researchers and control managers.
- Important scientific obstacles to the rational development of a new TB vaccine remain, notably the lack of correlates of protection for immunity in humans.

## 3. Development of an action plan

In view of the above constraints, the action plan for TB research will focus on three critical areas:

### *Health systems and services research for TB*

At present, only a very small proportion of global TB control expenditure is allocated for health systems and services research (HSSR), with the result that only a limited amount of research is carried out. This is a key area that could greatly improve coverage levels for TB control using the DOTS strategy. Generating HSSR results with practical application that can be convincingly demonstrated is critical to the successful development of HSSR at country level. The activities of TB control programmes should be evidence-based – underscoring the need for research on service delivery. HSSR that effectively demonstrates the economic and social gains of specific control activities can help direct future control activities and be a powerful tool for increasing political commitment. Several

HSSR projects have recently been implemented by WHO and results are being generated which are already having an impact on control policies.

#### *Research capability strengthening for TB*

In most of the countries with a high TB burden, there is not enough research capacity to support a significant tuberculosis research agenda. The incorporation of TB into TDR's diseases means that it will benefit from the research capability strengthening (RCS) activities of TDR.

#### *Development of new tools for TB control*

The development of new diagnostics, drugs and vaccines is needed.

### **4. Progress**

The first area where progress has been made is in research capability strengthening, which is a key component of the TDR mandate. Recent developments include:

- As part of TDR's research capability strengthening activities, one of the call letters for applications for research training grants focused on training for TB research.
- TDR emphasizes training within ongoing R&D projects which would be of benefit when applied to TB.
- A special initiative (Task Force) is to be undertaken similar to that for malaria.
- At regional level, RCS activities include direct support to small-scale studies through small grants that will be useful for TB research.
- There are plans to expand the composition of existing task forces within TDR to include TB expertise.

There has also been progress through renewed WHO collaboration with industry in the form of "round table" discussions. In these discussions, both the public sector and private industry have agreed on the need and

opportunity to move forward in a new spirit of cooperation, with a particular focus on R&D for new products for neglected diseases.

TB has been identified as a priority in this unique venture using a number of possible "push and pull" mechanisms:

- Pull mechanisms: price support and/or guaranteed purchase, tax credits, registration fee waivers, neglected disease legislation.
- Push mechanisms: use of public funds to subsidize R&D costs, development of pharma/WHO partnerships, such as the Medicines for Malaria Venture (MMV).

Meanwhile, there has been significant progress in the development of new diagnostics for TB, with a strong focus on the needs of developing countries. WHO's TB Diagnostics Initiative is being incorporated into the diagnostics R&D operation of the TDR Product Development Research Group. This will facilitate cooperation between the different TB partners and industry.

On drugs, TDR is working in alliance with STOP TB, the Rockefeller Foundation, the National Institutes of Health (NIH), the US Centers for Disease Control, Aventis (formerly Hoechst Marion Roussel) and Glaxo Wellcome to develop strong evidence in support of the research and development of new TB drugs.

### **5. The future**

The second meeting of the Global Tuberculosis Research Initiative made a number of recommendations, including:

- sponsorship of regional workshops to develop country-specific operational research agendas for TB
- development of a clear mechanism for priority setting for TB research within TDR

- development of strategies to better demonstrate the epidemiological, economic and social impact of improvements in the control of TB and translate the findings of research into a form that can be readily grasped by policy-makers
- expansion of product development work and industry liaison activities to include tuberculosis
- inclusion in the global research agenda of biomedical research aimed at understanding fundamental aspects of mycobacterial biology in order to accelerate the development of new tools
- study of methods to streamline TB clinical trials
- inclusion of TB in activities for research capability strengthening, particularly mechanisms for making research training and other tools of capability strengthening available at regional and local levels
- strategy development for research on the impact of gender on TB control.

A meeting of the Scientific Working Group on TB in February 2000 defined the TB research agenda within TDR for the next three years. The Scientific Working Group on TB brings together external experts in the area of tuberculosis research and control from the developed and developing world. The meeting particularly focused on the following:

- define the needs and opportunities for research in tuberculosis
- discuss TDR's comparative advantage in tuberculosis research
- discuss existing and likely future activities conducted by other organizations in the field of tuberculosis research
- define and prioritize the specific areas of work to be undertaken under basic and strategic laboratory-based research, product development, intervention development, social, economic and behavioural research.

## Section 3

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### Initiative on Cardiovascular Health in Developing Countries

#### 1. Background

The rise in the burden of noncommunicable diseases, particularly in developing countries, was highlighted by the Ad Hoc Committee on Health Research (September 1996). The *World Health Report 1999* revealed that, in 1998, an estimated 43% of all DALYs globally was attributable to noncommunicable

diseases. Cardiovascular diseases are responsible for 10% of DALYs in low-income countries and 23% of DALYs in high-income countries. Insert 6.2 shows that projections of disease burden to the year 2020 indicate a substantial increase in the burden of noncommunicable diseases in low-income countries. Insert 6.3 shows the distribution of mortality for cardiovascular disease by cause

and gender. With the exception of coronary heart disease, there is a slightly higher prevalence among females in absolute numbers. Insert 6.4 shows the distribution by income group, highlighting the increasing prevalence of deaths in absolute numbers among low-income groups. This underscores the need for research on CVD control in developing countries, where the burden of CVD will add to the existing high burden of communicable diseases – thus stretching the meagre resources available to deal with these problems. The CVD Research Initiative was established in November 1998 as a joint programme of the WHO Noncommunicable Diseases Cluster, the Global Forum and other partners to address this issue through research. The partnership council is shown in Insert 6.5.

## **2. From priorities to proposals**

A meeting of the CVD Initiative partners in Cape Town in February 1999 identified nine priority areas which constitute the action plan for the Initiative:

### *Access to existing knowledge*

This involves the selection of six to eight developing countries from diverse settings to collect and critically appraise existing studies (both published and unpublished), using common search strategies and the format of appraisal and reporting. Burden of disease estimates, risk factor levels in the population and experience of population-based interventions will comprise the first phase of the study. National and central data banks will be established for easy access. The costs will be shared equally by national agencies and the CVD Research Initiative.

### *Surveillance systems*

This involves the establishment of sentinel surveillance systems in selected developing countries using data from community samples or industrial populations (employees

and families), with an emphasis on cardiovascular risk factors. Younger age groups (children and adolescents) will also be included in this surveillance. While cause-specific CVD mortality will be included where feasible, morbidity surveillance is likely to prove expensive and to be included only if specific resources are available for this. The possibility of integration with other existing surveillance systems (for communicable diseases, for example) will be examined.

### *Etiological research*

Incident case-control studies were recommended for the study of independent and interactive risks attributable to conventional and emerging risk factors. The INTERHEART study provides an excellent model which combines case-control and ecological comparisons across several developing and developed countries, using standardized methodology. There is also a need to study the implications for developing countries of the linkages between foetal nutrition and adult susceptibility to CVD.

### *Population-based interventions*

Cost-effective algorithms for combined lifestyle interventions aimed at reducing the levels of “absolute cardiovascular risk” in population groups need to be identified for study and action. These may be linked to the surveillance studies in selected developing country populations.

### *Health promotion for the young*

There is a need to assess the cost-effectiveness of lifestyle-based health promotion algorithms for primary prevention of cardiovascular risk factors in children and adolescents. These may be school-based studies or linked to the surveillance studies.

### *Hypertension*

Cost-effective algorithms for the detection and control of high blood pressure are required for integration into primary health

## Insert 6.2

### *Contribution of CVD to DALY loss (% of total)*

Region	1998	2020
World	10.8%	14.7%
Developed countries	18.0%	22.0%
Developing countries	10.0%	13.8%

## Insert 6.3

### *Global mortality by cause and by sex: CVD estimates for 1998 (in millions)*

Disease condition	Total	Males	Females
Coronary heart disease (heart attacks)	7.4	3.7	3.7
Cerebrovascular disease (strokes)	5.1	2.3	2.8
Inflammatory and rheumatic heart disease	0.9	0.4	0.5
Other cardiac diseases	3.3	1.6	1.7
Total population at risk	5,885.0	2,964.0	2,921.0

## Insert 6.4

### *Mortality due to CVD in high-income and low- and middle-income countries: estimates for 1998 (in millions)*

Disease condition	Total	High-income countries	Low- and middle-income countries
Coronary heart disease (heart attacks)	7.4	1.9	5.5
Cerebrovascular disease (strokes)	5.1	0.9	4.2
Inflammatory and rheumatic heart disease	0.9	0.1	0.8
Other cardiac diseases	3.3	0.7	2.6
Total population at risk	5,885.0	908.0	4,977.0

(Source of Inserts 6.2, 6.3 and 6.4: The World Health Report 1999)

## Insert 6.5

### *Members of the CVD Partnership Council*

- 
- Canadian International Development Agency (Health Promotion and Programmes Branch, Population Health Directorate)
- 
- Global Forum for Health Research
- 
- Institute of International Health and Development (Australia)
- 
- Institute of Medicine (USA)
- 
- Instituts universitaires de médecine sociale et préventive, Switzerland
- 
- International Obesity Task Force
- 
- National Public Health Institute (Finland)
- 
- World Health Organization (NCD Cluster)
- 
- World Heart Federation
- 
- World Hypertensive League
- 
-

care. These may be studied in the context of the surveillance systems or in specifically selected community-based samples. Secondary data analysis currently under way will identify the needs for primary data collection.

#### *Tobacco*

Tobacco research needs to focus on the determinants of both demand and supply in the developing countries. Tobacco and CVD research agendas need to be integrated, wherever feasible, especially in surveillance studies, population-based interventions and in clinical algorithms for secondary prevention. The detailed research agenda for tobacco control is described in Insert 6.6.

#### *Clinical algorithms*

Clinical algorithms for cost-effective management of two acute medical problems (acute coronary events and evolving stroke/transient ischaemic attack) and four chronic problems (hypertension, diabetes, secondary prevention after myocardial infarction, and congestive heart failure) have been recommended for study. These should be carried out in primary and secondary health-care settings with a focus on current practice patterns. In addition, context-specific algorithms need to be developed and evaluated for cost-effectiveness and this should be linked to health systems research in general. A study of missed opportunities (to detect tobacco habit and hypertension) would be useful. Wherever feasible, ongoing studies by INCLEN are to be examined for linkages and extension.

#### *Capacity development*

The development of capacity for conducting such research in developing countries needs to be integrated with the proposals for research, particularly partnership research. Efforts would be made for linkages to existing programmes of the World Heart Federation and INCLEN. There are other possibilities of

linkages being explored, such as Public Health Schools Without Walls.

### **3. From proposals to protocols**

A small scientific planning group was constituted after the Cape Town consultation to use the areas identified above to develop protocols for initiating collaborative research projects in developing countries representing different regions. This group met in the Institute for International Health Research in Sydney in April 1999 and developed core protocols for conducting research projects in six priority areas:

- Development of a global information network on CVD in developing countries.
- Establishment of sentinel surveillance systems for monitoring CVD risk factors and mortality to track the evolving epidemics of CVD and their determinants and to evaluate the impact of interventions.
- Population-based interventions for reducing CVD risks associated with high blood pressure – the major risk factor for both coronary heart disease and stroke, the two dominant forms of CVD. High blood pressure is a problem shared by all developing countries, irrespective of their present stage of health transition. It affects large numbers of both men and women.
- Evaluation of strategies for identifying individuals at high risk of blood pressure-related CVD and implementing guidelines-based management to reduce that risk.
- Evaluation of clinical algorithms for the management of acute myocardial infarction and congestive heart failure, based on evidence of the efficacy of existing methods.
- Assessment of existing capacity in selected developing countries for initiating and implementing CVD control programmes at different levels of health care.



## Insert 6.6

### *Tobacco control research*<sup>2</sup>

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#### The problem

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Over the last few years, there has been a resurgence of worldwide interest in tobacco control. This is due to increasing awareness that tobacco is fast becoming a greater cause of death and disability than any single disease. It has been estimated that tobacco will cause about 150 million deaths over the next 25 years (*World Health Report 1999*). Concern at the increase in tobacco-related deaths was reinforced in 1998 by the release of 35 million pages of documents from the internal files of the tobacco industry following a landmark lawsuit brought against the tobacco industry in the USA. These provide evidence of the subversion of science by the tobacco industry, including the refusal to acknowledge tobacco as a key risk factor for diseases such as lung cancer, cardiovascular disease and chronic lung disease.

In reality, much of the existing burden from smoking and its projected increase in the near future can be attributed to the failure of successive governments to control the production and marketing of tobacco. Some governments lack the incentive to control tobacco use because they are not convinced of its devastating impact on either health or development in their own economies. The creation of the Tobacco Free Initiative by the World Health Organization is designed to focus concerted action on controlling this critical health problem. A global agenda for research on tobacco control is needed to underpin all control action and policy development. Over the last 18 months, such an agenda has been developed in close partnership with researchers and policy-makers from developing countries, international donors and research bodies with global mandates.

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#### Investment and potential for research

Global funding for tobacco control research continues to be inadequate, particularly when compared to a US\$ 400 billion<sup>3</sup> industry that promotes tobacco products. International tobacco control research has attracted only minimal funding, although opportunities abound for increased funding and collaboration with multilateral and bilateral sources. The proposed research agenda set out below is a compilation of recommendations drawn from various recent symposia, consultative meetings and reports. The various agendas show a striking similarity. Some research issues are clearly country-specific, while others have the potential to inform policy and practice internationally. The development of common protocols on key questions would facilitate research locally and the pooling of data globally.

