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Strategies for Health Research Systems Development in South-East Asia Region

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FOREWORD

THE World Health Organization, from its inception, has recognized the vital role of health research in health development. One crucial way in which WHO promotes health research is by developing research strategies that influence, and are, in turn, influenced in an interactive manner, by national and local health research strategies in support of specific country needs.

Health research strategies for the WHO South-East Asia Region were drawn up in 1993 in accordance with the guidelines provided by the Regional Advisory Committee on Health Research (ACHR). Since then, new opportunities and challenges have emerged in health development. The International Conference on Health Research, held at Bangkok in October 2000, recommended major strategic directions and action plans for promoting health research and strengthening health research systems in the countries. Keeping in view current developments in health research systems, it became imperative that the regional strategies for development of health research systems are revised and updated to help efforts in health sector reforms.

Thus, with the full participation of and guidance from members of the ACHR and other senior public health scientists and researchers from the Region "Strategies for Health Research Systems Development in South-East Asia Region" were developed. These strategies were thoroughly reviewed and endorsed by the 54th Session of the WHO Regional Committee for South-East Asia in September 2001.

This document aims at providing a strategic framework to health policy makers and research institutions for health research systems development in the countries of the Region. It highlights the development and strengthening of national health research systems as the key to health system development. It covers the main objectives of national and local health research systems, the core functions, structure and challenges. It is ***generic, dynamic and flexible****. It also identifies the key strategies for strengthening the health research systems and how these could be transformed into action. The role of WHO and other agencies is also indicated*

I am confident that this document will be very useful in updating and strengthening the health research systems in Member Countries.

Dr Uton Muchtar Rafei
Regional Director

EXECUTIVE SUMMARY

THE regional health research strategies for WHO's South-East Asia Region were developed in 1993. Since then, a number of political, socioeconomic, health and environmental changes, such as democratization, economic growth as well as crises, globalization and trade liberalization, rapid development of technology and advances in medical and biotechnology sciences, massive population movement within and between countries, natural and man-made calamities, have taken place at a pace much faster than expected. WHO has also become one of the many actors in international health, especially in formulating international health policies for the prevention and control of diseases as well as development of health research. Many other inter-governmental, bilateral, multilateral and international agencies and organi-zations, both public and private, have come into the picture for providing support or executing health and health research development around the world. WHO adopted its Organization-wide corporate strategies in 1999 to address these challenges and, at the same time, to seize opportunities with a view to promoting health for all. These changes, coupled with the continuing health disparities and avoidable disease burden, prompted the Member countries in the Region, to review and revise the regional strategies for health research systems development, in order to optimally cope with their health problems through research.

*A **health research system** functions as the "brain" of a health system, to enable it to respond effectively to the health challenges. The key objective of a health research system is to coordinate health research through appropriate architecture and mechanisms. There is an array of specific **objectives** of a health research system, which include, inter alia, setting health research priorities, generating knowledge, building capacity, developing standard procedures and mechanisms to ensure ethics, quality, accountability and transparency, mobilizing resources and conducting advocacy for better partnership. A prime objective is immediate response and being alert to the continuing needs and challenges of health development.*

***Five essential functions** have been identified as the core of a health research system. The first is **stewardship** - the quality leadership to promote*

and develop strategic visions for the development of a health research system, in response to the knowledge needs of a health system. The second function is ***capacity development,*** *for both the demand and supply sides of health research.* ***Knowledge generation*** *is the third function, which helps in improving the health science as well as the management of health systems. The fourth function is the* ***utilization and management of knowledge*** *for health improvement where new knowledge derived from research has to be translated into a suitable format for policy or actions. The fifth essential function is* ***mobilization of resources*** *for health research. Strategic planning is required to ensure appropriate human, financial and other material resources.*

An appropriate ***structure of a health research system*** *is needed to govern the above core functions. The different contexts and needs of countries shape the structure of each national health research system so as to best fulfil the unique needs of the countries. There is a need to establish local, national or international health research forums with a view to addressing multi-players' issues. Strengthening the linkages and functioning of existing and potential networks of institutions and individuals is another example of promoting health research networks.* ***Four key challenges*** *for the development of health research systems have been identified. The first challenge concerns research values. Equity in health research is the degree to which funding is allocated for priority health issues of the countries. Inequity in health research can occur when agencies allocate funds in wrong areas, thus missing the opportunity to improve the health of the poor. Ethics in health research ranges from development of and agreement to conduct health research involving human and animals, to moral issues in the conduct of research. New discoveries in health research, such as genome, are of global interest. The challenge is to anticipate the consequences of new discoveries, assess ethical implications of the new knowledge and to obtain the widest possible access to such new knowledge.*

Research environment, the second challenge, comprises problems of inadequate resources for research, globalization and research culture. Because of deficient resources, most developing countries accept donor-driven research activities. Globalization has created multiple actors, both at international and national levels. Another key challenge is to build an effective national health research system that is able to coordinate external partners. For promoting research culture, the principal challenge is to create a science-based, decision-making atmosphere at the country level, which further leads to a favourable

environment for research. Research culture, therefore, should go beyond health research to cater to health systems and non-health systems.

