

Chapter 2

Priorities in Health Research and Development: Correcting the 10/90 Disequilibrium

*Section 1:
The context for priority setting in health*

*Section 2:
Priority setting in health research*

*Section 3:
Examples of priority setting*

*Section 4:
Progress in the priority areas identified by the Ad Hoc Committee, 1996-98*

*Section 5:
Priority setting: a summary of lessons from the past*

*Section 6:
Results of priority setting: a comprehensive list and a short list*

*Section 7:
Priority setting and the future*

Summary

Despite substantial gains in global health over recent decades, inequities in health status have widened, the environment has deteriorated, and other obstacles to the attainment of health for all have appeared or re-appeared. These developments challenge the global community in its pursuit of the objective of health for all in the next century. In this context, priority setting in health research assumes even greater importance.

This chapter summarizes some of the attempts which have been made in research priority setting, particularly that of the Ad Hoc Committee on Health Research. It does not attempt to summarize the uneven progress made in each of the priority areas. It does however draw some general conclusions that may be of use in future exercises to monitor research progress. It concludes that two kinds of priority lists may be envisaged in health research: a comprehensive list of research priorities and a short list.

The comprehensive list will itemize priorities globally or by subject area (for example, child health or reproductive health). Such a list would be as exhaustive as possible, and include a mixture of short- and long-term R&D products or results. It would be based on the analysis of a priority setting process (such as the five-step process), which would improve gradually as more information becomes available.

The short list, such as that generated by the Ad Hoc Committee in 1996, is a mechanism to select, from the more comprehensive list, those that are currently under-resourced, may be achievable in the shorter term, and may result in highly cost-effective interventions.

Finally, this chapter draws attention to the fact that we are only in the early stages of learning how to set priorities effectively. Further development of methods and tools for priority setting will occur, and lists will have to be revised to keep pace with this. Tracking progress in priority areas can also help reduce the 10/90 Gap by ensuring that the products of research, already available to wealthier populations, are also made available to the large majority of the world's population.

Section 1:

The context for priority setting in health

Despite substantial gains in global health over recent decades, inequalities in health status have widened, the environment has deteriorated, and other obstacles to the attainment of health for all have appeared or reappeared. These developments challenge the global community in its pursuit of the objective of health for all in the next century. Such a re-evaluation needs to take into account the following elements identified by WHO in 1998:¹

- determinants of health (including political, economic, social, and environmental factors outside the health sector)
- health patterns in the future (projected on the basis of current and foreseeable trends)
- inter-sectoral action (to uphold the principles of equity and sustainability in health care)
- partnerships in health (long-term collaboration between actors involved in health, with special attention to the community level)
- health personnel (whose training has to change in accordance with changing needs and changing options for meeting them)
- a dynamic and proactive role for WHO in standard-setting, monitoring, defining essential functions, and concerted action.

Improving the opportunities for health in a diverse, changing, and inequitable world calls for a careful examination of the basis of decisions made locally, nationally, and internationally. A crosscutting issue of central importance is health R&D, which is both a strategy to achieve the objectives of health, and a means for further defining the frontiers of what is possible and how it can be pursued. Efforts should be focussed on the most urgent and pressing health issues, and on those problems that affect the largest numbers. Such an approach will benefit all sectors and overall global health.

Health systems throughout the world are facing financial crises, demographic and epidemiological changes, and an increasing demand for more and costlier services. In response, widespread health system reform is being undertaken by national governments assisted by national and international organizations. The Ad Hoc Committee recommended strengthening global capacity to provide the information required for better decision-making for health system reform. A critical part of this is information on the economic and equity implications of health interventions.

¹ *Health for All in the 21st Century*. WHO, 1998.

Section 2:

Priority setting in health research

In the literature on economic evaluations of health care, the recommended criterion for priority setting is essentially that of health maximization. This normative basis could, however, be considered to reflect the stated objectives in many nations' health services when these refer to *efficiency* in terms of "value for money" or "as much health as possible within the given budget". Reflecting the additional objective of equity in most publicly financed health services has been an increasing research interest. Other objectives such as the measurement of the *severity of disease* have also been incorporated in the decision-making criteria of nations.