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#### The research agenda

##### *Country-specific research*

The lack of standardized and comparable data is a recurrent theme. There is a need for surveillance systems to capture country and regional data on:

- prevalence of tobacco use and consumption patterns
- patterns and trends in tobacco-attributable morbidity and mortality
- level of awareness of the health risks associated with tobacco use
- elasticity studies to determine the impact of taxation on tobacco control
- behaviours and attitudes with respect to tobacco control measures.

##### *Policy interventions*

Economic and legislative research is needed to determine the impact of tobacco control policies, including taxation and pricing, clean indoor air policies, restrictions on marketing, advertising and promotion, and restrictions on young people's access to tobacco.

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<sup>2</sup> This paper has been edited from one by Enis Baris of the World Bank and Derek Yach of the World Health Organization.

<sup>3</sup> Policy Paper of Tobacco Free Initiative, WHO/TFI, 1998.

## Insert 6.6 (continued)

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### *Programme interventions*

The global research agenda should be grounded in a comprehensive public health model of nicotine addiction that encompasses environment, agent, host and vector. Topics for research on possible interventions include:

- opportunities for/barriers to tobacco control
- optimal components of a comprehensive tobacco control strategy
- development of effective messages to counter tobacco industry promotions
- behavioural research to test prevention and treatment programmes
- the relative effectiveness and consequences of single-risk strategies versus multiple-risk strategies.

### *Tobacco product design and regulation*

This research will seek to demonstrate how product modification (in nicotine/tar content, delivery system, additives, taste, size, etc.) can change use patterns and/or reduce harm among various subgroups. The following components are possible priorities:

- the biology of tobacco addiction
- characterization of additives to tobacco products
- examination of alternative labelling for tobacco products
- a basis for future decisions about nicotine and tar content derived from public health findings.

### *Tobacco farming*

- Many aspects of tobacco cultivation are poorly understood, including occupational hazards, environmental impact, economic benefits and socio-cultural impact (particularly for women and children).

### *Tobacco dependence*

Two broad research fields are of particular importance:

- examination of a range of approaches to increase the cessation rates in populations
  - evaluation of new pharmaceutical interventions and delivery mechanisms, their cost-effectiveness and their impact in diverse socio-cultural, physiological and genetic subgroups.
- 

## **The future**

Research data from the global agenda outlined above will be pivotal in providing technical assistance for the development and implementation of the proposed WHO Framework Convention on Tobacco Control presently being developed. Cross-cutting research themes will be taken into consideration in all thematic areas such as:

- high-risk populations (e.g. youth, women, indigenous populations)
- country readiness
- dissemination of research results to policy-makers for use in developing control programmes
- capacity development for research to support tobacco control
- mobilization of human and financial resources.

Funding for tobacco control is clearly inadequate at both the institutional and global levels. It is imperative for funding levels to be increased and coordination between existing research initiatives to be strengthened. Optimal funding levels for tobacco control research should be determined at both the institutional and global level and should be at least proportionate to the burden of disease attributable to tobacco use.

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In selecting these areas for protocol development, three priorities were not included in order to avoid duplication. First, it was recognized that research to inform tobacco control, a high priority area, is already being supported by the WHO Tobacco Free Initiative (see Insert 6.6). Second, research on rheumatic heart disease is being coordinated by the joint World Heart Federation-UNESCO initiative. Third, case control studies for etiologic research are under way in WHO, co-sponsored by the global INTERHEART study.

#### **4. From protocols to projects**

The protocols developed in Sydney described above were discussed at Forum 3 and were well received by the CVD experts and donors at that meeting. A brief but well argued advocacy document for addressing the donor community was also prepared and widely disseminated in order to solicit broad support for the initiative and financial support for the research protocols. This document was discussed and received wide support at the International Conference on Heart Health held in India in October 1999.

#### **5. The way forward**

The initiative is being coordinated by Srinath Reddy, who heads its Scientific Secretariat, based at the All India Institute of Health Sciences in Delhi, India, and funds have been made available by the Global Forum and WHO. A Partnership Council has also been established to guide and support the initiative; the council's first meeting was held in February 2000.

An eight-member International Scientific Steering Committee has also been established comprising scientists from developing and developed countries. The steering committee will plan and supervise the initial activities of the initiative and will be responsible for commissioning or making calls for research proposals from qualified teams of professionals and scientists, especially from developing countries.

When this initiative becomes fully operational the expectation is that research will focus mainly on the CVD problems of developing countries and will be carried out mainly by researchers from these countries.

## Section 4

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### Medicines for Malaria Venture (MMV)

#### 1. The problem

Malaria kills more than any other single infectious disease except tuberculosis. It represents about 2.3% of the total disease burden in the world. It affects populations in more than 90 countries across the tropics and even reaches into more temperate regions. Over two billion people are at risk. Malaria has a devastating impact on the communities it affects, killing more than one million people a year. The majority of these deaths occur in children under five. The second highest risk group is pregnant women. Many of these women and children do not have access to health services. It is estimated that there are 300-500 million cases of malaria each year – 10 new cases every second.

Endemic malaria combined with malaria epidemics cause death, reduce the productivity of agriculture, inhibit tourism and affect external investment. Malaria keeps societies poor and undermines development; it reduces the income of families who are already among the poorest in the world. It is estimated that 90% of all malaria cases are in sub-Saharan Africa, where it accounts for about 9% of the total disease burden of the region. However, other regions cannot remain complacent. The global situation is worsening rather than improving, due to increasing resistance to commonly used drugs. Over the last few years, several major epidemics have occurred in regions of tropical countries normally free of the disease. As a result, the disease continues to be taken very seriously

by countries in Asia and South America. Reports of disease transmission have also been reported in southern Europe, the Independent States of the former Soviet Union and in the southern part of the USA.

New products are desperately needed, especially affordable drugs to treat uncomplicated cases of malaria. However, the high costs of developing and registering pharmaceutical products, coupled with the prospect of inadequate commercial returns, has resulted in the withdrawal of the majority of pharmaceutical companies from R&D investment in tropical diseases, especially from discovery research activities.

The public sector has maintained basic science funding, but in general lacks the expertise, mechanisms and resources to discover, develop, register and commercialize new products. The best way forward is a joint partnership between the public and the private sectors.

#### 2. The Medicines for Malaria Venture (MMV)

The Medicines for Malaria Venture is the response of the public and private sectors to the growing crisis of malaria. The initial co-sponsors of MMV were WHO, the International Federation of Pharmaceutical Manufacturers Associations (IFPMA), the World Bank, the UK Department for International Development, the Swiss Agency for Development and Cooperation, the Global

Forum for Health Research, the Rockefeller Foundation and the Roll Back Malaria movement. It was launched in November 1999 and established as an independent foundation in Geneva.

MMV will act as a not-for-profit business combining aspects of a virtual pharmaceutical R&D company and a venture capital fund. It has the global objective of financing and managing a portfolio of R&D projects for the discovery and development of affordable new antimalarial drugs. Its objectives include:

- To register one new antimalarial drug every five years (starting in 2008-10), with the initial emphasis on oral drugs for treatment of uncomplicated malaria.
- Through partnerships, to ensure the commercialization of these products at affordable prices.

### 3. Operations and funding

MMV's approach is to competitively select and manage projects that contain all the expertise necessary to succeed. A key strategy is to link academic groups with industry groups to optimize access to the knowledge and technologies necessary to discover and develop new products.

A worldwide call for R&D proposals was advertised in the international scientific press and through the WHO website in early 1999. As a result, 101 proposals were submitted from academic and industrial groups in 27 different countries. Based on the

recommendations of the Expert Scientific Advisory Committee (ESAC), three initial projects were selected to be supported by MMV, including partnerships with three companies: Glaxo Wellcome, SmithKline Beecham and Hoffmann-La Roche. A new round of drug discovery proposals is planned for 2000. It is estimated that to support sufficient projects to ensure the registration of one new product every five years, approximately four to five discovery projects and four to five development projects need to be running at any one time.

Financing of MMV is in the form of cash and gifts-in-kind appropriate to antimalarial drug discovery and development, as follows:

- Contributions in cash will come primarily from governmental agencies and philanthropic institutions, on a non-reimbursable basis.
- Gifts-in-kind will come primarily from the private sector (e.g. access to combinatorial libraries and high throughput screening systems), but could also come from the public sector (e.g. access to primate models of human malaria).

As of early 2000, MMV had secured funding of about US\$13.7 million.<sup>4</sup> The objective is to raise US\$15 million a year by end 2001 to enable the full establishment of discovery projects and to enable the hiring of a complete MMV management team. The next stage will require additional financing to about US\$30 million a year by end 2003, as a complete development portfolio is established. Funding

<sup>4</sup> Funding to date for the year 2000 has come from the following partners:

• Bill and Melinda Gates Foundation	\$5.0 million
• Government of the Netherlands	\$2.5 million
• Rockefeller Foundation	\$1.3 million
• Roll Back Malaria/WHO	\$2.5 million
• Swiss Agency for Development and Cooperation	\$.65 million
• United Kingdom, Department for International Development	\$1.5 million
• World Bank	<u>\$.25 million</u>
Total	<u>\$13.7 million</u>

for individual projects can be raised, lowered or terminated depending on a project's progress and the status of other projects in the fund's portfolio. The MMV management and the Expert Scientific Advisory Committee (ESAC) will select and finance the development of the most promising of the candidate antimalarials discovered and, at a later stage, out-license their manufacture/commercialization to an industrial partner. Downstream revenue accruing to MMV from out-licensing will be reinvested in the MMV fund.

MMV is supervised by its Governing Board and managed by a chief executive and a small management team. The main tasks of the management team are:

- to work closely with appropriate academic institutions and private-sector companies to encourage and facilitate the putting together of discovery research proposals, their reviewing and funding, the assessment of their progress and their evolution, if appropriate, into a development proposal
  - to identify a third party or to set up and administer a "virtual" development operation to manage the development process
  - to ensure a scientifically balanced portfolio of discovery and development projects
  - to negotiate appropriate contracts with public- and private-sector partners
  - to facilitate the production and commercialization of products arising from successful development projects
- to optimize appropriate financial return to the MMV fund from commercialized products
  - to raise funds and to access other resources (e.g. gifts-in-kind)
  - to administer the operation of the Board and the ESAC
  - to work closely with public-sector agencies and companies with an interest in tropical disease R&D and tropical disease control.

#### 4. Monitoring and indicators

In the longer term, the value of MMV will be measured in terms of the number of patients treated with antimalarial drugs as a result of its work. Because of the lead time needed, it is unlikely that an affordable antimalarial will be available before 2008-2010. In the meantime, progress in the initiative can be measured by the following intermediate indicators:

- patent-protected molecules entering preclinical development (2003 onwards)
- compounds entering clinical development (2004 onwards)
- compounds demonstrating proof of principle in humans (2006 onwards)
- compounds registered as drugs in collaboration with commercial partner (2008 onwards)
- drugs in widespread use at affordable prices (2010 onwards): success to be measured in numbers of treatments sold.

## Insert 6.7

### *Roll Back Malaria*<sup>5</sup>

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#### The Roll Back Malaria movement

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The Roll Back Malaria movement was launched by WHO in 1998 in response to the concerns of Heads of State in more than 30 malaria-affected countries and to the particular problems faced by the poor. The movement builds on the experience of the last 20 years – particularly recent malaria initiatives in Africa – and draws on the insights of the co-sponsored Special Programme for Research and Training in Tropical Diseases (TDR). Within the next few years, Roll Back Malaria can be expected to benefit from the anticipated products of the Medicines for Malaria Venture (MMV). The movement is committed to making a difference: to halving the world's malaria burden by the year 2010, and halving it again over the following five years. Maximum emphasis is given to this outcome, and to ensuring its achievement. This requires concerted and coordinated action by a broad range of public- and private-sector organizations at all levels of society. Roll Back Malaria is a social movement backed by a partnership of governments, civil society, development agencies and banks, nongovernmental organizations, foundations, research groups and other interested parties.

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#### The potential to make a difference

Much could be achieved through better use of existing malaria control tools. In Asia, for example, effective malaria control has already led to dramatic declines in malaria death rates. Prompt and effective treatment of malaria can reduce death rates by 50% – even more if the treatment can be administered in the home. Effective malaria treatment should be included within routine child and maternal health care; services should be built up when epidemics have been predicted, and private-sector groups must be involved in the response. Dip-stick malaria diagnostics, pre-packaged medicine and new treatments, like artesunate suppositories, ensure more effective home treatment. The malaria parasite's resistance to treatment can be delayed through using therapies that combine different medications: the challenge is to ensure that inexpensive combination drugs are readily available to all who need them. Vector control tools, such as spraying the indoor walls of houses with insecticides, are still important in some settings. However, the tools themselves must be updated and targeted to reduce reliance on DDT – a persistent organic pollutant. The wider use of insecticide-treated bednets reduces episodes of illness by 50% in areas of high transmission. Increasing access to mosquito nets and effective treatment calls for a broad-based movement, involving the participation of schools, community groups and local government.

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#### Strategies of the movement

The Roll Back Malaria movement tries to get the best possible results with existing malaria control tools, through better functioning health services as well as community-level action. It supports the development and adaptation of new tools needed to ensure that gains are sustained.