How to sustain a health research system is the third challenge. The relationship amongst the stakeholders covers problems of power versus authority, degrees and level of coordination, collaboration and partnerships, and an environment of trust and solidarity. The lack of research capacity is a major problem in many developing countries. Capacity strengthening must be carried out in line with specific priority areas. Financing of health research is the biggest challenge in sustaining the health research system. Good governance on managing resources for health research could produce a better health research environment.

How to propagate health knowledge as a public domain is another challenge. There is also a need to establish continuous mechanisms for the promotion and clarification of ideas for health research as inputs to the functions of health systems and health policies.

The following ***key regional strategies*** *are proposed to deal with the above challenges:*

(a) ***Analysing national and local health research systems:*** *Countries need to analyse the situation in regard to the role of their health research system within the overall national and local health systems, identify their strengths and weaknesses, and develop case studies indicating successes and failures, using the strategic framework of the objectives, functions and structure of health research systems. These will allow countries to look at possible options to improve their own health research systems and help them choose a strategy to take their health research systems forward. The first step to make an appropriate analysis of the existing national and local health research systems is to organize health research fora periodically. These would provide avenues for health researchers, policy-makers, the public and other stakeholders to make an overall assessment of the health research systems, health research priorities and provide guidance for research and collaboration. Such guidance and collaboration is a key input to the development of national and local strategies and plans of action for health research system development, so that health research can be the "brain" of a health system.*

(b) ***Strengthening research capacity:*** *Strengthening of technical and managerial capacity ranges from improving management of health research, exploring new frontiers of sciences in health and biotechnology to updating health research-related legislation and policies. On the demand side (senior executives, funding agencies, community, media), management strengthening issues deal with absorptive capacity for research. On the supply side, there is a need to expand and improve the management capacity of researchers and managers in the areas of leadership, negotiation, team building etc.*

(c) ***Managing knowledge:*** *Generating, validating and using knowledge as well as services resulting from research should be in the public domain in order to make it accessible and for it to be effectively used. With the emerging developments in scientific and social arenas, exploring new frontiers in research becomes essential. A balance between research to generate new knowledge and research to apply existing knowledge at the local level is needed. Effective health research information for technical and monitoring purposes for building institutional networks has to be supported, using available information and communication technology.*

(d) ***Strategic support to the national health research system:*** *Strategic support to the countries includes resource-flow analysis, enhancing partnerships for resources, capacity building, and information sharing. Ensuring good governance and creating conditions conducive to a good research environment are the key to making use of the opportunity to support national and local health research systems. Two key strategic areas to expand resources for health research systems development include improvement in coordination at the country level and proof of impact assessment.*

(e) ***Ensuring good governance****: Good governance of health research begins with the involvement of society in identifying the research problems and priorities and, to some extent, deciding on resource allocation. How this will happen is a big challenge. How it will happen in an equitable way may become a bigger challenge. Another challenge is how the public can become more involved in the determination of the broader systems?*

Lastly, a few directions are proposed for ***translating the strategies into action****. National health research policies need to be reviewed, revised or newly formulated with wider participation of stakeholders. Further, national health*

research forums should be organized to prepare the national health research agenda and to monitor the performance of health research systems. Specific country case studies and situation analysis of the national and local health research systems could be a starting point to review the performance of national and local health research systems. WHO can play a pivotal role in strengthening partnership at national and international levels. The Organization should also promote the development of national health research systems based on individual country needs and develop global leadership, advocacy and promotion of health research.

1. INTRODUCTION

The World Health Organization (WHO) has, from its inception, recognized the vital role played by health research in health development. One of the main functions of the Organization, enshrined in its Constitution, is to promote and conduct research in the field of health. WHO has repeatedly stated that all national and international health policies should be based on valid scientific evidence; that such evidence requires health research; and that research has significant potential in promoting health and a vital role in improving health through applications or solutions that are already available and through generation of knowledge for the development of new solutions. WHO promotes health research by developing its own health research strategies that influence, and are in turn influenced, in an interactive manner, by national and local health research strategies in support of specific country needs.