Priority setting in health becomes a complex task of evaluating the process using normative and other criteria as above. Another key consideration is the geographical level of application: local, national, regional or global. These multiple levels have common issues related to the appropriate use of resources, and yet offer vastly different settings for decision-making. Since the challenges in each will differ, the response and priorities for each will also need to be appropriate.

The Commission on Health Research for Development (1990) evaluated the distribution of resources for health R&D in relation to the purpose of that R&D. It concluded that the majority of health R&D resources (95%) are being used on issues that are relevant to only a minority of the world's population (5%). This is reflected in the fact that (i) little or no research is undertaken on diseases affecting mainly the poor; (ii) the application of research results for conditions prevalent in

more advanced countries is not directly transferable to less advanced countries due to the high costs of the proposed interventions and/or to the country-specific nature of the research undertaken. The population which is excluded from the benefits of health research is predominantly in the developing world, largely poor, and often marginalized from both power and decision-making. This situation raises questions of an economic, social, ethical, and political nature.

At the beginning of this decade, growing pressure to correct this imbalance in health research priorities led to the recommendation of the concept of Essential National Health Research by the Task Force on Health Research for Development, further developed by COHRED, and to the delineation of a research agenda by countries themselves. The Ad Hoc Committee was established in 1994 under the auspices of WHO. Since then, it has carried out its work in synergy with the 1990 Global Burden of Disease study and extended the work of the World Bank's *World Development Report 1993*. In its Report of 1996, the Ad Hoc Committee re-emphasized the 10/90 Gap in health research. In addition, it underlined the growing nature of the non-communicable disease epidemic in the developing world, especially the effects of smoking. It also indicated that the fight against communicable diseases was still essential and that conditions such as HIV/AIDS, malaria, tuberculosis, and acute respiratory infections posed serious threats to global health. Other issues highlighted in the report included anti-microbial resistance and the inequities in the delivery of health services.

Section 3:

Examples of priority setting

1. Priority setting in reproductive health: an example

Priority setting processes have been used by those involved in R&D work, such as the UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (Insert 2.1).

Insert 2.1

Priorities in Health R&D: WHO

Sexual and Reproductive Health Research Priorities for WHO for the Period 1998-2003

The Process

- Phase I: Identification of research needs in the field of sexual and reproductive health
Outcome: Several hundred researchable topics distilled into 12 major issues
- Phase II: Further identification of research strategies for WHO's reproductive health programme
Outcome: 37 strategies grouped in 10 major issues
- Phase III: Prioritization among these strategies, using the criteria below, to identify those offering the best return on investment
-

The Criteria

1. Impact on health and development
 - Public health significance
 - Utility and sustainability
 - Reproductive rights and gender equity
 2. Feasibility
 - Practicality
 - Cost and time
 3. WHO's comparative advantage
 - Credibility and neutrality
 - Collective skills and resource base
 - Position
 - Capacity building
-

Description

Over 1997-98, WHO has worked with many partners in the field of reproductive health on a research agenda for 1998-2003. Each area within reproductive health was evaluated using a peer-reviewed process with participation of a wide range of stakeholders and a list of research priorities was developed (Phases I and II).

This list was then prioritized using a set of criteria and a three-stage process (Phase III). In the *first stage*, criteria were grouped into those that reflect the expected impact on health and development and feasibility. These were further weighted to reflect the relative importance of each criterion. The *second stage* involved the application of the criteria to determine those strategies that are suited to WHO's comparative advantage. These included an evaluation of whether WHO's credibility and neutrality is important to the research; whether the skills and resources of WHO are sufficient to make a significant contribution to the research; whether research would benefit from WHO's status and position; and the potential of the research for capacity development in developing countries. These criteria were also weighted and results fed into a *third stage* of the process which was an overall evaluation of the results after the first and second stages that helped to "balance" the priority list.

The resulting list of priorities included the three best buys in reproductive health identified by the Ad Hoc Committee within the top 10 list. The top 10 strategies in the results of the process described above included research on aspects of:

- unsafe abortions, abortion complications, post-abortion care
- broadening the choice of fertility regulation methods
- best practices for maternal care
- diagnosis and management of RTIs/STDs, including cervical cancer
- access to care issues
- violence against women, including misuse of medical interventions.