The six principles of Roll Back Malaria are:

- Early detection: community awareness of the symptoms of the disease; surveillance; and monitoring the spread of resistance.
  - Rapid treatment in the home: simple packaging of drugs and knowledge of when to seek medical care.
  - Multi-pronged interventions: better health care; impregnated bednets and other materials; and environmental management.
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<sup>5</sup> Edited from a paper written by David Nabarro, World Health Organization, Geneva.

## Insert 6.7 (continued)

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- A well coordinated strategy: good situation assessment followed by structured technical support.
- Research to discover new tools: medicines; vaccines; and new insecticides. MMV is an integral part of Roll Back Malaria, focusing on the discovery and development of new antimalarials.
- Coalition of stakeholders: from community participation, through the private sector and NGOs to governments, international organizations and research institutions and foundations.

Action to Roll Back Malaria is already building on existing control efforts within 15 countries in Africa, 11 in the Middle East and Near East, seven in the Far East and up to nine American states, with efforts mainly focused on Amazonia. Meanwhile, interventions by Roll Back Malaria have helped reduce the suffering caused by malaria during the complex humanitarian crises in Afghanistan, East Timor, South Sudan and Tajikistan.

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### What is special about Roll Back Malaria?

The Roll Back Malaria movement depends on up-to-date technical systems and expertise – for surveillance, for controlling mosquito vectors, for promoting the use of effective medicines, for integrated management of childhood illness and for encouraging the development of new diagnostics, treatment and preventive measures.

Through the Roll Back Malaria movement, the World Health Organization is helping countries to develop the kind of expertise needed to control malaria. Systems to track progress and outcomes are being put in place; information will be widely available through the WHO website. Through a focus on saving lives, improving school attendance and alleviating poverty, Roll Back Malaria is making a real difference to the lives of millions of people around the world.

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### The future

Since June 1999, WHO regional offices, together with the regional offices of UNICEF, the World Bank and UNDP, and many national governments, development agencies, regional banks, commercial entities and NGOs, have worked hard to initiate country-level action to roll back malaria. WHO is tracking the progress of country-level action, setting up effective information systems and means for sharing experiences. Strong progress has been reported on the establishment of country partnerships and planning for action to roll back malaria in the Mekong Region and at least 20 countries in Africa, Central Asia, South-East Asia (particularly India) and the Americas. More intensive country-level action is expected during 2000.

Under the Roll Back Malaria strategic umbrella, WHO departments and regions will work closely with other partners to agree on strategy, positions, guidance and research needs in relation to the critical technical areas. Such an approach has already been established for anti-malarial drug resistance and policy.

It is estimated that the partnership will need to mobilize an additional amount of at least US\$300 million a year in support of country action and US\$100 million a year for intervention studies and product development. In 2000, partners will be asked to agree on plans for scaling up action through intensified public-private efforts, incorporating RBM action into health-sector development and intersectoral action.

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## Insert 6.8

### *Multilateral Initiative for Malaria in Africa*

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#### A progress report

The Multilateral Initiative on Malaria in Africa (MIM) was established in 1997 to maximize the impact of international scientific research on malaria. Over the past year, there has been considerable progress in efforts to tackle the key MIM objectives of improving global coordination and collaboration, mobilizing resources, promoting capacity building in Africa and encouraging increased collaboration between the malaria research and malaria control communities.

In March 1999, the first MIM African Malaria Conference in Durban, South Africa, was attended by almost 900 participants from 61 countries. They included scientists, health professionals, malaria control personnel, policy-makers and representatives of private industry and major funding agencies. One of the main objectives of the conference was to strengthen scientific partnerships both between countries in Africa and between Africa and the rest of the world. The meeting included numerous presentations on the results of research carried out in Africa (by Africans or with overseas collaborators).

A one-day research-training workshop was held on the final day of the MIM conference to discuss malaria research capacity development in Africa and to review methodological aspects related to research grant applications on malaria. The discussions, involving 180 African researchers, covered key areas of project design and project implementation in different areas of expertise based on real examples. The topics discussed included: definition of research questions; adequate scientific justification of the research approaches being applied; coherence between objectives and methodology proposed; analytical approach; and elaboration of a balanced proposal regarding objectives, time lines and budget and general protocol design. The workshop also provided useful information on funding sources for training and research in malaria and was a useful forum for discussion on international collaboration between African and non-African scientists. The participants recommended that this kind of workshop should be included as one of the satellite activities at all scientific meetings.

Meanwhile, a major review was carried out by the Wellcome Trust as part of MIM activities to build research capacity for malaria in Africa. This included a survey of training opportunities in health and biomedical research offered by high-income countries to scientists across the developing world, particularly in Africa. It also examined the current status of malaria research capacity and training in Africa by looking into infrastructure, research outputs, resources for training and the opinions of African scientists on training needs.<sup>6</sup> The discussion that took place at Forum 3 on aspects of this report is reported in Chapter 7 under research capacity development.

Over the past year, there has been an unprecedented level of MIM-brokered collaboration between representatives of organizations funding malaria research and control. Meanwhile, regular meetings, the production of a MIM Newsletter and MIM websites have all been important mechanisms for improving communication and promoting coordinated international action. Elsewhere, the US National Library of Medicine has led efforts to upgrade electronic communication facilities at major research sites in Africa including Cameroon, Kenya, Mali and Tanzania.

MIM has played an important role in encouraging concerted action on antimalarial drug resistance by funders, researchers and policy-makers, through organizing a key meeting in mid-1998. A major focus has been the potential to delay the emergence and spread of resistance through combining standard antimalarial drugs with artemisinin and its derivatives. Studies on the feasibility of this approach were carried out in 1998-99.

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<sup>6</sup> P. Beattie, M. Renshaw, C. Davies, *Strengthening Health Research in the Developing World: Malaria Research Capacity in Africa*. Available from the Wellcome Trust.

## Insert 6.8 *(continued)*

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MIM has also been successful in attracting new funds for malaria research. As a result, annual funding for malaria research has risen from US\$85 million in 1995 to over US\$100 million today. Scientists and funding agencies have taken action either collectively or individually to address agreed priorities. Activities have either been funded through pre-existing schemes or through new mechanisms established to tackle specific needs. Notable achievements since MIM's inception in Dakar in 1997 include:

- the establishment of a repository of standardized research reagents
- a research capability strengthening programme presently located and managed within the Tropical Diseases Research programme at WHO (funded from a number of sources)
- the MIM conference devoted entirely to malaria in Africa, and the enhancement of scientific collaboration and partnerships across Africa.

The most widely recognized accomplishment is the emergence of an invigorated and growing African malaria research community working collegially with partners within and outside Africa. Fogarty International Center, which took over the role of MIM coordinator from the Wellcome Trust in May 1999, hosted a meeting of partners and African scientists in December 1999. The meeting agreed on an action plan and agenda for MIM activities over the next two years.

## Section 5

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### Violence against Women

#### 1. Burden of the problem

There are very few population-based data available on the important public health problem of violence against women. This is partly due to the nature of the problem and its deep-rooted and far-reaching sociocultural aspects. It is also a reflection of widespread reluctance among women to talk about the problem. In addition to the severe health risks involved, violence against women is also a violation of fundamental human rights. Recent population-based studies have revealed that 20%-50% of women experience physical violence involving a partner or ex-partner. Violence against women in situations of war or conflict is an even worse form of aggression.

#### 2. The scope of the problem

Violence against women involves a wide range of different kinds of violence including:<sup>7</sup>

- abuse by an intimate partner
- rape, including marital rape
- sexual abuse of girls
- sexual torture, trauma and rape in war

- female genital mutilation and other harmful traditional practices
- forced sterilization or contraception
- violence against widows and elderly women
- trafficking in women and girls, and forced prostitution
- sexual harassment and intimidation in the workplace
- violence condoned or carried out by the state.

The issue of child abuse is sometimes considered as one form of violence against women under the broad category of “family violence”. A consultation on child abuse was held in April 1999. A summary of the outcomes is included as Insert 6.9.

#### 3. Background

Although a number of recent publications on violence against women have highlighted the extent and gravity of the problem,<sup>8, 9, 10</sup> most have focused on abuse by intimate partners, also known as “domestic violence”. Over the past five years, there has been an increase in research on the wider problem of violence

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<sup>7</sup> From the United Nations Declaration on the Elimination of Violence Against Women, 1993.

<sup>8</sup> Lori L.Heise, Jacqueline Pitanguy and Adrienne Germain, *Violence Against Women: The Hidden Health Burden*. World Bank Discussion Papers, 1994. L. Heise, M.Ellsberg, M.Gottemoeller, *Ending Violence Against Women*. Population Reports Vol XXVII No.4, December 1999.

<sup>9</sup> *Violence against Women: WHO Consultation 5-7 February 1996* (FRH/WHO/96.27). *Violence Against Women: A priority health issue* (WHO/FRH/WHO/97.8).

<sup>10</sup> *Annotated Bibliography on Violence against Women: a health and human rights concern*. Commissioned by the Global Commission on Women's Health (WHO/CHS/GCWH/99.2).

against women. For example, WHO has initiated multi-country studies to determine the magnitude and scope of the problem. And INCLLEN has initiated studies on the abuse of children and women within the family. Elsewhere, the Medical Research Council of South Africa has just completed a study on violence against women in three South African provinces. However, there is a need for research both on violence against women by partners and on the broader aspects of violence against women.

Many agencies have been active on specific aspects of the problem, in particular UNIFEM which has supported regional advocacy campaigns. Meanwhile, the International Committee of the Red Cross and UNHCR continue to press for specific action to prevent sexual and other forms of abuse in conflict situations, and WHO has begun to collect evidence on the prevalence and health burden of violence against women. Elsewhere, women's organizations continue to guide and support work in this field in both developed and developing countries.

Violence against women has been discussed at meetings of the Global Forum since 1997. The resulting partnership initiative included the Asian-Pacific Resources and Research Centre for Women, International Women's Health Coalition, Medical Research Council and the Government of South Africa, Rockefeller Foundation, Swiss Agency for Development and Cooperation, World Bank and World Health Organization.

At Forum 3, it was recommended that a consultation should be organized on this issue to bring relevant partners together to discuss the problem and plan future action. A consultation planned for May 2000 will bring together a team of experts and interested parties from both industrialized and developing countries to review a wide range of issues, particularly sexual violence against women.

Based on this review, the meeting will identify gaps and make recommendations on possible intervention strategies and approaches needed to guide future action, including future research needs.

#### **4. Future plans**

The report and recommendations from the consultation will form a useful basis for advocacy and concerted research action. The next steps include the following actions:

- The report will be presented and discussed at the International Conference on Health Research for Development in Bangkok in October 2000.
- Issues for further research will be identified and funds solicited from partners to carry out these studies.
- In order to take account of the regional diversity of the problem, further multi-country studies will be needed using standardized methodologies.
- The initiative will be formally launched and publicized and its modus operandi carefully defined so that the work in this area can be developed further.

## Insert 6.9

### *Consultation on child abuse prevention*

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#### The problem

Injuries, both intentional and unintentional, represent a group of health problems that has been widely overlooked. The *World Health Report 1999* revealed that, in 1998, injuries accounted for an estimated global burden of 222 million cases (16% of the global burden of disease) and that twice as many males as females were affected. About 20% of injuries were due to homicide, violence and self-inflicted injuries. These findings are summarized in the table below.

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#### **DALYs attributable to injuries in low- and middle-income countries in 1998** (*World Health Report 1999*)

Road traffic accidents	16%
Self-inflicted injuries	9%
Homicide and violence	10%
War	11%
Other injuries	54%
TOTAL	<u>100%</u>

The burden of ill-health caused by child abuse represents a significant proportion of the burden of violence. Child abuse is an important, widespread and frequently ignored problem that has been responsible for much suffering among children and adolescents the world over. About 40 million children aged 0-14 throughout the world suffer from abuse and neglect and are in need of health and social care. The issue of sexual abuse of children has been highlighted over recent years by the global upsurge in reported cases involving paedophiles. Children who have been abused may suffer from trauma and other long-term effects of abuse.

At present, there is no standardized way of assessing the magnitude and burden of child abuse. There is also disagreement on an appropriate "cut-off age" for child abuse and on the definition of child abuse, which can take many forms. What little information exists is often fragmentary: data on mortality are available but there are no corresponding data on morbidity, disabilities and other consequences of child abuse; where data exist, they may be incomplete or unreliable; there are no data on the socioeconomic consequences. As a result, there are no data which can be used to formulate a coherent policy to deal with the problem.

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#### Definition of the problem

A consultation in Geneva in April 1999, sponsored by WHO and the Global Forum for Health Research, brought together 27 experts with a wide range of expertise and experience in work on child abuse. The discussions were based, as far as possible, on original scientific studies by participants as well as publications. The aim of the consultation was to:

- obtain a consensus on the definition of child abuse
  - describe contributing factors, health consequences and related costs of child abuse
  - review data collection methods in order to increase accuracy at national and local levels
  - review best practices for the prevention of child abuse and suggest research orientation
  - describe practical steps and concrete actions to be taken.
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## Insert 6.9 (continued)

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Consensus on an acceptable definition of what constitutes child abuse was difficult due to wide variation in cultural practices. However, all definitions of child abuse included two elements:

- the fact that some form of harm had been done to the child
- an interpretation of the responsibility for that harm.