The WHO Regional Office for South-East Asia had developed, in consultation with Member States and scientific experts, **regional health research strategies** in 1993. Since then a number of unprecedented and rapid changes affecting health have taken place. These are exemplified by the profound socioeconomic and political changes around the world, including accelerated democratization, rapid economic growth as well as crises, globalization and trade liberalization, rapid development of technology and advances in medical and biotechnology sciences, massive population movement within and between countries, natural and man-made calamities, etc. The most notable have been the rapid spread of communicable diseases and other health problems such as HIV/AIDS, drug-resistant malaria and tuberculosis, across national boundaries, highlighting the vulnerability of nations. The development and use of new drugs and vaccines and the scientific breakthrough in genome sequencing, introduction of new health system performance indicators and a variety of health care reforms have also occurred rapidly.

WHO has now become one of the many actors in international health, especially in relation to the development of health research. In addition to WHO, other UN specialized agencies, numerous bilateral, multilateral and

international agencies, foundations and multilateral financial institutions including the World Bank, have become major players in health and health research. International nongovernmental organizations and alliances such as the Council for Health Research and Development (COHRED), the Global Forum for Health Research (GFHR), the Rockefeller Foundation and the Alliance for Health Policy and Systems Research are the other major players. New global public and private partnerships, such as the Welcome Trust, the Bill and Melinda Gates Foundation and the UN Foundation, as well as the stronger involvement of multinational pharmaceutical industries, in the neglected areas of health and health research, have offered new opportunities of international cooperation by promoting health through health research. This multitude of active players is possibly causing confusion, fragmentation, redundancy and gaps in the efforts to improve the health of the people in the countries.

These changes, coupled with the continuing health disparities in a "globalized" world and the continuing deaths as well as the avoidable burden of diseases from preventable health conditions, especially in the developing world, have prompted many agencies to review and revise their strategic plans. WHO endorsed new Organization-wide corporate strategies in 1999 in order to address such profound rapid global changes. WHO is also working with the Member countries to review and update their national health development strategies in order to guide their own health sector reform processes.

In the light of these developments, it is appropriate to review and revise the strategies for health research systems development in the South-East Asia Region in order to optimally support the countries to cope with their health problems through research.

2. OBJECTIVE

The main objective of this document is to provide a strategic framework for health research systems development in the Region. It is hoped that Member countries will use the document over a medium-term period (2002-2005), to develop their national health research systems.

Health research, in this context, encompasses the entire spectrum of research, ranging from biomedical, clinical, social and other health sciences, health systems and policies as well as research which has an impact on various

development policies affecting health such as socioeconomic, energy and agricultural policies. These areas will serve as the integral part of health research in a balanced manner. A health research system serves as the "brain" of a health system. Therefore, the entire spectrum of a health research system can contribute to a health system including policy issues. Health researchers have debated the facts and issues highlighted in the present document in the last few years leading to the International Conference on Health Research and Development in Bangkok in October 2000. The document represents the outcome of various consultative processes worldwide organized by different agencies and reflects the views of the global health research community.

The document was submitted to and endorsed by the 54th session of the WHO Regional Committee for South-East Asia held in Yangon in September 2001. It provides a policy framework to advance health research systems development in the Region. The review and planning of health research systems development, using these strategies as a policy instrument, would allow Member countries and WHO to jointly develop appropriate mechanisms for partnership, and thus strengthen the responsiveness of health research in solving health problems in the light of rapidly changing opportunities and challenges.

The document would also serve as a generic framework to generate understanding of health research systems and to encourage a broader debate leading to effective health research support for improving health systems performance. It might also help countries beyond the Region as a guide for improving their health research systems. The document highlights the development and strengthening of national health research systems as the key strategy to health system development. The strategic framework for the direction, balance and priorities of health research in the Region have to be worked out at appropriate forums of national, regional and global health research systems (See Section 5.3.4).

The document describes the objectives, role, functions and structure of health research systems as they now exist in countries or as they should be in an ideal situation. It also suggests ways and means to improve health research systems development. The development and strengthening of national health research systems as the key strategy to health research development in the Region is also highlighted. It is ***generic, dynamic and flexible***. Countries could focus on any major area of health research systems development, such as genome, vector control, health care delivery, alternative health care financing,

choice of disease interventions, or other health systems issues. The document will serve as a framework for the development of plans of action at country and regional levels. A monitoring process and an evaluation framework will also be set up for a mid-term evaluation planned for early 2004.

3. NATIONAL AND LOCAL (SUB-NATIONAL) HEALTH RESEARCH SYSTEMS

Hitherto the countries had approached the development of health research in a diffused, piecemeal manner. This document attempted to adopt a systematic approach to health research development.