(Source: internal document, *Special Programme of Research, Development and Research Training in Human Reproduction. UNDP/UNFPA/WHO/World Bank, 1998*)

2. Ad Hoc Committee

One of the main contributions of the Ad Hoc Committee Report was the identification of specific areas where further investments in R&D would make a difference to global health. Their identification was based on a process that included an analytic (five-step) process, and considerations of the attributable burden likely to be reduced by interventions and attendant costs. 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 a significant advance. It was also to draw global attention (and resources) to these areas and track progress in promoting more work in these fields.

An important aspect of the Ad Hoc Committee work in priority setting was to underline the need for economic analysis in health. Resource allocation within health care, and especially health research, is both value-laden and ethically charged. Yet seeking cost-effective use of health R&D funds – especially public funds – is consistent with public health aims. Such a rationale has enabled the search for priorities and prioritization processes to be further developed.

The Ad Hoc Committee proposed a methodology for priority setting in health R&D and the list of such priorities was partly based on

this method. The 5-step process was proposed to inform priority setting. It involves seeking answers to the following:

- How large is the health problem? (magnitude)
- Why does the burden of disease persist? (persistence)
- How adequate is the current knowledge base? (knowledge base)
- Is the planned research likely to yield interventions significantly better than the existing ones? (cost-effectiveness)

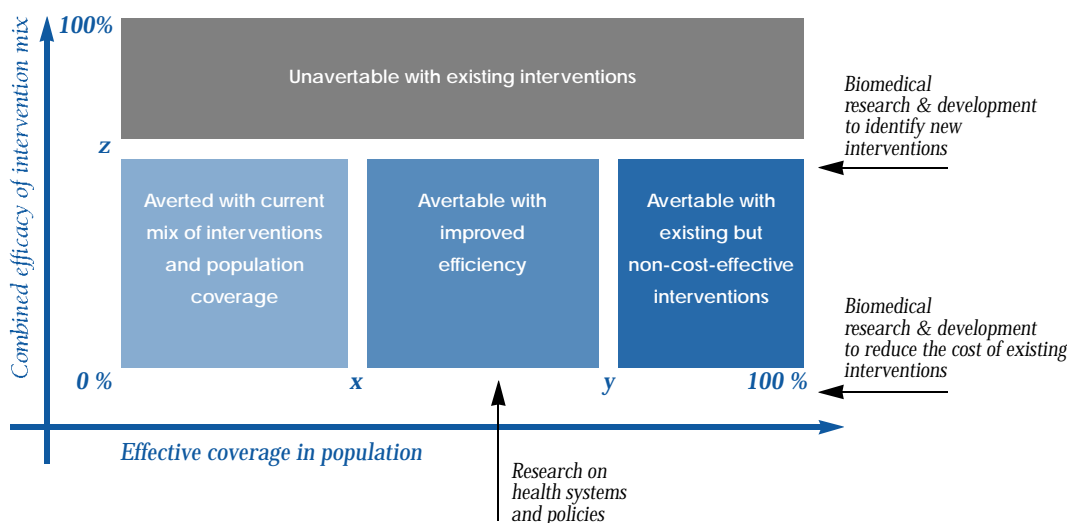
- How much is being spent already? (current resource flows)

Analysing the burden of a health problem to identify research needs is an important step in this process. As Insert 2.2 demonstrates, the total burden from a specific disease, the efficacy and effectiveness of interventions, and the extent to which effective interventions are reaching a population have to be considered. In doing so, areas where research may contribute and the type of research required can be defined.

Insert 2.2

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



- 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

(Source: reprinted from Report of the Ad Hoc Committee, 1996)

The Ad Hoc Committee's list of priority areas in child health, reproductive health, and infectious diseases is given in Insert 2.3.

Insert 2.3

List of priority areas in the “unfinished agenda”