The consultation eventually agreed on the following definition:

**Child abuse or maltreatment constitutes all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power.**

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### The future

The report of the consultation<sup>11</sup> highlights: factors contributing to the persistence of the problem; its prevention; identification of good public health policies and practice to deal with the problem; and data collection methods for future studies. The report also makes detailed recommendations on future courses of action. It stresses the need to develop methodologies for future studies and for WHO and its regional offices to develop strong advocacy and policy to tackle the problem. However, the problem of child abuse goes far beyond WHO's sole jurisdiction and mandate. It is a major issue for all organizations involved in the welfare of children: UNICEF, the International Red Cross, NGOs, policy-makers and bilateral agencies as well as a multiplicity of international bodies. There is a need for global advocacy and concerted efforts, including legislation, to combat this problem. The reports of consultations such as this should be widely circulated to highlight the problem and the issue placed high on the agenda at appropriate forums for discussion.

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<sup>11</sup> *Report of the consultation on child abuse prevention*. WHO, Geneva, March 1999 (WHO/HSC/PVI/99.1). This report is available in English, French and Spanish.

## Section 6

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### Child Health and Nutrition Research Initiative

#### 1. Burden of the problem

In low- and middle-income countries, a few childhood diseases and conditions still account for about 25% of the total burden of disease (in DALYs). Of these childhood conditions, seven out of ten are due to acute respiratory tract infections, perinatal conditions, diarrhoea, malaria and measles. Malnutrition, often overlooked, is both a cause and a consequence of many of these conditions, and overall is believed to contribute to more than 50% of all deaths among children under five in developing countries.

Projections of the burden of these paediatric problems to the year 2020 reflect that, alongside conditions such as acute respiratory tract infections and diarrhoea, the overall pattern may be dominated by chronic noncommunicable diseases and accidents. This reflects the epidemiological transition under way in low- and middle-income countries. However, the projected decrease in the burden of infectious diseases cannot be taken for granted and considerable work is still needed if it is to be achieved.

An analysis of the burden of disease in 1990, expressed in DALYs, arising from important diseases and conditions for children in the age groups 0-4 years and 5-9 years, reveals that:

- among children aged 0-4 years, perinatal conditions, infections and malnutrition are predominant and there is an important

contribution from injuries, especially those occurring in the household

- among children aged 5-9 years, both infections and malnutrition are still the most important problems, with household injuries and road traffic injuries making a substantial contribution to morbidity and mortality. In addition, chronic conditions such as rheumatic heart disease, epilepsy and asthma become increasingly important from this age onwards.

#### 2. Background

At a session on child health and nutrition research at Forum 3 (June 1999), eight papers were presented on topics including health interventions, nutritional interventions, child development, environment and injuries. The Initiative on Child Health and Nutrition Research used the “five-step process” promoted by the Global Forum for priority setting in health research. This process, described in Chapter 2, aims to present systematic information to facilitate comparisons of the relative importance of components of child health and nutrition. For each issue or disease, the following information was presented:

- magnitude of the problem
- determinants and reasons for persistence
- current knowledge base including cost-effectiveness of current interventions
- cost-effectiveness of future interventions
- resource flows for research.

The Initiative on Child Health and Nutrition Research emerged from an expression of interest by participants in Forum 3.

### **3. Rationale and objectives**

The global objective of the initiative is to bring together partners committed to improving child health and nutrition by helping to identify criteria and set priorities for future research in this field. The main aims of this initiative are: (i) to provide a platform to initiate and sustain a debate on analytical work to identify priority research and development activities for child health and nutrition; (ii) identification of, and gearing support, for research activities on child health and child nutrition; (iii) promotion and coordination of priority research within a broad approach to child health and nutrition.

The specific objectives of the initiative are to:

- promote priority research within a broadened approach to child health and nutrition
- expand the database on childhood disease burden and the cost-effectiveness of interventions
- ensure adequate inclusion of developing country institutions and scientists in the setting of priorities and formulation of plans of work in this area
- promote research capacity development in the South for participation in these activities
- encourage donor participation by proposing clearly defined and focused research activities and a plan of action.

### **4. Partners in the initiative**

The initiative brings together the following partners:

- representatives of the scientific communities/universities/research institutions in developing countries

- international research institutions/groups/networks
- WHO programmes
- multilateral and bilateral organizations/UN bodies.

### **5. First meeting of interested parties and future plans**

The Initiative on Child Health and Nutrition Research held its first meeting of interested parties in February 2000. The group explored a wide range of dimensions affecting child health and nutrition. Important in this process was a discussion of the approach and value base of considering healthy child development in a fostering environment. The partners reaffirmed that global efforts to evaluate child health and nutrition research are required to promote action for equitable health development, especially in the developing world.

The discussions led to the formation of two task forces:

- (i) Task force to focus on “Criteria and methods for priority setting in child health and nutrition research”. This includes conducting a review of methodology for setting priorities, evaluating the measurement of child health and nutrition burden of disease, and defining mechanisms to consider child development and risk factors within the priority-setting framework;
- (ii) Task force on “International collaborations and mobilizing funds for child health and nutrition research”. The group will develop a “compendium” of donors and their priorities, conduct a situation analysis of institutions, groups and researchers currently involved in child health and nutrition research, and develop a web site and list serve mechanisms to enhance a global dialogue on this important issue.



## Section 7

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# The availability and accessibility of drugs and vaccines for the poor: the role of the Public/Private Partnerships Initiative<sup>12</sup>

### 1. The problem

Over the past three decades, there have been major advances in immunization coverage rates and overall health care in many low- and middle-income countries. Yet despite this progress, three million children die each year – six children every minute – from diseases that could have been prevented with existing vaccines. Vaccines against hepatitis B and *Haemophilus influenzae* type b were licensed in 1981 and 1990 respectively but are still not widely available in developing countries.

Other major diseases of the developing world, including malaria, TB and HIV/AIDS, are potentially treatable in the longer term. However, scientific obstacles and economic disincentives have resulted in under-investment in medical research for new vaccines and medicines targeted at these diseases.

The reasons are the following:

- The high costs of developing and registering pharmaceutical products, coupled with the prospect of inadequate commercial returns, have resulted in the

withdrawal of the majority of private pharmaceutical companies from R&D investment in tropical diseases.

- The public sector, while maintaining funding of basic science, generally lacks the expertise, mechanisms, and resources to discover, develop, register and commercialize new products.

As a result, the solution has to come from joint undertakings of the public and private sectors (together with reinforced “push” and “pull” interventions on the part of the public sector, as described in part 2 below). In order to have an impact on the health of populations, public/private partnerships should not be limited to the discovery and development of new drugs and vaccines but include the following stages:

- (i) **availability of products:** discovering and developing new drugs, vaccines, diagnostics or other products against “orphan” diseases
- (ii) **accessibility of products to poor populations:** devising strategies that ensure that poor populations have access to existing and new products and services

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<sup>12</sup> This section has been written on the basis of the following documents:

- Roy Widdus, *The Future of Public/Private Partnerships to Improve the Health of the Poor: A Preliminary Analysis*. Paper presented at the Conference “Creating Global Markets for Orphan Drugs and Vaccines: A Challenge for Public/Private Partnerships”, Carmel, California, 18-21 February 2000, jointly organized by the Institute for Global Health (University of California San Francisco and Berkeley) and the Global Forum for Health Research.
- The “Preliminary Consensus Paper” summarizing the conclusions of the Conference “Creating Global Markets for Orphan Drugs and Vaccines: A Challenge for Public/Private Partnerships”, Carmel, California, 18-21 February 2000.

(iii) **assurance of product quality, rational selection and appropriate use.**

## **2. Summary of the tools to improve the discovery, development and delivery of vaccines and drugs needed in the developing world**

An international conference entitled “Creating Global Markets for Orphan Drugs and Vaccines: A Challenge for Public/Private Partnerships” organized jointly by the Institute for Global Health (University of California San Francisco and Berkeley) and the Global Forum for Health Research was held in California in February 2000. The objective of the meeting was to discuss mechanisms to accelerate the development and delivery of vaccines and drugs needed in the developing world. The conference benefitted from previous conferences and seminars held over the past two years on this subject and attempted to summarize and build upon the results of the earlier work.

Participants included representatives from the World Health Organization, World Bank and World Trade Organization, executives from biopharmaceutical companies including Aventis Pasteur, Cadila Pharmaceuticals, Chiron, Glaxo-Wellcome, Hong Kong Institute of Biotechnology and SmithKline Beecham, health officials and corporate leaders from Canada, China, France, India, Indonesia, South Africa and the United Kingdom, staff from the US Congress and the White House, and academics with expertise in global health.

The discussions focused on various tools proposed for the promotion of the availability of drugs and vaccines for developing countries, their accessibility by poor populations, and the assurance of product quality, rational selection and appropriate use. It was recognized that interventions are needed all along the product development

and delivery pipeline. No single model or incentive can solve the problem of underinvestment in diseases of the poor. Many tools will be needed – and some of these tools will need to be individually targeted at specific diseases. The gaps in research, development and delivery efforts must be identified for each of the most needed products, and public and private sectors must work in concert to fill these gaps. Simply increasing foreign aid budgets will not rectify the structural problem of under-investment in the diseases of less developed countries.

The various tools are briefly reviewed below.

### *(i) “Push” interventions by the public sector for the discovery/development of new products*

“Push” interventions reduce the costs or risks of research and development. These interventions include:

- increased funding for research on neglected diseases
- tax credits on research and development
- social venture capital funds
- harmonization of licensing processes: the multiplicity of product licensing procedures in countries creates an obstacle for accelerated delivery of products; the first step in this process would be the standardization of application requirements and administrative procedures
- accelerated approval of drug and vaccine products: delays in approval of drugs and vaccines are of particular concern to industry given the time-limited value of intellectual property rights.

### *(ii) “Pull” interventions by the public sector for the discovery/development of new products*

“Pull” interventions provide support to guarantee markets for products, or subsidize sales.

These interventions include:

- Purchase funds: drug and vaccine purchase funds provide a credible market for

products and act as an incentive for R&D and for the delivery of products once licensed.

- Tax credit on sales: tax credits on sales increase company revenue from the sale of a product destined for low-income countries, thus making these markets more attractive.
- Wider delivery of currently available vaccines: it typically takes at least ten years for a vaccine to reach populations in poorer countries after it has been licensed for use in the OECD countries; wider purchasing and delivery of existing or imminent new vaccines would convince industry of the credibility of other multilateral efforts and have an immediate impact on the public health of communities around the world. For example, *Haemophilus influenzae* type b (Hib) and hepatitis B vaccines are already licensed but not yet widely available in many countries.

A summary of “push” and “pull” interventions is presented in Insert 6.10.

*(iii) Public interventions addressing product quality, rational selection, appropriate supply and use of products*

Insert 6.11 lists the main interventions by the public sector to improve the delivery of health products for the poorer populations, with regard to product quality, rational selection, appropriate supply and use of these products.

*(iv) Public/Private Partnerships (PPPs)*

PPPs can create “win-win” situations for the public and private sectors by combining resources from each to discover, develop or deliver needed products. PPPs are not new: a number of examples can be traced to the 1980s. TDR played a pioneering role in this respect. HRP is another successful example, with the launching of the Concept Foundation in the 1980s to promote the availability of affordable products for developing countries, particularly in the reproductive health field.

More recent examples include the following:

- the Global Alliance for Vaccines and Immunization (GAVI)
- the International AIDS Vaccine Initiative and the South African AIDS Vaccine Initiative
- the Medicines for Malaria Venture
- the International Trachoma Initiative
- commercial pharmaceutical companies have also joined with the public sector internationally and at the country level to combat some of the major diseases of the poor, such as onchocerciasis (river blindness), leprosy, trachoma, drug-resistant malaria and lymphatic filariasis (elephantiasis) through donations of drugs and by supporting the development of delivery systems.

A summary of some of the existing public/private partnerships is presented in Insert 6.12.

*(v) Creating functioning markets*

If both public and private demand in large low- and middle-income countries were adequately expressed, a substantial new market incentive would be created. For example, public purchase of high priority drugs and vaccines for the poorer segments of populations in China, India and Indonesia would represent a market of about 1.5 billion people. Similarly, the large and growing middle class in these countries could exert a substantial private demand if new products were available and their benefits widely known. In addition, in many middle-income countries, a sizeable proportion of the population is covered by social insurance or private insurance. The policies of the insurers, and the benefit packages purchased by employers, have a large impact on demand for children’s vaccines and other products.

## Insert 6.10

### “Push” and “pull” interventions to promote the discovery/development of drugs and vaccines<sup>13</sup>

Push interventions		Pull interventions
<b>To lower costs and risks of research and development</b>	<b>To remove barriers in the development pipeline</b>	<b>To provide incentives for development and manufacture, by creating a market, providing other economic rewards or removing economic deterrents</b>
Basic research funding (from government or philanthropy) Grants for product development R&D tax credits to companies R&D expense write-offs Tax credits to investors Establishment of R&D capacities in endemic situations, e.g. Phase III trial sites Protocol assistance, as per US Orphan Drug Act Support for R&D to identify new indications for existing entities: <ul style="list-style-type: none"> <li>• financial</li> <li>• through mass screening facilities</li> </ul> Consortia (public, private or public/private) <ul style="list-style-type: none"> <li>• “horizontal” – discovery</li> <li>• “vertical” – development/manufacturing</li> </ul>	Regulatory harmonization Expediting regulatory/licensing processes Lowering regulatory fees for specified product categories Simplification (not lowering) of standards Protocol assistance Setting ethical guidelines for conduct of research involving human subjects and/or international collaboration	Improved delivery of existing drugs and vaccines Identification of public health priorities for new projects Product specifications/contingent recommendations for use Recommendations for use (earlier) Market assessments Patent extension Patent “exchange” (extension on another product) Market exclusivity Prizes (for first to meet specified product characteristics) Market “assurances” <ul style="list-style-type: none"> <li>• purchase funds</li> <li>• contingent loans and credits</li> <li>• minimum price guarantee</li> <li>• “cost-plus” formulas</li> <li>• requisition to buy</li> </ul> Legislation on product liability litigation

<sup>13</sup> Roy Widdus, *The Future of Public/Private Partnerships to Improve the Health of the Poor: A Preliminary Analysis*, op.cit.