A ***health system*** is very broad; anything connected to health or any action related to health falls into a health system. The purpose of a health system is to promote Health for All and to provide effective health care, upholding the noble values of equity, quality, efficiency and social accountability. A health system includes three main components, viz., health promotion or health building, disease control and prevention, and health care provision. All three components of the health system need research.

A national or local health research system closely relates to, and in many cases, forms a part of the national or local health system. The health research system supports the national health systems for achieving overall objectives. It maintains its technical and scientific independence and accountability for health development.

A ***health research system*** is a ***tool*** to understand, organize, operate and evaluate the health system. Examples of research for health promotion or health building include research on healthy public policies, national policies on a welfare economy (poverty leads to poor health), environment, education, lifestyles, and behaviour. Disease prevention and control also need research for effective and efficient choice of interventions. Research for health care systems must take into account the advances in biomedical sciences such as genomics, cosmetic medicine, quality and standards of care, consumer protection, self-care and alternative care, etc. Research is needed to address many issues in health development, in areas like human resources, community development, technology, pharmaceuticals and vaccines, communication and information systems, financial systems, health policy and laws. Therefore, a health research system is the application of a systems approach to research

to serve for planning and implementation of health strategies based on equity, quality, efficiency and social accountability.

A health research system has to adopt various tools and methods to create or generate relevant knowledge, through a variety of mechanisms for setting research priorities, research management and research capacity strengthening. One of the crucial mechanisms is health research funding. An appropriate mechanism would be needed to enable scientists from various disciplines to work together. Coordination of basic sciences, clinical sciences, epidemiology, and social sciences to address health issues is also needed.

3.1 Role and Objectives of a Health Research System

(1) Role of a health research system

The overall role of a health research system is to function as the "brain" of the health system. A health system is rooted in the desirable values and principles, including equity in health and access to services, efficiency, effectiveness, quality and social accountability. A health system is broader than a health care system and includes health promotion or health building, disease prevention and health care system as sub-components. A health care system takes into account health care or services provided by the professional sector as well as by the folk and the popular sector, self-care, and alternative care.

A health system must be able to respond effectively to the rapid advances in biomedical science and other technology development, national and international politics, demographic and epidemiological transition, environmental degradation, globalization, trade liberalization and other development policies that affect health. Therefore, as the "brain" of the health system, a health research system should be dynamic and integrative, balancing research in the various disciplines according to national needs and imperatives.

No research, in a single discipline, can integrate knowledge and serve as the "brain" of a national and local health system. A systems approach is needed for integrating multi-disciplinary efforts. Hence, the notion of a national and local health research system is proposed to coordinate multiple players in health research and to avoid fragmentation, redundancy and gaps in knowledge in various disciplines needed to serve the objective of a health system.

(2) Objectives

The key objective of a national and/or local health research system is to coordinate health research through appropriate architecture and mechanisms, with the following specific objectives:

(a) To set research priorities and develop a long-term health research strategic plan;

(b) To align health research to national and local health priorities and needs;

(c) To conduct health research to meet the ultimate goals of equity and development according to values and principles;

(d) To respond immediately to the needs and challenges and provide evidence-based research findings for decision-making to all stakeholders;

(e) To ensure that appropriate knowledge produced is efficiently used and linked to policy, planning, service delivery and policy instruments within and outside the countries;

(f) To create synergy and promote collaboration and multi-disciplinary linkages;

(g) To develop standard procedures and mechanisms to ensure ethics, quality, accountability and transparency in health research system;

(h) To develop individual and institutional technical research capacity, to evolve a sustainable critical mass of knowledge, information and evidence for promoting equity and improving health;

(i) To develop capacity to promote and manage health research and related sciences, including health research information;

(j) To advocate and be vocal when the broader development systems are not reflecting goals, values and principles *originally* set for the health system, and

(k) To advocate and mobilize resources for research and development.

The objectives of a health research system at national and local levels, as mentioned above, apply as much to health research systems at the international level. In addition, certain issues pertaining to international health research systems include the notion of correcting north-south imbalance;

country focus (developing countries determining their own research agenda); decentralized decision-making and transparency. In other words, research should not be carried out for the sake of research, but must be channelled to improve health and promote equity and development.

3.2 Functions of a Health Research System

In general, the following core functions can be identified as **essential** for an ideal health research system - at local, national and international levels. These functions are essential for the health research system to fulfill its role as the "brain" of a health system. Brief descriptions of these primary functions are given below.

(1) Stewardship

It is ***quality leadership*** that is needed to continuously promote and develop effective and efficient health research systems. The main task is to develop a strategic vision for health research development. This includes both the medium and long-term, according to the knowledge needs of the local or national health system, and to be responsible for steering the whole research community in a coherent manner, keeping in mind the oversight function.