Area of health	Description of priority area
Child Health	<p>Understand the relative importance, in different environments, of increased nutrient intake and controls on infectious disease as a means to reduce malnutrition.</p> <hr/> <p>Evaluate and refine the package for the Integrated Management of the Sick Child.</p> <hr/> <p>Evaluate the efficacy and optimal dosage of candidate rotavirus vaccine in low-income countries.</p> <hr/> <p>Evaluate the efficacy of candidate conjugate pneumococcal vaccine in low-income countries.</p> <hr/> <p>Evaluate the efficacy of existing Hib vaccine in low-income countries.</p> <hr/> <p>Develop and evaluate ways to increase efficiency in the Expanded Programme on Immunization by simplifying delivery and maximizing use of opportunities for immunization.</p> <hr/> <p>Evaluate promotion of insecticide-impregnated bednets, possibly for inclusion in a future healthy household package.</p>
Reproductive Health	<p>Develop, evaluate, and refine the Mother-Baby package for pregnancy, delivery, and neonatal care.</p> <hr/> <p>Evaluate the implementation of a range of family planning packages offering a wide choice of methods.</p> <hr/> <p>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.</p>
Infectious and communicable diseases	<p>Sequence genomes of major pathogens.</p> <hr/> <p>Investigate factors influencing the spread of anti-microbial resistance and approaches to monitoring resistant strains, with the aim of identifying ways of slowing their emergence.</p> <hr/> <p>Develop effective strategies to extend the coverage of directly observed treatment, short course (DOTS) for tuberculosis.</p> <hr/> <p>Develop an effective prophylactic for tuberculosis (e.g. single administration depot chemoprophylaxis).</p> <hr/> <p>Conduct trials of conjugate pneumococcal vaccines.</p> <hr/> <p>Develop a malaria vaccine.</p> <hr/> <p>Develop an HIV vaccine.</p> <hr/> <p>Develop improved methods for the diagnosis, prevention, and treatment of STDs, including vaginal microbicides.</p>

(Source: AA Hyder. Presented at the Second Annual Global Forum, 25-26 June 1998, Geneva)

Section 4:

Progress in the priority areas identified by the Ad Hoc Committee, 1996-98

One of the premises of the Ad Hoc Committee was that the identification of a short list of high priority investments for a global health research agenda focused on the health problems of the poor would help direct resources to them. Clearly this aim is more likely to be achieved if the list of priority areas is both updated and reviewed periodically to assess the extent and reasons for progress or lack of it. This evaluation of progress was done in 1998 on behalf of the Global Forum for Health Research.² The review draws attention to the progress made but also highlights areas where progress has been slow and attempts to identify reasons for this. Such reasons include lack of financial resources, lack of interested researchers with the capacity to conduct research, and changing research priorities.

The review of progress in health R&D priorities was done with the following objectives in mind:

- To evaluate progress in research and development in the priority areas in infectious diseases, child health, and reproductive health as identified by the Ad Hoc Committee in 1996.
- To assess the impact on resource allocations of having a short list of global health research priorities.
- To determine the implications of having

such a priority list and define the conditions under which it would be most helpful.

The methods used for evaluating progress were based on structured interviews of researchers, programme managers, and policy-makers, and a comprehensive review of the scientific and operational literature. The evaluation of progress considered the following factors:

- Baseline status of research on priority area around 1995-96.
- Definition of endpoint(s) in the priority areas that will determine completion and become the *reference point(s)* against which progress in the specific area can be measured.
- Intensity of research. This is an attempt to capture factors such as the pace and timeliness of research, strength of interest (amount of research), and appropriateness (site, design, methods).
- Success of research in the priority area.

The review of progress based on the above factors indicated the critical role of defining and stating the endpoint in each priority area. No research priority areas were suggested for noncommunicable diseases and injuries, but special programmes were suggested for further evaluation of those issues.

² Hyder A. A., *Review of Progress in Health Research and Development in Priority Investments. Presented at the Second Annual Meeting of the Global Forum for Health Research, 25-26 June 1998, Geneva.*

As shown in Insert 2.4, about half of the priority areas had a well defined endpoint, and another half had multiple endpoints. Furthermore, a number of areas are either inherently complex areas leading to a number of potential endpoints or relate to strategies that will continue to be improved through an iterative process of research and implemen-

tation. In both cases, it is difficult to say whether the endpoint has been reached. This report does not attempt to summarize the progress made in each of the priority areas. Rather, it draws some general conclusions that may be of use in future exercises to monitor research progress.