## Insert 6.11

### *Public interventions addressing product quality, rational selection, appropriate supply and use of products by poorer populations<sup>14</sup>*

Interventions addressing product quality, rational selection and appropriate prescription and use	Interventions addressing supply/logistics	Interventions addressing economic factors
<p><b>Assurance of quality</b> Strengthening national regulatory agencies and their enforcement capacities</p> <p>Implementation of measures against counterfeit and ineffective medicines</p> <p><b>Rational selection</b> Designation of national “essential” drugs lists</p> <p>Identification of optimal formulations/packaging</p> <p>Ethical criteria for drug promotion</p> <p>Consumer education</p> <p><b>Use</b> Training in appropriate use</p> <ul style="list-style-type: none"> <li>• prescribers</li> <li>• dispensers, drug sellers</li> <li>• patients and community</li> </ul> <p>Consumer education</p> <ul style="list-style-type: none"> <li>• compliance/adherence</li> </ul> <p>Regulation of drug and vaccine provision through private providers and monitoring of compliance (NB private-sector distribution in many countries at 50-90% of markets)</p> <p>Monitoring consequences of misuse, e.g. antibiotic resistance, and educating on its dangers</p> <p><b>Consumer knowledge and health behaviour</b> Consumer education</p>	<p><b>Reliable sources of supply</b> Preparation of demand/uptake estimates for global needs, to predict and coordinate necessary production capacity</p> <p>Requirements</p> <p>Training in preparation of demand estimates at national level</p> <p>Multi-year predictions/contracts</p> <p>Training in procurement procedures (to secure fair prices)</p> <p>Brokering by international organizations between potential suppliers and “consumers” to ensure reliable supply</p> <p>“Local” manufacturing</p> <p><b>Availability at point of use</b> Market consolidation (bulk procurement) to facilitate supply to previously unserved populations (e.g. UNICEF, PAHO procurements)</p> <p>Training in design/management of distribution systems</p> <p>Expand pharmacy services in rural areas</p> <p>Contracting for private-sector delivery systems</p> <p>Knowledge and health-seeking</p>	<p><b>Resources</b> Allocation of adequate government financial resources</p> <p>Market segmentation (for procurement for poorest countries) and price-tiering by suppliers</p> <p>Targeting of public financing to neediest</p> <p>Cost-recovery schemes</p> <p>Cost-sharing schemes/insurance</p> <p>Advocacy to policy-makers particularly on value of prevention</p> <p>Social marketing to “consumers”</p> <p>Debt relief, loan contingencies</p> <p><b>Cost</b> Tax credits to encourage donations by industry</p> <p>Support for new methods to lower production costs</p> <p><b>Pricing policies and controls</b> Encourage generic drug use/competition</p> <p>“Compulsory” licensing (innovation may be inhibited)</p> <p>Parallel importation (innovation may be inhibited)</p> <p>Government price controls (innovation may be inhibited)</p> <ul style="list-style-type: none"> <li>• cost-plus</li> <li>• reference pricing</li> <li>• profit/return on capital</li> </ul> <p><b>Price at point of use</b> Elimination of import taxes</p> <p>Reduce distribution margins that increase consumer prices (by up to 80%)</p>

<sup>14</sup> Roy Widdus, *The Future of Public/Private Partnerships to Improve the Health of the Poor: A Preliminary Analysis*, op.cit.

However, policy reform, better information and improved performance of health-care systems are necessary before these markets will become globally significant and play a major role in industry investment decisions.

### 3. Recent national and international efforts

Recent national and international efforts to increase the resources flowing into health research against “orphan” diseases include the following:

- The World Health Organization and the International Federation of Pharmaceutical Manufacturers' Associations (IFPMA) have formed a “round table” for discussions focused on the availability of, and access to, needed medicines and global health-care delivery.
- The World Health Organization Commission on Macroeconomics and Health (Working Group II) brings together participants from industry, the World Bank, WHO and research institutions to discuss the economics of incentives for new vaccines and product development.
- The World Bank is considering the creation of an International Development Association (IDA) credit for purchase of drugs and vaccines in less developed countries and other poverty-oriented, basic health measures.
- The European Union has recently passed orphan drug legislation. Modifications of this legislation in Europe and other countries could provide incentives for research on priority products for developing countries.
- The fiscal year 2001 Budget Proposal by the US President includes increased funding for research on the prevention and treatment of major tropical diseases and HIV/AIDS. In addition, the US Congress is discussing a package of incentives for research on the prevention and treatment of malaria, TB and HIV/AIDS.

- Japanese pharmaceutical companies, working with the World Health Organization and Japan's Ministry of Health and Welfare, have launched a new partnership to identify potential drugs against malaria.
- Countries in Southern Africa are studying how bulk purchasing and harmonization of product licensing in the region can accelerate and expand product delivery.

### 4. Efforts by the Global Forum for Health Research: Initiative on Public/Private Partnerships

From the outset, the Global Forum has paid significant attention to providing opportunities for exchange of views on the issue of public/private partnerships among industry, multilateral and bilateral agencies, governments, NGOs and foundations. Over the past few years, it has worked with its partners to help nurture the International AIDS Vaccine Initiative (IAVI) and the Medicines for Malaria Venture (MMV).

On the basis of these initial experiences, the Global Forum and its partners decided to support, with financing from the Rockefeller Foundation and the World Bank, a Public/Private Partnerships Initiative to gather information on existing partnerships and promote the development of new partnerships. The secretariat of this initiative, headed by Roy Widdus, is located in the Secretariat of the Global Forum and started its operations in May 2000.

Its specific tasks are the following:

- (i) *Assessment of public/private partnerships*
  - drawing up an inventory of PPPs and mapping their origins, objectives, partners, institutional arrangements, financing and results
  - identification of pre-requisites for productive dialogue

- identification of “best practices” for effective PPPs by category
  - assessment of “demand” for additional information
  - establishment of a project advisory group with the participation of public and private sector representatives.
- (ii) *Facilitating the exchange of information and the development of new partnerships*
- identifying gaps in existing information exchange systems for “orphan” diseases
  - preparation of an inventory of biotechnology and pharmaceutical companies, with particular efforts to include those outside the OECD countries
- creation of an internet “orphan diseases portal”, comprising links to existing sites, databases and directories related to product development for orphan diseases
  - assessment of prospective target audiences (e.g. industry, researchers in developing countries), technologies and resource needs for information dissemination.

Initial activities got under way in early 2000 and will be closely coordinated with the efforts of the Global Forum partners.

## Insert 6.12

### *Examples of existing public/private partnerships to improve access to drugs and vaccines by poorer populations*

Health targets	Products	Partners
Infectious diseases	Vaccines	Global Alliance for Vaccines and Immunization (GAVI)
HIV/AIDS	HIV vaccines	International AIDS Vaccine Initiative (IAVI)
	Anti-retrovirals	UNAIDS/Industry Programme (Glaxo-Wellcome and others)
Onchocerciasis	Mectizan Program (Ivermectin)	Onchocerciasis Control Program/ Mectizan Donation Program (Merck)
Malaria	Malarone Programme (Atovaquone-proguanil)	Malarone Programme (Glaxo-Wellcome)
	New malaria drugs	Medicines for Malaria Venture (MMV)
	New malaria drugs	Japanese Pharmaceutical Manufacturers
	Artemesin derivatives	Rhone-Poulenc Rorer (China)
	Insecticide-treated bednets	Public/private partnerships at country level for treated bednet marketing
Trachoma	Zithromax (zithromycin)	International Trachoma Initiative (Pfizer)
Tuberculosis	TB drugs	Action TB (Glaxo-Wellcome)
Lymphatic filariasis	Albendazole	Global Programme to Eliminate Lymphatic Filariasis (SmithKline Beecham)
Leprosy	Multi-drug therapy for leprosy	Global Alliance to Eliminate Leprosy (Novartis)
Dranunculiasis (Guinea worm)	Textile filter material donation	Guinea Worm Eradication Program (Dupont)
Dengue	Dengue vaccine	Mahidol University and Aventis-Pasteur
Schistosomiasis	Praziquantel	Schin Poong Pharmaceutical Co. and Korean Government
Reproductive health	Contraceptives	Joint UNFPA/industry initiative to expand access to contraceptives through commercial markets
	Various products	Concept Foundation, Bangkok



# Chapter 7

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## **Capacity development for health research**

### *Section 1*

*What is research capacity development?*

### *Section 2*

*Pre-conditions for success*

### *Section 3*

*Progress made in 1999*

### *Section 4*

*The rationale for research capacity building*

### *Section 5*

*Research capacity for what?*

### *Section 6*

*Research capacity for whom?*

### *Section 7*

*Assessing the outcomes of research capacity development*

### *Section 8*

*The future*

## Summary

Over the past three decades, many of the partners of the Global Forum have been involved in training and research capacity development in developing countries. However, despite many attempts at evaluation, suitable indicators have not yet been developed to measure success. Chapter 7 outlines the discussion at Forum 3 on evaluation reports of research capacity development by two WHO programmes and a more detailed one by the Wellcome Trust, which focuses on capacity development for malaria research in Africa. The chapter concludes with a presentation of impact indicators (mainly process indicators) that can be used to monitor future successes in research capacity development.

## Introduction

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The *10/90 Report on Health Research 1999* described the concerted efforts made by partners over the past three decades to strengthen research capacity in developing countries. This was achieved by training scientists and providing them with the appropriate institutional set-up for their work. Some of the lessons learnt from the limited evaluation carried out were described in that report. The report pointed out that success depends on a number of key factors including:

- the careful selection of young motivated trainees
- the appointment of capable scientific leadership to head the national research institution(s)
- continuity of research funding, including the availability of start-up research funds for young returning trainees
- an enabling environment for good research in the national institution
- good infrastructure and equipment in the institution (communication facilities; stable service conditions for the scientists, adequate remuneration); and scientific linkages to other (stronger) institutions, especially in the North and the South.

Today, there is an increasing need for emphasis on outcomes and results in order to justify the investments made. This calls for the further development of robust indicators that can be applied to review the success or otherwise of capacity development in low- and middle-income countries. One of the roles of the Global Forum is to support these efforts, given their very important contribution to correcting the 10/90 gap.

## Section 1

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### What is research capacity development?

**Research capacity development is the process by which individuals, organizations and societies develop abilities (individually and collectively) to perform functions effectively, efficiently and in a sustainable manner to define problems, set objectives and priorities, build sustainable institutions and bring solutions to key national problems.**

This definition, adapted from one given by the United Nations Development Programme (UNDP)<sup>1</sup>, emphasizes the three aspects critical to research capacity development. The first is the individual researcher, the primary actor of capacity development. In order to acquire knowledge, he/she needs to acquire the techniques and competence to do research. The second is the institution in which the researcher will operate. This is where the enabling environment for research must be provided. The institution must have the appropriate infrastructure as well as equipment and supplies for research. The third, often overlooked, is the central administration itself, its organization and mode of operation.

This is the policy level where decisions are taken and policies formulated on the importance of research in the country, its conduct and the use of research findings. At the policy-making level, both disease control

and health care managers need technical competence to absorb the results of research and translate them into policies. The policy-maker must also know when there is a need for new evidence for decision-making. Together, these three form the basis on which countries and their populations can build the technical capacity to solve their own health problems.

The proposed definition of research capacity development takes into account this inclusive broad view of what constitutes capacity development. It also implies that capacity development is a dynamic state with a number of characteristics:

- It is an ongoing learning and teaching process within an ever-changing environment that involves individual researchers, their institutional environment, the policy-makers and the people who are the end-users of the research capacity that has been developed.
- It leads to empowerment of individuals and organizations with skills and know-how to perform certain tasks and activities to solve their national problems in the spirit of self-reliance.
- It requires the use of systematic approaches in devising capacity development strategies and programmes at the individual and institutional levels.

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<sup>1</sup> UNDP Technical Advisory Paper 2, Aug 1999

- It requires strong political commitment to design the process of developing research capacity, introduce the necessary changes to establish this and the will to take evidence-based decisions.

Research capacity development should be based on clear goals and priorities and build on what exists as a springboard for the future.

## Section 2

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### Pre-conditions for success<sup>2</sup>

Successful outcomes of research capacity development depend on a number of pre-conditions being met by the host country:

- The country must have identified its key health problems and drawn up its priority research plan for the implementation of which it requires appropriate capacity development.
- It must have development of research capacity within its national development plans.
- There must be a career structure for researchers as well as adequate remuneration commensurate to the work and status of researchers.
- There must be adequate infrastructure, equipment and supplies including communication facilities and a favourable environment in which the researchers will work.
- There should be a transparent recruitment process for researchers with an emphasis on the selection of young talented individuals within a long-term career structure.
- The training must focus on the key problems of the country. Experience has shown that training through research and training in collaboration with strong partners are among the key criteria for success.
- The availability of funds to enable the returning trainee to become immediately operational is also key: there must be start-up and operational funds available in the institution.
- The scientific leadership of the research institution must be responsive to the research needs of the country and should provide an enabling environment for good research.
- There should be a critical mass of scientists backed up by good technical staff and a good *esprit de corps*.