(2) Capacity development

A key function within a health research system is to strengthen its own health research capacity. Both the demand and supply sides need to be strengthened.

(3) Knowledge generation

Health research needs to address various issues to improve health and reduce inequity. There are two sets of knowledge generation**:** (a) knowledge for the ***purpose of improving health*** (*identification of knowledge gaps relevant to improving health*) and (b) knowledge for ***improving the management of the health system*** (*application of knowledge to determine health issues and appraise appropriate interventions that would lead to the greatest improvement in health*). The knowledge for improving health and for managing a health system must go hand in hand. In the past, health research was mainly aimed at generating knowledge to improve health, such as identification of disease interventions like development of vaccines or drugs.

Later, there was increasing investment in health research development, especially in the area of generating knowledge to manage the health care system more effectively. Vaccines for immunization against communicable diseases, such as EPI vaccines, resulted from biotechnology research. How to make these vaccines accessible to all who need them reflects more of the management aspect of applying health research results.

(4) Utilization and management of knowledge

Health research, as stated above, is not just the generation of knowledge, but also **making knowledge useful** for improvement in health. The results of health research need to be presented in a suitable format as well as translated into policy or action or absorbed into the existing knowledge and technology. There is a need to promote a "health research information culture" that recognizes the importance of producing, sharing and using knowledge. This is to ensure that health research results in health status improvement. This implies the need for stronger links among health researchers, health care workers, health planners, policy-makers and the community.

(5) Research resources mobilization

Mobilization of ***resources for health research*** covers more than the supply of money. Appropriate human, financial and other material resources are required to support long-term health research strategies, including capacity strengthening, which will eventually be cost- effective. Long-term investment, both national and international, on national and local health research systems development aims at future savings. The adoption of an appropriate funding mechanism on a long-term basis, independent of the political system, is highly desirable. Most countries, whether rich or poor, always have some funds for health research. ***Appropriate funding mechanisms*** could make efficient use of the resources for health research and to bring actors together to tackle a problem, requiring multi-disciplinary skills.

3.3 Structure of Health Research Systems

(1) Different systems context

Different forms of health research systems exist in countries of the Region, with variable socioeconomic and political contexts. Efforts have to be directed at strengthening the existing health research systems rather than establishing

new ones. The development of a health research system needs to be considered within the environmental contexts in which it is operating (i.e. historical, political, ideological, socioeconomic, cultural and demographic). An overview of such outside influences is crucial for designing a strategy for health research system development of a particular country. It may be desirable to collate the characteristics and responsibilities of national and local health research systems within various environmental contexts in the Region. The common issues and challenges could be derived based on an overview.

Due to the different contexts within which the countries operate, each would have a variable focus on its own health research system development which will then be translated into an appropriate operational strategy and organizational or institutional framework. One of the purposes of health research strategy is to combine different actors into a more cohesive whole. Within a country, the context could change over time with respect to the variety of actors, expertise and problems. Therefore, the focus of national and local health research systems has to be responsive to the changing context to maintain its central role as the "brain" of its health system. This means that the system has to be ***dynamic***, ***learning about itself*** and ***adjusting continuously***.

One example is the Health Systems Research Institute (HSRI) in Thailand. Earlier, HSRI was responsible for executing health research projects. Later, it began to focus on research coordination, resource mobilization, result dissemination and facilitating networking to promote health research based on a long-term policy perspective. Efforts of HSRI to empower the public and engage them in using health research knowledge in order to influence the policy process are under way. This includes participation of the public in the governance of autonomous hospitals and empowering policy- makers in health reform initiatives.

Knowledge management also entails efforts to create a common understanding between policy-makers and the public about specific issues. The main focus of a national or a local health research system depends on the capacity evolved within and around the institutions over the years.

(2) Constructive engagement with policy makers

National and local health research systems have to enter into an appropriate and constructive engagement with higher administrative levels of the health systems. This would allow the health research system to elucidate the right research questions. Despite the need for a constructive engagement,

independence and non-interference from the higher administrative levels, including high-level policy-makers, and maintenance of sound ***scientific principles*** and ***objectivity*** are essential for national and local health research systems. This will prevent health research being used by politicians or policy-makers to advance their political objectives. Health research results, in some cases, might be in partial or total disagreement with the principles, purposes and expected results of the national or local health development. Excessive involvement by policy-makers could be harmful if the health research questions change along with frequent changes of policy-makers, which is common in most developing countries.

The following factors help determine the characteristics of national and local health research systems.