Insert 2.4

Endpoint analysis of priority investments in the “unfinished agenda”

Description of priority area	Type of endpoint		
	Well defined endpoint	Multiple endpoints	Other
Understand the relative importance of increased nutrient intake and controls on infections to reduce malnutrition			Complex
Evaluate and refine Integrated Management of Childhood Illness			Iterative process
Evaluate efficacy of candidate rotavirus vaccine in low-income countries	X		
Evaluate efficacy of candidate conjugate pneumococcal vaccine	X		
Evaluate efficacy of existing Hib vaccine in low-income countries	X		
Expanded Programme on Immunization: develop ways to increase efficiency		X	
Evaluate the promotion of insecticide-impregnated bednets	X		Complex
Develop, evaluate and refine Mother-Baby package			Iterative process
Evaluate family planning packages		X	
Develop new contraceptive methods		X	
Sequence genomes of major pathogens		X	
Investigate factors influencing anti-microbial resistance and monitor resistant strains		X	Complex
Extend the coverage of DOTS for tuberculosis	X		
Develop an effective prophylactic for tuberculosis	X		
Develop a malaria vaccine	X		
Develop an HIV vaccine	X		
Develop improved methods for prevention and treatment of STDs		X	Complex

(Source: AA Hyder, 1998)

The review of progress suggested that:

- If progress in priority areas is to be monitored, it is important to have clearly defined endpoints (products or milestones). Progress at various intervals of time can be measured (quantitatively or qualitatively) with respect to these reference points.
- Measuring progress in priority areas of operational research, which is often open-ended and iterative, requires the statement of clearly defined interim outcomes.
- Monitoring of R&D must take into consideration the time usually taken for each type of product development, for example, 5-10 years for drug or vaccine development.

The objectives of the study included an evaluation of the impact of the Ad Hoc Committee's work on health research and development. The review could not judge whether the priority list generated by the Ad Hoc Committee has had a major impact on resource allocation, since there are a large number of factors that affect the allocation and distribution of resources. Resource allocation for global health R&D is currently not monitored, especially not in a way in which small changes can be detected.

However, the attempt by the Ad Hoc Committee to make the imbalance in global health R&D resource allocations more explicit and transparent may have resulted in the increased sensitization of researchers and policy-makers to the importance of work in the identified priority areas. This, combined with the whole body of knowledge that includes elements of the burden of disease, cost-effectiveness, and prioritization methods, may have had a catalytic effect in many of the priority areas. However, further work will be needed to determine a direct effect.

Another important issue was the generation and redirection of resources towards priority areas of health R&D. The increased funding for the development of malaria vaccines under the Multilateral Initiative on Malaria in Africa has been one positive development. Others have been the renewed interest and allocation of funds for studying the impact of global anti-microbial resistance, investment in the search for a vaccine for HIV/AIDS, and an increase in funds for developing new contraceptives. Renewed interest in all these areas suggests that publicized statements of R&D priorities can draw attention to key issues. In time, this may lead to an increase in resource flows for specific issues.

Section 5:

Priority setting: a summary of lessons from the past

The production of a list of research and development priorities is not a one-time event. It is only the beginning of a process that includes defining, monitoring, promoting, and supporting work in that area over a longer period of time. As a consequence, one of the important results of the Global Forum's work has been the recognition that the usefulness of evaluating progress ultimately depends upon whether factors retarding progress are amenable to change. A priority area defined by a systematic process at one point in time will remain a priority until the endpoint has been achieved.

In addition, some generic findings also emerge from the work on priority setting in health R&D:

- Quantitative information (burden of disease, cost-effectiveness, resource flows) is a key element in the priority setting process. However, this information by itself is insufficient and there will always be a need for experience and expert judgement.
- Priority setting discussions are rarely held in the place where decisions will be implemented. As a result, such discussions tend to become theoretical and sometimes counter-productive.
- There are multiple levels of priority setting: local, national, regional, and global;

priority setting discussions become confused by mixing them together.

- Priority setting is a process of relevance to all actors involved in health R&D: governments, research institutions (medical research councils), academia (universities), and international agencies (WHO, World Bank, and NGOs e.g. COHRED).
- It is important to have priorities and priority setting processes, ***but these must remain flexible in order to address new opportunities and challenges as they arise.***

One way of drawing attention to neglected priorities is to highlight the time lag between the development of useful scientific products and their availability to those most in need. An example of such delays is the decade between the registration of the Hib vaccine in some industrialized countries and its delivery in developing countries. Similarly, the “inequity clock” has started ticking on the rotavirus vaccine which was licensed in the United States in 1998. The clock will stop when the vaccine is accessible to the millions of children who suffer from this disease in the developing world. Research in these cases has to focus on shortening the time lag between the availability of a cost-effective intervention and its accessibility for the millions of people who need it.