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<sup>2</sup> Based on discussions at Forum 3 (June 1999) and the Prospective Thematic Review of TDR Research Capability Strengthening, November 1999.

## Section 3

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### Progress made in 1999

During Forum 3 (June 1999), the UNDP/WHO/World Bank Special Programme for Research and Training in Tropical Diseases (TDR) and the UNDP/UNFPA/WHO/World Bank Special Programme for Research and Research Training in Human Reproduction (HRP) presented the results of recent evaluations of their research capability strengthening activities. Over the past three decades, these two programmes have, between them, been responsible for developing extensive research capacity in institutions across the developing countries in Africa, Asia and Latin America. They have also supported the development of a large number of institutions in developing countries.

TDR emphasized the following key factors as contributing to success:

- early identification of trainees
- use of the “learning by doing” approach in training
- training at the cutting edge of science
- recognition of the importance of partnerships in training
- re-entry grants as a strong incentive for encouraging trainees to return and establish independent research in their home countries, thus helping to discourage the “brain drain”.

The presentation by HRP focused on their efforts in the following areas:

- development of large networks of developing country institutions involved in research training in reproductive health globally and nationally
- use of re-entry grants as an incentive to encourage and facilitate the return of trainees to their home institutions on completion of training.

Insert 7.1 shows the outcomes for research capacity development efforts on the part of TDR and HRP.

The increase in the number of trainees as well as the increased efforts in research capacity development in low- and middle-income countries are intended to improve the technical ability of countries to compete successfully for research funds to solve the health problems of their people and thereby help correct the 10/90 gap. A summary of the documents presented by both programmes is shown in Inserts 7.2 and 7.3.

## Insert 7.1

### *Outcomes of research capacity development efforts<sup>3</sup>*

	TDR	HRP
Capacity to provide good training locally	+++	+++
Scientific output	+++	+++
Training in biomedical and clinical research	+++	+++
Uptake of research results by control officers	++	++
Training in health systems and policy research	+	+
Gender balance	++	++

#### The above table reveals that:

- Both programmes greatly increased their capacity to train at the local level. The beneficiary institutions are now the centres of training within their respective countries. Local training is preferred over training institutions overseas because of its local relevance. However, both programmes still retain the possibility of providing overseas training in more advanced institutions to learn techniques unavailable locally.
- Training in health systems and policy research and in health economics is still at an unacceptably low level and constitutes one of the training gaps.
- Gender balance in training is gradually improving. The number of training grants awarded in 1997 was 44% female in TDR and 43% female in HRP.

<sup>3</sup> Summarized from the presentation made by TDR and HRP at Forum 3, June 1999.

## Insert 7.2

### ***Research capacity building in developing countries is cost-effective and relevant to national needs: the experience of HRP<sup>4</sup>***

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HRP bases its activities on strong partnerships with collaborating institutions from both developed and developing countries. In developing countries, the focus has been on research capacity building. An important underlying premise is that research capacity building is not an end in itself but an important means of contributing to the ultimate goal of improving the reproductive health status of developing country populations. One of the major objectives of HRP's capacity-building efforts is to create and strengthen a critical mass of human resources in developing countries, capable of planning and implementing research projects that address national reproductive health needs. Research training grants awarded by HRP to scientists from developing countries are always linked to institutional-strengthening programmes in pre-selected institutions. Grants are not offered on a competitive basis, on the assumption that there is necessarily a selection process by the institutions themselves. A follow-up study was undertaken in 1996-1997 of individuals who had completed HRP-supported training programmes of more than three months between January 1988 and December 1996. These individuals should additionally have spent at least two years in their country of origin following completion of the training programme. Data was collected by means of a questionnaire mailed to all those eligible and by using the research training database available within HRP.

A total of 516 Fellows received training grants during the nine-year period, a large proportion of them from the Asia/Pacific region (65%). About 93% of all Fellows returned to their home country after completing training abroad. Linking training to institutional development is probably an important contributory factor to this high rate of return. Female trainees accounted for 42% of those trained. However, there were significant regional variations, ranging from 15% of women from the African and eastern Mediterranean regions to approximately equal proportions of men and women from the Americas (52%) and from the Asia Pacific region (45%). The under-representation of women benefiting from grants in the African and eastern Mediterranean regions has not changed over the past 30 years. The present level of 15% female trainees is comparable to that of the 1960s and 70s. In the eastern Mediterranean region, the gender disparity is due to the low level of female education in many countries. Although this is being corrected, significant changes will only become evident in the next decade.

There are differences in research training facilities within and between the regions. In the Americas, 58% of Fellows were trained in Latin American centres and in the Asia/Pacific region 51% undertook training programmes in regional institutions. However, only 4% of those from Africa and eastern Mediterranean received training within the region. Efforts are urgently needed to support academic institutions in these two regions in order to reduce this scientific dependence.

The large proportion of trainees in basic and clinical research (47%) reflects the predominant biomedical orientation of the Programme up to the early nineties; the emphasis has gradually shifted over the past five years to include an increasing proportion of epidemiological and social sciences research.

About half of all trainees who returned to their home country were still at their home institution and spent more than 50% of their time in research activities. In addition, 58% of them had been promoted.

However, scientific productivity did not increase proportionately. Less than half of all ex-trainees had published a scientific paper in an international or national journal during the post-training period. The reasons for this were varied but included the lack of active support for the preparation of the protocol and the lengthy duration of the scientific and ethical review process for proposals.

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<sup>4</sup> Enrique Ezcurra, WHO Department of Reproductive Health. Presentation at Forum 3, June 1999.



## Insert 7.2 (continued)

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Among the more established scientists in the institutions, the publication record was high. There were 2198 publications in 1996-1997, of which 845 were original articles. However, this high publication record has not been matched by a high uptake of research results by policy-makers, a critical link that needs further exploration. Qualitative case studies are being prepared for in-depth evaluation of failures in which determinants and trends could contribute to a better understanding of the process and impact of research capacity building.

The 58 developing country collaborating institutions supported by HRP in the 1996-1997 biennium provided training for some 14,000 individuals worldwide. The largest proportion (53%, 7461) were trained in institutions in the Asia/Pacific region, which has the largest number of collaborating institutions as well as some of the world's most populous countries. The institutions in Africa and the eastern Mediterranean region trained the lowest number (12%). This underscores the need to further assist countries from that region to build up a critical mass of in-country expertise in reproductive health research.

The preliminary findings presented in this paper support the view that research capacity building is a cost-effective and much needed strategy for developing country institutions to address reproductive health problems. Total HRP investment amounted to about US\$5 million over a two-year period in 58 institutions in developing countries. This investment has proved to be cost-effective – acting as a catalyst for 513 projects, over 2000 scientific publications and the training of almost 14,000 local resource people. However, HRP does not, and cannot, claim credit for all the results of the institutions being strengthened, as other international and national agencies have also actively contributed to this major partnership effort.

There have been major policy changes as a result of this assessment. Greater emphasis is now being placed on supporting networks of centres involved in regional research initiatives, in linking capacity-building grants to specific research proposals and in assuring that national and regional research proposals are responsive to priority reproductive health problems at the country or regional level. An important challenge for the future is to devise capacity-building strategies for centres in the least developed countries and to coordinate research implementation at country level with technical support activities that facilitate the application of research findings. Increased interaction and cooperation with national governments and organizations as well as with other international agencies active at country and regional level will remain a critical component of HRP's capacity-building strategies.

## Insert 7.3

### *Assessment of TDR's research capability strengthening, 1990-97<sup>5</sup>*

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Over its 25-year history, TDR's Research Capability Strengthening (RCS) programme has awarded over 2500 grants to scientists in over 80 developing countries at a total cost of over US\$117 million. Within the major RCS grant formats, this includes 1044 Research Training Grants, 290 Re-entry Grants, 266 Institution Strengthening Grants and the funding of almost 130 training workshops.

An assessment of TDR's RCS activities was undertaken in 1998 using mainly process and outcome indicators. Data was compiled on all TDR-funded PhD graduates from 1991-1997, a total of 131. The review included: the registry files of all re-entry grants awarded between 1992-1995 and completed between 1994-1997; institution-strengthening grants awarded and completed between 1990-1997; and ongoing institutional grants already funded for at least three years. In total, 131 PhD research training grants were reviewed, including 51% from Africa; 30 Re-entry Grants, including 19 from Africa; and 25 Institution Strengthening Grants. TDR's research training grants are awarded on a competitive basis to nationals of developing countries who are working in their own countries and who have research interests in one of the TDR target diseases. The grant is to enable the young grantee to receive training leading to a postgraduate degree. This training may take place in his or her home country, in another developing country or abroad. The proportion of female trainees started off low (only 29 % in 1990) but has rapidly increased and was 44% in 1997. In 1998 it fell to 37.9% and in 1999 it was 33.6%. There was no apparent reason for this drop in 1999 except that there were relatively fewer female applicants for these competitive training grants in 1999. The return rate of trainees to their home institutions remains high (over 95%), a trend that has been monitored by WHO.

The review, involving a Medline search through the Internet (PubMed), revealed that the majority of PhD graduates (60%) published more in the post-grant period than during the pre-grant period, and continue to publish. The training focused more on disciplines related to field research than during the previous ten-year period. This shift was to take account of the growing needs of field-oriented research. However the number of trainees in social sciences (including economics) remained modest (only 10 in all). The rate of non-return of trainees to their institutions remained low (less than 5%).

The Re-entry Grants, which allow promising new graduates, whether TDR-funded or not, to establish new independent research laboratories in their home countries, were clearly shown to be an effective mechanism for transferring modern technology and methods to research groups in developing countries. They also provided additional opportunities for research training.

Partnership grants linking institutions and scientists in the South to those in the North proved to be an outstanding success. Scientific productivity was exceptionally high, resulting in large numbers of publications in international, peer-reviewed journals. There was a substantial increase in capacity building, including advanced training of large numbers of graduate students without additional cost to TDR. The grants also proved effective in integrating trainees into cutting-edge science early in their careers.

Other findings from this review showed that there have been major policy shifts in the recent past, which are now bearing fruit. In addition to the gender imbalance which is gradually being corrected, there is now more training in the epidemiological and behavioural sciences. There is also more local training (increasing from 18% in 1993 to 60% in 1997) and a greater focus on training individual researchers as opposed to simply building institutions.

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<sup>5</sup> Summarized from a presentation made at Forum 3 (June 1999) by Steven Wayling, WHO/TDR/RCS, Geneva.

## Insert 7.3 *(continued)*

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The review, as conducted, provides an assessment of individual grants and grant formats. It relies on process and outcome indicators but without being able to assess the impact on disease prevention and control – especially the application of research findings and the influence of research on related policies. While the review leads to positive conclusions, the impact (or difference made) is difficult to document and requires further consideration. However, the RCS programme operates well, its trainees graduate, investigators publish and there is appropriate technology transfer.

TDR believes that its RCS programme is on the right course. Studies by the Wellcome Trust (1999) and additional reviews presented to the 3rd External Review show that developing countries have clearly benefitted from TDR's capacity-building activities. Over the past decade, scientific knowledge and techniques related to tropical disease research have advanced dramatically. Much of this knowledge has come from research in developing countries. More importantly, there is a growing ability within these countries to make use of this knowledge. Although TDR cannot take all the credit for these successes, it has helped contribute to it through its partnership role.

TDR plans to carry out more impact studies in the future and to refine indicators that can be used to assess the impact of capacity development. The programme also plans to intensify capacity development in the poorest countries, particularly those that have never benefitted from TDR support. This will be partly achieved through increasing training opportunities in the developing countries and encouraging the development of more North-South partnerships.

## Section 4

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### **The rationale for research capacity building**

There is a need for developing countries to have the capacity to deal with their own health problems – underscored by the current emphasis on evidence-based decision-making. Individuals and groups need appropriate training to enable them to acquire the skills, knowledge and competence to respond to national and local health problems. At present, there is a mismatch

between the burden of disease and health problems and the technical capacity of developing countries to make use of existing knowledge or generate new knowledge to combat this. Research capacity development is concerned with ensuring that countries have the potential to deal with their own health problems through evidence-based decision-making.

## Section 5

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### **Research capacity for what?**

Research capacity development programmes should start with a critical assessment of the disease burden in the country and draw up a realistic list of priority research topics to deal with this. The purpose for which the research capacity is being developed should then be clearly stated. This could be, for example, to build up a group of highly trained scientists and professionals to work together as a team in carrying out research in one of the priority areas. The outcome of this research would be used to deal with the particular health problem of the country. Without this focus, people would be trained, organizations built and institutions strengthened with no clear purpose in mind. It is important for policy-

makers and health leaders to articulate precisely the visions and goals to which the newly developed capacity will be directed. The aim is to avoid building empty laboratories and facilities. Research capacity development must be responsive to the needs of the country and its entire population. This involves a shift away from empiricism and ad hoc decisions based on common sense to evidence-based approaches. Finally, research capacity development is intended to ensure that research capacity exists to generate the data needed for evidence-based decision-making at central, regional and district levels of the health system.

## Section 6

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### Research capacity for whom?

Research capacity development is influenced by more recent and deeper dynamics in society, including efforts to determine exactly where research capacities should be located and for whom. Governments and policy-makers today are grappling with the need to create appropriate enabling environments for development and to organize their services to meet the needs of their people. This often requires having to make hard choices in the face of competing priorities. For this, they need suitably trained people to generate the data, submit the results in an appropriate form, translate the results into policy and implement these decisions. There is also increasing realization that governments are not the only source of development. The role

of communities, the private sector and NGOs also has to be taken into account.