- Who are the players in health research system development?
- What are the criteria for defining the stakeholders and primary or secondary role players?
- What are their constituents, roles and responsibilities (leadership, referee, a separation of funding from prioritization)? How to deal with people in the system with different agendas? How can coordination and solidarity be established?
- How will the rules, procedures and governance be established? How will the system be evaluated in achieving its aims and goals?

(3) Basic architecture

The basic architecture of an ideal health research system refers to the relationship and governance between functional components of agencies and bodies related to health research within a structure or network of structures to carry out the core functions of a health research system. The different contexts of a health research system within which countries in the Region operate mean that countries will need a specific architecture for their own national and local health research systems. While some may be able perform all essential functions of the health research system through one structure (or even one person), others would have a whole range of structures and networks.

Basic operating principles to guide the development of architecture of the health research system(s) at national, regional and global levels were discussed and adopted by the Asian Forum of Health Research, held in early 2000. These principles include *(a) political commitment to support equity;*

(b) capacity to set research priority and direct research policy; (c) effective health research coordination; (d) efficient resource mobilization, and (e) clearing house and strategies to empower national and local research communities. These principles could be used as guiding principles for restructuring the health research system(s).

The health research systems in the Region are changing rapidly. Most countries have transformed their health research systems recently, within the framework of health sector reform. There is a need to update the latest structure and linkages, especially on how national and local mechanisms and linkages for health research are working. A modification of the architecture or structure may be warranted to improve effective functioning of national and local health research systems. Examples of architecture and mechanisms of national, local and regional health research systems could be given to demonstrate to other countries how such arrangements could improve performance. The analytical documentation on national and local health research systems and their evolution would be used as reference documents for further improvement. WHO-SEARO has attempted through case studies and documentation, to provide information on the basic functions and structure of health research systems in Member Countries.

Experience has shown that a "***national and local health research forum***" or similar coordinating mechanism at the highest level of national administration and with the widest possible participation of stakeholders is necessary for better coordination of health research. The mechanism would allow a much wider participation and bring people of all walks of life together to discuss health research system issues and to reach consensus towards a unified concept at national and local levels. The forum could serve as a neutral platform to bring people together from various sectors (professional, public, private and media) to express their views to the government, and to get consensus on national health research policy, priority setting, resource mobilization and coordination.

The establishment of such national and local health research forums is more necessary in countries where there are multiple stakeholders in health research**.** Some countries already have national health or medical research councils or national health committees or similar analogous bodies, to which legal responsibility has been assigned for policy development and coordination. These bodies have to ensure that there is a wider participation and consultation whenever national health research issues arise. Technical seminars and general public forums might be organized by them to solicit general consensus among the professionals and the public.

The opinions of informed stakeholders could serve to move the political processes for a better functioning of a health system. Knowledge generation and management, along with social empowerment, and the involvement of the political process are referred to as the ***triangular*** **process,** which can be very powerful in shaping the performance of a health system**.**

(4) Research networks

Strengthening the networks and functioning of health research institutions and expertise in specific technical areas within a country and across countries have been the recurring theme of discussions at ACHR and the WHO governing bodies. Experience has shown that many health research networks have been created and are functional at the national or regional level and even at the international level.

There are a few significant facts that are challenging effective and efficient linkages of health research institutions and networks. They are (a) lack of sharing of information, (b) lack of monitoring, and (c) lack of sharing of resources. Currently, several networks of national and intercountry technical collaboration have been initiated in a variety of priority technical areas such as essential drugs and vaccines, disease surveillance, nutrition, health policy and health systems research, and national health accounts. There is a need to define and identify networks of individuals, institutions, organizations, technical bodies, health research councils, and medical associations working at national and international levels, including ASEAN, SAARC, and other intergovernmental bodies. Further studies could be undertaken to identify the functional linkages as well as the ways of collaborating at national, regional and international levels. Such technical cooperation among developing countries (TCDC) and within the country could enhance the capacity building of individuals and groups of countries.

WHO needs to establish or strengthen existing regional and intercountry networks in health research. The SEA-ACHR could strengthen its advisory role at the regional level in promoting coordination between development agencies and national health research systems, especially in dealing with regional health research issues. Development of an "Asian Health Research Forum" or a similar coordination forum at the regional level could also be considered. WHO and COHRED have already laid the groundwork for the establishment of such a regional forum.

One way of effective networking is assigning the regional and intercountry networks to deal with appropriate health research development addressing regional research priorities and sharing the research results at ACHR or other appropriate health research forums. WHO could facilitate such processes in collaboration with other development partners. A vast network of WHO collaborating centres (WHOCC) and other networks of national centres of expertise have existed for some time and could be used as part of the regional architecture and research networks. The increasing role of WHOCC needs to be defined in this new architecture.