Section 6:

Results of priority setting: a comprehensive list and a short list

Priority setting in health R&D can take place on various levels using different depths of analysis. A more comprehensive, analytic priority setting process in a specific field such as shown in Insert 2.1 may yield a long list of R&D priorities. On the other hand, some of those on the list will be more pressing than others and may be consolidated into a short list such as that developed by the Ad Hoc Committee. As a result, two kinds of priority lists may be envisaged in health R&D: a comprehensive list of R&D priorities, and a short list.

The comprehensive list will itemize priorities globally or by subject area (for example, priorities within child health or reproductive health). Such a list would usually be as exhaustive as possible, and include a mixture of short- and long-term R&D products or results. It would result from the analysis of a priority setting process (such as the 5-step process) and would improve gradually as more information becomes available. Such lists are often within the purview of health R&D institutions or specialized centres.

The establishment of short lists, such as that generated by the Ad Hoc Committee in 1996

(Insert 2.3), is a mechanism for selecting from the more comprehensive list those that may have one or more of the following characteristics :

- they address a major problem currently under-resourced
- they are expected to result in highly cost-effective interventions
- they are achievable in the shorter term.

These characteristics of priorities for health R&D will make such short lists worthy of urgent global attention. The search for an appropriate pneumococcal vaccine warrants inclusion in such a "list of opportunities" in view of the very high health benefits expected from a vaccine. Completing the research that would lead to the introduction of the rotavirus vaccine in the developing world at an appropriate cost is an urgent economic and equity issue, as the vaccine is already available in the developed world.

Section 7:

Priority setting and the future

We are only in the early stages of learning how to set priorities effectively. Further development of methods and tools for priority setting will occur, and lists will have to be revised to keep pace with this. Tracking progress in priority areas may serve as an indicator for global commitment to R&D in relation to the health problems of the large majority of the world's population. These priorities can help reduce health inequities by ensuring that the products of research, already available to wealthier populations, are also made available to the large majority of the world's population.

It would be useful to undertake a series of studies on decision-making processes which have led to the cost-effective allocation of resources. Such studies in both the public and private sector would serve as a vehicle for global learning. Similarly, it is critical to make such information available to all relevant constituencies. Wide dissemination of concepts, frameworks, studies, and reports in the area of priority setting is essential to an informed global debate.

Policy-makers need to be aware of the dangers of creating policy, or modifying existing policies, without adequate information. Prioritization of activities is an important task for developing and developed countries alike which, regardless of their funding base, need to justify spending in the health sector as opposed to other sectors. Prioritization takes place within a variety of contexts and each context has to rely on research in order to make the best informed investment choices.

As for the coming years, the review of progress in priority areas as defined by the Ad Hoc Committee in 1996 (Insert 2.3) revealed that, although substantial progress had been recorded in some areas, all areas require further efforts and investments, particularly the following where progress has been more limited:

- understanding of the relative importance of increased nutrient intake and controls on infections to reduce malnutrition
- evaluation of the implementation of a range of family planning packages
- development of an effective prophylactic for tuberculosis
- development of an HIV vaccine
- development of improved methods for prevention and treatment of sexually transmitted diseases
- evaluation of the efficacy and delivery of pneumococcal vaccine in developing countries
- development of antimalarial drugs and a vaccine
- delivery of the *Haemophilus influenzae* type B (Hib) vaccine in developing countries
- availability of rotavirus vaccine in developing countries.

Further priority areas (that require additional evidence-based information for proposing research for more specific interventions) may include the following:

- health policy and systems research
- effective strategies to reduce malnutrition

- reproductive health
- cardiovascular diseases in developing countries
- mental health in developing countries
- domestic violence (including violence against women and child abuse)
- road traffic injuries in the developing world
- child injuries in developing countries
- effective strategies against substance abuse.

This is a first and non-exhaustive list, which will be progressively refined, particularly

in relation to more specific recommendations, as more information becomes available. National and regional priorities for health R&D will also have to be determined by the countries concerned. Although this activity has a complementary role with the global effort, it comprises distinct and diverse processes. Repeated and refined priority setting exercises are important for future global and national health R&D.