Research capacity development requires strategic and holistic thinking and approaches if it is to respond adequately to varying country needs. And it must also ensure equity and gender balance. Countries need to determine who actually needs capacity (the state, civil society or the private sector) for the different tasks to be performed. They must also ensure capacity for deployment at the regional and district levels as well as the central level. This is at the very heart of the concept of Essential National Health Research and its three defining characteristics: equity, multidisciplinary and inclusiveness.

## Section 7

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### Assessing the outcomes of research capacity development

Research capacity development has been under way for nearly three decades and there is a need to assess the results and determine whether the methods used are producing the expected outcome. Counting the numbers and disciplines of trained scientists is one way of quickly assessing the strength of an

institution, using a process indicator. This can be further enriched by information on their deployment as multidisciplinary teams for large research projects. Studies of the type presented at Forum 3 by TDR and HRP are designed to assess these.

Publications, another process indicator, are vital in ascertaining the scientific productivity of scientists. A presentation on this<sup>6</sup> and extensive discussions at Forum 3 highlighted some key features of publication that can be used to measure the success of a trainee and his/her institution:

- Publication in peer-reviewed journals attests that the articles have been judged to be of high scientific quality. This is a positive reflection on the calibre of the scientist. However, developing country scientists have limited possibilities to publish, and even less if they do not speak English.
- Publications citing a particular scientist as the first author are evidence of originality in thinking on the part of the scientist and of his ability to lead a team to do the work that has been published.
- The number of times citations have been made of the article by other scientists is an indication of its relevance and quality.
- The number of times the results of studies are cited in ministry of health plans of action is a clear indication of the relevance of the study in the national context.
- Research funds obtained by the trainees in the form of competitive grants won is a good indicator but is again biased towards English speakers who have greater access to external funds.

Discussions on the importance of publications were based in part on the preliminary results,

presented at Forum 3, of a study that had been conducted in Africa by the Wellcome Trust.<sup>7</sup> The study was a comprehensive assessment, both quantitatively and qualitatively, of research capacity for malaria research in Africa. The study analysed malaria publications in Medline and science citation index databases (1995-97) to identify the most productive countries and centres, collaboration patterns and funding sources. The study also analysed research literature cited in African malaria treatment guidelines and policies. The analyses showed that African scientists and institutes make a major contribution to international malaria research: over 17% of global publications included an address in Africa. However, it was not possible to determine how many of these were Africans and how many were expatriate researchers based in Africa.

Another key indicator of success in capacity development is the ability of the scientist and the institution to compete successfully for competitive grants. There are periodic calls for letters of intent or of full proposals for prestigious grants by different institutions (Fogarty International Center, the European Commission, TDR, the US National Institutes of Health and the Wellcome Trust). Scientists and institutions obtaining these grants are highly regarded. Another indicator that is still uncommon, but should be encouraged, is the number of studies commissioned by the disease control services of the ministry of health.

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<sup>6</sup> Measuring success in research capacity building: INCLLEN as a case study in progress. Presentation at Forum 3 (June 1999) by David W. Fraser, Executive Director of INCLLEN. Available from the Global Forum's website [www.globalforumhealth.org](http://www.globalforumhealth.org)

<sup>7</sup> P. Beattie, M. Renshaw, C. Davies, Strengthening scientific research in developing countries: A study of malaria research capacity in Africa by the Wellcome Trust on behalf of the Multilateral Initiative on Malaria, 1999.

## Insert 7.4

### Evaluation criteria and potential indicators of impact for research capability strengthening in disease-endemic developing countries<sup>8</sup>

	Individual	Institutional	National	Global
<b>Impact RCS</b>	Incorporation of research results in policy documents and country programmes Incorporation of individual into policy-making bodies at national, regional, global level	Cumulative (individual) involvement in national, regional, global level policy-making bodies Incorporation of institutional representatives into national policy-making bodies (consultations)	Implementation of policy at national level Budget allocation for research and continuity over time (% GNP)	Implementation of evidence-based policy at regional, global level
<b>Outcome RCS</b>	Publications: national, international Citation index Grants: number, magnitude, diversity of source Trainees, undergraduate, postgraduate, % women Collaboration with established international groups Awards Tools/patents Collaborative projects	Total number of publications and citation frequency over time Number of national, regional, international trainees International grants: number, diversity, magnitude and over time Participation in inter-institutional networks Proportion of projects that are inter- or trans-disciplinary Denominator of total funding from TDR Number of and role in collaborative projects; proportion of projects that are collaborative	Product Policies Tools Introduction of health-improving instruments Evidence (research results) for policy development Institutionalization of guidelines	Product Policies Tools Introduction of health-improving instruments Evidence (research results) for policy development
<b>Process</b>	Success in training Reintegration to home country over time Promotion record	Number of funded activities and level of funding: 1. local (state) 2. national 3. regional 4. international Number of functional research groups Number of principal investigators within supported centre (conducting independent externally funded research) TDR total support over time	National commitment to research Existence of national research council Research included as line item in national budget Contribution to TDR diseases	Regional networks to achieve TDR research goals

<sup>8</sup> Conclusions of the Prospective Thematic Review of TDR Research Capability Strengthening, November 1999.

## Section 8

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### The future

**It is now widely recognized that research capacity development is a long-term effort that is not amenable to short cuts and quick results.** However, funders are anxious to get results and confirmation that their investment has been worthwhile. The need to identify a wide range of indicators for measuring the impact of research capacity development has become a priority.

Success in capacity development could be assessed at three levels: the individual, the institutional and the national.<sup>9</sup> This would test a wide range of indicators related to scientists and their skills (the individual level), the institutional capacity to support good research (the institutional level) and policy-makers who have to use and apply the results (the national level). For example it should be possible to question policy-makers on how often they have commissioned research to provide the evidence base for decisions. They should also be able to indicate policy changes made as a result of the findings of research. This kind of evaluation would entail a multilevel framework for assessing the outcomes of research capacity strengthening. For each level, the elements to be measured could be stated and the indicators to be used identified.

A suggested framework and some key indicators are shown in Insert 7.4. They were developed during a TDR workshop held in Geneva in November 1999, where it was widely agreed that evaluations should take place at the three levels mentioned in Insert 7.4.

TDR is considering incorporating this kind of format for project evaluation in their proposal forms to facilitate prospective data collection. The indicators proposed will be further pre-tested retrospectively in order to ensure relevance and internal consistency. The Global Forum will continue to work with its partners to refine these indicators. The results of these studies will give a clearer picture of the reasons for failure and success and will be presented at the annual meetings of the Global Forum.

In time, capacity development will succeed in establishing the core of trained people needed in developing countries to do cutting-edge research and play their part in the global research agenda, thus contributing to the correction of the 10/90 imbalance.

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<sup>9</sup> Unpublished manuscript by Jonathon Simon, of the Harvard Institute for International Development. Draft document, October 1999.



## Annex 1

### Global Forum for Health Research

#### *Statutes of the Foundation*

#### Section I – Name, Headquarters and Duration

##### *Article 1: Name*

Under the denomination 'Global Forum for Health Research', a Foundation is hereby established in accordance with Article 80 and following of the Swiss Civil Code and on the basis of the present Statutes. This Foundation is placed under the ordinary supervision of the Supervising Authority of the Federal Ministry of the Interior in Berne.

##### *Article 2: Seat*

The 'Global Forum for Health Research', hereinafter called the Foundation, will have its seat in Geneva, Switzerland.

##### *Article 3: Duration*

The duration of the Foundation is unlimited.

#### Section II – Objectives, Activities and Capital

##### *Article 4: Objectives*

The overall objective of the Foundation is to bring partners together to help focus research efforts on the health problems of the poor through an improvement in the allocation of research funds, support of better priority setting processes and methodologies, promotion of relevant research, support for concerted efforts in health research and dissemination of the research findings.

The specific objectives of the Foundation are as follows :

- a) Facilitate the exchange of ideas and the undertaking of concerted efforts among partners by organizing at periodic intervals Forum Meetings of interested Parties.
- b) Keep informed and exchange information and knowledge about the prioritization efforts in health research and contribute to these efforts in an appropriate way.
- c) Support concerted efforts in pursuit of the Foundation's global objective between various actors in the health research field (governments, multilateral development agencies, bilateral development agencies, foundations, international NGOs, women's organizations, research-oriented bodies, private commercial enterprises).

- d) Stimulate the dissemination of essential information in support of the Foundation's global objective.
- e) Contribute to the mobilization of resources for health research in line with the Foundation's global objective.
- f) Take all actions it will judge appropriate in the pursuit of its global objective.

**Article 5: Capital**

The Foundation capital amounts to US\$ 1 million. The Foundation capital is open to further contributions by the same donors or other Parties.

**Section III – Organization**

**Article 6: Organs of the Foundation**

The organs of the Foundation are the following:

- The Foundation Council.
- The Secretariat.

**Article 7: The Foundation Council**

7.1 The Foundation Council is composed of a maximum of twenty members selected from the various constituencies referred to in Article 4(c) above. The Foundation Council constitutes itself and elects its members. In particular, it elects its Chair. It is convened and presided over by the Chair of the Foundation. It meets twice a year in normal sessions.

7.2 The Foundation Council may make decisions when the majority of its members are present or represented. Except as otherwise provided in the present Statutes or in the By-Laws, the Foundation Council makes its decisions by simple majority of the members present or represented. In case of equality of votes, the voice of the Chair is determining.

**Article 8: Duties and Powers of the Foundation Council**

The Foundation Council is the highest policy and decision-making body of the Foundation. The Foundation Council delegates to the Secretariat the management functions which are not reserved to the Council by law, the present Statutes or the By-Laws. The Foundation Council has in particular the following duties and powers:

- a) Act on behalf of the Foundation and take all such action as is deemed necessary in the pursuit of the Foundation's objectives.
- b) Establish the By-Laws of the Foundation.
- c) Appoint the Chair, the other members of the Foundation Council, the Executive Secretary and the auditors.
- d) Establish the policies and principles followed by the Foundation.
- e) Adopt the Workplan and the Budget of the Foundation.
- f) Approve the annual report and audited accounts of the Foundation.
- g) Undertake periodically the evaluation of the Foundation, its strategies and activities.
- h) Create such committees as may be deemed desirable and necessary for the implementation of the objectives, programmes and projects of the Foundation.

- i) Delegate any powers of the Council which can lawfully be delegated to any committee or agent.
- j) Maintain close relations with the representatives of the constituencies mentioned in Article 4(c) above.
- k) Take note of the report of the Annual Meeting of the Forum and make the necessary decisions.
- l) Make all decisions which are not in the competence of another organ of the Foundation.

**Article 9: The Chair and Vice-Chair**

- 9.1 The Chair is appointed by the Foundation Council for a term of three years, renewable once. The appointment is decided upon by the majority of the members of the Council. The Chair represents the Foundation in its dealings with third parties, convenes and presides over the Foundation Council, actively promotes the Foundation's objectives, and helps mobilize resources for the activities of the Foundation.
- 9.2 The Foundation Council may nominate a member of the Foundation Council as a Vice-Chair. The powers and duties of the Vice-Chair are those delegated to him/her by the Chair.

**Article 10: The Secretariat**

The Secretariat is composed of (a) the Executive Secretary appointed by the Foundation Council for a term of three years, renewable; and (b) staff members as may be necessary, appointed by the Executive Secretary, in consultation with the Chair. Its functions are the following:

- a) Execute all decisions of the Council.
- b) Prepare the annual workplan and budget and submit it to the Foundation Council for approval.
- c) Execute the workplan approved by the Foundation Council and manage the activities of the Foundation.
- d) Manage the personnel and financial resources of the Foundation and sign the commitment and disbursement authorizations in the name of the Foundation.
- e) Prepare the annual meeting of the Global Forum for Health Research and the meetings of the Foundation Council and such other Committees as may be instituted by the Foundation Council.
- f) Establish implementing regulations and procedures for the Secretariat.
- g) After the close of each fiscal year, present to the Foundation Council an annual report on the activities and operations of the Foundation.
- h) Prepare the report of the Annual Meeting of the Forum.
- i) Perform such other tasks and functions assigned by the Council.

**Article 11: The External Auditors**

Accounts will be audited annually by an internationally recognized auditing firm appointed by the Foundation Council as Auditor. The fiscal year corresponds to the calendar year. Audited accounts will be submitted to the Foundation Council for its final approval within four months of the closing of the calendar year.

## **Section IV – Representation and Liability**

### ***Article 12: Representation***

The Chair (for matters which are the responsibility of the Foundation Council) and the Executive Secretary (for matters which are delegated to him/her) or their representative are entitled to represent the Foundation in all dealings with Third Parties.

### ***Article 13: Signatures***

All instruments committing the Foundation shall be signed by the Chair or his/her representative, except for the matters delegated to the Executive Secretary.

### ***Article 14: Liability***

The Foundation is responsible for its liabilities on all its assets. Members and officers of the Foundation or its organs shall incur no personal liability in respect of the commitments of the Foundation.

## **Section V – Final Provisions**

### ***Article 15: Amendments to the Statutes***

The Foundation Council may at any time make amendments to the present Statutes by notarized decision, after having obtained the approval of the Supervising Authority.

Amendments to the present Statutes require a decision made by a two-thirds majority of the Foundation Council.