Many countries have established networks of health research institutions, e.g. the national network for health systems reform formed around the HSRI of Thailand, the national epidemiology research network of Indonesia, the community-based health research network under the guidance of the Nepal Health Research Council, and the social and community health research network of India formed around the Tata Health Research Institute, etc. Similarly, at the regional level, the Action-cum-research Network for Nutrition, Asia Pacific National Health Account Network, Asia Pacific Network of Health Systems and Health Policy Research, ACT-Malaria, Mekong-basin Disease Surveillance, and INCLEN, have been quite successful in strengthening national and regional health research capacity.

These networks consist of national apex institutions and are carrying out health research activities on specific subjects of interest, such as nutrition, malaria, disease surveillance, national health accounts, and clinical epidemiology, which represent national and regional priorities. They have also involved other institutions in the network to set the research priorities, to make joint research protocols and to share the lead role in the conduct and coordination of research. They periodically issue publications on research findings. WHO continues to facilitate the functioning of such networks in close collaboration with other development partners. The importance of the existing networks of health research must be recognized and fully supported, as they are valuable for promoting research at national and regional levels.

4. KEY CHALLENGES IN HEALTH RESEARCH SYSTEM DEVELOPMENT

A member of key challenges in health research systems development can be identified as (a) health research values; (b) research environment; (c) sustainable health research systems, and (d) knowledge production and its application. The

first three challenges are important for the vitality of the health research system, while the last challenge deals with the relationship between the health research system, health systems and broader development systems. Specific issues related to each of the challenges are highlighted below.

4.1 Health Research Values

Sustaining equity and ethics with respect to human dignity is the main social value for health research systems.

(1) Equity

Equity in health and health care is the basic value for health system development and might not be the direct result of a health research system. ***Equity in health research*** could be measured by the *degree to which funding is allocated to health research* for priority health issues and the needs of the countries. This would depend on how strongly national and local health research systems could influence and negotiate resource funding based upon their ***own research agenda*** in a systematic way.

The role of health research is not just to advocate improvement of equity in health, but also to aim at improvement of health. HIV/AIDS and malaria vaccines are being developed to reduce the disease burden as these diseases affect millions. Research and development of HIV/AIDS or malaria vaccine is a valid investment. Inequity in health occurs when vaccines against HIV/AIDS or malaria are available only to those who can afford them. It may be noted that investment in vaccine research is not the issue, but investment in operations research to improve the management of vaccine use is important. Inequity in health research could also occur when development agencies allocate funds in the "wrong" areas, and thus miss the opportunity to improve the health of the poor.

Some clinical drug trials including development and testing of new drugs which were carried out in the developing countries were not related to the priority health issues of those countries. The SEA Region has a major proportion of the global burden of tuberculosis. The drugs available for DOTS in the TB control programme are not under patenting but are still expensive for use on a national scale. If the countries want to produce these drugs, they have to import expensive raw materials from developed countries. The imbalance of TB drug production is an example of a condition not conducive to equity in health development. Several efforts are under way to cope with this kind of situation.

For example, the Global WHO/TDR programme has a policy to give special grants for scientists or institutions only from least developed countries. The Bill & Melinda Gates Foundation has granted US $60 million for research on TB drugs and vaccines, where institutions in developing countries could be involved.

(2) Ethics

One challenge in health research is parachuting health research from outside agencies, both from public and private domains, with financial and other incentives attached. After the collaborative research is carried out, the capacity of institutions involved has to be fully strengthened. However, in many instances, especially those related to research and development of vaccines and vaccine production, the capacity was not sufficiently strengthened. Before starting collaboration in health research, appropriate agreements on the transfer of technology and strengthening of human resources or other institutional capacity should be in place. The country would then be able to procure the vaccines or produce them at an affordable price since facilities for the field research for testing such a vaccine were provided by the country.

One example relates to genetic diversity. The global interest in the South-East Asia Region is now profound because this Region is a very good resource for genetic diversity. Multinational private corporations from the developed and developing world are in touch with private and public hospitals of developing countries for samples of biological products to match genes that will require large families and population diversity**.** National ethical guidelines need to be developed to deal with such practices.

(3) Other values

The other values of health systems such as efficiency, effectiveness and social accountability also apply to health research system.

4.2 Research Environment

(1) Globalization

Globalization is characterized by three distinctive and interrelated phenomena, (a) increasing cross-border flows of goods, services, money, people, technology, and ideas; (b) opening of national economies and boundaries to such flows; and (c) development of international institutions

and rules governing these cross-border flows. It entails multiple actors at the country level. One key challenge is to have effective national and local mechanisms for coordinating external development partners for health research system development, within the framework of rapid globalization. This can also include coordination to tackle cross-country issues. Rapid advances in science and technology, increasing trade liberalization, rapid expansion of communication and transport, fluid movement of people across international borders and rapid urbanization, present the biggest challenges for health research.