### ***Article 16: Dissolution***

The dissolution of the Foundation will proceed with the agreement of the Supervising Authority when its objective can no longer be achieved.

The Foundation may decide on its dissolution by a two-thirds majority of the Foundation Council. The liquidation of its assets, after payment of its liabilities, shall be affected by the Foundation Council to activities pursuing similar objectives to those of the Foundation. A restitution of assets to the founders is not possible.

### ***Article 17: Entry into Force***

The present Statutes entered into force on 24 June 1998.



# Global Forum for Health Research

Promoting research to improve the health of the poor

## Annex 2

### **Foundation Council**

**Adetokunbo O. Lucas**  
Harvard School of Public Health  
Chairperson

**Rashidah Abdullah**  
Asian-Pacific Resources and Research Center  
for Women

**Harvey Bale**  
International Federation of  
Pharmaceutical Manufacturers  
Associations

**Martine Berger**  
Swiss Agency for Development  
and Cooperation

**Rolf Carlman**  
Swedish International Development  
Cooperation Agency

**Tim Evans**  
Rockefeller Foundation

**Theodor M. Fliedner**  
WHO Advisory Committee  
on Health Research

**Julio Frenk**  
Mexican Health Foundation

**N.K. Ganguly**  
Indian Council of Medical Research

**Adrienne Germain**  
International Women's  
Health Coalition

**Andrew Y. Kitua**  
National Institute of Medical Research,  
Tanzania

**Mary Ann Lansang**  
College of Medicine  
University of the Philippines

**Maureen Law**  
World Bank

**Adolfo Martinez-Palomo**  
Mexican Center for Research and  
Advanced Studies

**Sigrun Møgedal**  
Norwegian Agency for  
Development Cooperation

**Carlos Morel**  
Oswaldo Cruz Foundation  
Ministry of Health of Brazil

**Pramilla Senanayake**  
International Planned  
Parenthood Federation

**Charas Suwanwela**  
College of Public Health  
Chulalongkorn University

### **Secretariat**

**Louis J. Currat**  
Executive Secretary

**Thomas C. Nchinda**  
Senior Public Health Specialist

**Andres de Francisco**  
Senior Public Health Specialist

**Elizabeth Carey-Bumgarner**  
Senior Communication Officer

**Diane Keithly**  
Administrative Officer

**Kirsten Bendixen**  
Administrative Assistant

**Jane Abel**  
Administrative Assistant

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## Attacking the 10/90 Disequilibrium in Health Research

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### Forum 3

8 - 10 June 1999

Forum Park Hotel, Geneva

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### Agenda

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## Tuesday, 8 June 1999

09:15 - 10:15

*Presenter*

Introductory session for newcomers

*Louis J. Currat*, Executive Secretary of the Global Forum for Health Research

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### SESSION 1

11:00 - 11:30

*Chair*

Opening Plenary

*Adetokunbo O. Lucas*, Chair of the Global Forum for Health Research

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### SESSION 2

11:30 - 12:15

*Chair*

*Presenters*

Plenary: Overview of the Health Situation in the World and Perspectives for 2020

*Adetokunbo O. Lucas*, Chair of the Global Forum for Health Research

*Julio Frenk and Christopher Murray*, World Health Organization

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### SESSION 3

14:00 - 17:30

Parallel Sessions

*Chair*

*Presenter*

**1. Alliance for Health Policy and Systems Research**

*Gaspar Munishi*, International Health Policy Program, Tanzania Group

*Sanguan Nitayarumphong*, Ministry of Public Health, Thailand

*Chair*

*Presenters*

**2. Child Health and Nutrition**

*T. Jacob John*, Christian Medical College, Vellore, India

*Robert Black and Mathuram Santosham*, Johns Hopkins School of Public Health;

*Nigel Bruce*, WHO; *Richard Cash*, Harvard School of Public Health;

*George Fuchs*, International Centre for Diarrhoeal Disease Research, Bangladesh;

*Olive Kobusingye*, International Clinical Epidemiology Network; *Kim Mulholland*, WHO;

*M.K.C. Nair*, Child Development Centre, International Clinical Epidemiology Network;

*Chair*

*Presenter*

**3. Partnerships, Priorities and Plans for Tobacco Research and Control in Developing Countries**

*Malegapuru Makgoba*, Medical Research Council of South Africa

*Derek Yach*, Tobacco Free Initiative, WHO

*Chair*

*Presenters*

**4. Capacity Development in Developing Countries**

*Peter Ndumbe*, University of Yaounde, Cameroon

*Pauline Beattie*, Wellcome Trust; *David Fraser*, International Clinical Epidemiology Network;

*Thomas C. Nchinda*, Global Forum for Health Research; *Steve Wayling and Enrique Ezcurra*, WHO

*Chair*

*Presenters*

**5. Reproductive Health**

*Michel Mbizo*, WHO

*Jane Cottingham*, WHO; *Jane Ferguson*, WHO; *Wendy Graham*, Dugald Baird Centre for Research on Women's Health,

Aberdeen; *Chérif Soliman*, Family Health International; *J. Patrick Vaughan*, London School of Hygiene and

Tropical Medicine; *José Villar*, WHO

*Chair*

*Presenters*

**6. Neuro-psychiatric Diseases in Developing Countries**

*Srinivasa Murthy*, National Institute of Mental Health and Neurosciences, Bangalore, India

*Rachel Jenkins*, Institute of Psychiatry, London; *F. Lieh Mak*, Queen Mary Hospital, Hong Kong;

*Malik H. Mubbashar*, WHO Collaborating Centre for Research and Training in Mental Health, Rawalpindi;

*Donald Silberberg*, Pennsylvania University Medical Center

*Chairs*

*Presenters*

**7. Public/Private Partnerships in Health Research**

*John La Montagne*, National Institute of Health, and *Richard Auty*, ZENCA Pharmaceuticals

*Peter Evans*, Department of Vaccines, WHO; *Cliff Lenton*, International AIDS Vaccine Initiative Europe;

*Tikki Pang*, University of Malaya, Kuala Lumpur; *Robert Ridley*, New Medicines for Malaria Venture

*Chair*

*Presenters*

**8. Family Violence and Child Abuse: Present Situation and Future Perspectives**

*Helena Agathonos-Georgopoulou*, Centre for Study and Prevention of Child Abuse and

Neglect, Institute of Child Health, Greece

*Carol Djedjah*, WHO; *Claudia Garcia-Moreno*, WHO; *Etienne Krug*, WHO; *Claude Romer*, WHO

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**SESSION 3 (Continued)**

*Chair* 9. Progress with the Global Tuberculosis Research Initiative  
*Presenter* *Gijs Elzinga*, National Institute of Public Health and Environmental Protection, Netherlands  
*Paul Nunn*, Stop TB Initiative, WHO

*Chair* 10. Priorities and Plans for Research leading to Cardiovascular Diseases Prevention and Control  
*Presenter* *Darwin Labarthe*, UNESCO/WHO/WHF Task Force on Risk Factors in Developing Countries  
*Srinath Reddy*, All India Institute of Medical Sciences

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**SESSION 4**

18:00 -20:30 Reception hosted by the Chair of the Global Forum for Health Research

**Wednesday, 9 June 1999**

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**SESSION 5**

08:30 -10:15 **Plenary: How Are Decisions Made?**  
*Chair* *Adetokunbo O. Lucas*, Chair of the Global Forum for Health Research  
*Moderator* *Gijs Elzinga*, National Institute of Public Health and Environmental Protection, Netherlands  
*Panel Participants* *Marco Ferroni*, World Bank; *John La Montagne*, National Institutes of Health, U.S.A.; *Malegapuru Makgoba*, Medical Research Council of South Africa; *Carlos Morel*, WHO; *Jeffrey L. Sturchio*, Merck

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**SESSION 6**

11:00 -11:30 **Keynote Address**  
*Gro Harlem Brundtland*, Director-General, World Health Organization

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**SESSION 7**

11:30 -12:15 **Plenary: What is New in Capacity Development in Developing Countries?**  
*Chair* *Sigrun Møgedal*, Norwegian Agency for Development Cooperation and Vice-Chair of the Global Forum for Health Research  
*Presenter* *David John Bradley*, London School of Hygiene and Tropical Medicine

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**SESSION 8**

14:00 -15:30 **Parallel Sessions**

*Chair* **1. Priority setting**  
*Presenters* *Sigrun Møgedal*, Norwegian Agency for Development Cooperation  
*Jack Bryant*, Council for International Organizations of Medical Sciences; *Louis J. Currat*, Global Forum for Health Research;  
*Marian E. Jacobs*, Child Health Unit, Republic of South Africa; *Mary Ann Lansang*, University of the Philippines

*Chair* **2. Burden of disease**  
*Presenters* *Prasanta Mahapatra*, Institute of Health Systems, Hyderabad, India  
*Marisol Concha*, Departamento de Epidemiología, Chile; *Rafael Lozano*, WHO; *Colin Mathers*, Australian Institute of Health and Welfare; *Howard Seymour*, Centre for Health Care Development

*Chair* **3. Cost-effectiveness**  
*Presenters* *Tessa Limjuco Tan-Torres*, University of the Philippines  
*David Evans*, WHO; *Andrés de Francisco*, Global Forum for Health Research;  
*Mark Miller*, Children's Vaccine Initiative; *Ana Salinas*, Mexican Institute of Social Security

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**SESSION 8 (Continued)**

- Chair* 4. Resource flows  
*Presenters* David Seemungal, Wellcome Trust  
*Maria Dutihl Novaes*, Universidad de Sao Paulo; *Catherine Michaud*, Harvard Center for Population and Development Studies; *Ulysses Panisset*, PAHO; *Chitr Sitthi-Amorn*, University College of Public Health, Thailand

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**SESSION****9**

16:00 -17:30

Special Interest Sessions

- Chair* 1. Health Research and Policies for Border Communities, Refugees and Internally Displaced Persons  
*Presenters* Jack Bryant, Council for International Organizations of Medical Sciences  
Jack Bryant, Council for International Organizations of Medical Sciences; *Manuel Carballo*, WHO Collaborating Centre for Migrants Health; *Brian Gushulak*, International Organization for Migration; *Wadie Kamel*, Health and Development in Border Areas Global Initiative, WHO Collaborating Centre for Border and Rural Health
- Chairs* 2.A Session with SHARED (Database on research projects)  
*Barend Mons and Jan van't Land*, Netherlands Organization for Scientific Research
- Chair* 3. Electronic Communication and Research  
*Elizabeth Carey-Bumgarner*, Global Forum for Health Research
- Chair* 4. How are Decisions Made?  
*Rainer Sauerborn*, University of Heidelberg
- Chairs* 5. Integrating Gender Perspectives in Health Research  
*Rashidah Abdullah*, Asian-Pacific Resources and Research Center for Women, Malaysia, and  
*Françoise Girard*, International Women's Health Coalition  
*Presenters* *Pilar Ramos Jimenez*, De la Salle University, Philippines;  
*Sundari Ravindran*, Reproductive Health Matters, India;  
*Carol Vlassoff*, Canadian International Development Agency
- Chair* 6. Road Traffic Injuries in the Developing World  
*Presenters* *Richard Morrow*, Johns Hopkins University, U.S.A.  
*Abdul Ghaffar*, Health Services Academy, Pakistan; *Martha Hajar*, National Institute of Public Health, Mexico;  
*Erastus K.Njeru*, Nairobi Clinical Epidemiology Unit

**Thursday 10 June 1999**

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**SESSION****10**

8:30 - 10:15

Plenary: Action Plans for Some Initiatives 1999-2000  
*Adetokunbo O. Lucas*, Chair of the Global Forum for Health Research

*Chair*

1. Roll Back Malaria Movement  
*David Nabarro*, World Health Organization
2. Tobacco Free Initiative  
*Derek Yach*, World Health Organization
3. Alliance for Health Policy and Systems Research  
*Anne Mills*, Alliance Board
4. Cardiovascular Diseases in Developing Countries  
*Srinath Reddy*, Secretary, Organizing Committee
5. Child Health and Nutrition Initiative  
*T. Jacob John*, Christian Medical College, Vellore, India



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## SESSION 11

11:00 - 12:15  
*Chair*

**Plenary: Progress in Methodology**  
*Sigrun Møgedal*, Norwegian Agency for Development Cooperation and Vice-Chair of the Global Forum for Health Research

Presentation of the Action Plan for 1999 - 2000 in each of the following:

**1. Priority setting**

*Louis J. Currat*, Global Forum for Health Research

**2. Burden of disease**

*Adnan A. Hyder*, Johns Hopkins University

**3. Cost-effectiveness**

*Andrés de Francisco*, Global Forum for Health Research

**4. Resource flows**

*Catherine Michaud*, Harvard Center for Population and Development Studies

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## SESSION 12

14:00 - 15:30  
*Chair*

**Plenary: Conclusions from the Global Forum Constituencies**  
**How Can the Global Forum Best Help Correct the 10/90 Gap?**  
*Adetokunbo O. Lucas*, Chair of the Global Forum for Health Research

**Conclusions from the Chair**

Key ideas and proposals identified during Forum 3 for follow-up by the Global Forum Foundation Council and Secretariat during 1999-2000 in pursuit of the correction of the 10/90 Gap.

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### POST-MEETING NETWORKING

- Core Group on Resource Flows Measurements
- Others

Note. Documents made available to participants in Forum 3 can be found on the Global Forum's website [www.globalforumhealth.org](http://www.globalforumhealth.org).