Another challenge is how to exploit opportunities and anticipate the consequences of new discoveries and advances in technology rather than reacting to the effects. This would cover how to assess the ethical, social, cultural and other impact of new knowledge and how to ensure the widest possible access to such knowledge. National and local health research systems could provide answers to determine the public good amongst the products of the new discoveries.

(2) Inadequate resources

The lack of or insufficient resources for health research systems development, especially in the least developed countries, creates dependence on foreign assistance. In many instances, external development agencies tend to set their own health research agenda and insist on the country participating in their agenda. Many countries have failed to adopt a policy of not accepting funds with conditionality from development agencies if the areas of funding do not coincide with national and local priorities.

Presently, tuberculosis, HIV/AIDS and malaria are receiving high priority in global health research. Similarly, high-priority health problems of the Region that require a lot of support through health research, like dengue/ dengue fever, thalassaemia, kala-azar or snakebites, are not attracting adequate financial resources. Therefore, a system that allows the generation of more resources for health research at the regional level is needed.

Secondly, countries have considered funding of health research as expenditure rather than an investment. At the same time, researchers tend to undertake health research to advance their career. This has resulted in gaps, fragmentation and redundancy of health research products. Therefore, there is a need for governments to invest some percentage (around 2-5%) of the

operating health budget towards health research, which should be linked to national and local health priorities. More investment in health research should be considered as a key added value of the health system. One possible way to generate health research funds in each country is to have a certain proportion of sale proceeds of some drugs and vaccines, or of some harmful items like tobacco or alcohol earmarked for research.

Thirdly, national and local plans for strengthening health research capacity should be developed to ensure that adequate human resources are available to carry out different national and local research. In addition, WHO should take the lead in allocating a certain portion of its operational funds for research.

(3) Research culture

Most countries do not have an environment or a culture conducive to health research. *How do we create and improve research culture?* The term "research culture" usually frightens people if not expressed well. Rather than talking about research culture in general, the stakeholders for health research should stimulate researchers to encourage science- and knowledge-based decision-making at all levels. Science-based decision-making is usually deficient in many countries, affecting the development of an environment conducive to research. Research environment and research culture are related. Even though the research culture is broader than research environment, research culture can be an outcome of the research environment. A good research environment makes it possible for the actors in the health system to adopt the research culture by demanding evidence in policy processes.

Research culture also extends beyond the environment of health research, to that of health systems and non-health systems. It includes not only producers but also consumers of research such as health care providers, professional organizations, local authorities and the community. Research environment focuses on institutional environment and the researchers themselves, including their career structures. Focus on research environment is a good entry point for establishing a research culture.

The creation of health research culture begins at the level of basic and high school education. Research practices should also be introduced as part of graduate and post-graduate education. There is also a need for recognition and to raise the profiles of researchers through various incentives and

motivation. Appropriate research careers should be established. The health policy makers and decision-makers should also demand evidence-based information for policies. Public and professional debates and forums should be organized to improve research capacity and to generate knowledge.

4.3 Sustainable Health Research Systems

(1) Plurality of stakeholders (governance)

There are many actors influencing a health research system, both from within, like the government health and health-related agencies, the private providers and industries and from outside like international development agencies, multinational corporations and foundations. There is a need for a detailed description on the **roles and functions of such stakeholders.** The description should include issues such as *who has the authority over what, who in particular has control over financing or where the powers are located.*

Some institutions or stakeholders might have formal authority, but the real power lies elsewhere, e.g. the difference between the National Research Council and the Thai Research Fund in Thailand. Mapping the spread and location of the *function, authority, power and financial control of health research* would be one way of reviewing linkages of the health research system.

Assessment of the *legislative and statutory environment* might be explored. In some countries, the health/medical research councils like Health Research Councils in Nepal or Bangladesh have been established with legislative support. The degree and level of *coordination, collaboration and partnerships* in health research would vary with the level of authority and the structure. The environment of *trust* and *solidarity* is another issue in addition to the requirement of law. *What is the level of coordination? What is the extent of consensus and element of trust? To what extent is there solidarity?*

When the *vaccine for Dengue/DHF* in Thailand was developed, there was sustained collaboration between external agencies (WHO and WHO/TDR), academic institutions (Mahidol University and its subsidiary institutions), the Ministry of Public Health, the Bangkok City Health Authority and the pharmaceutical industry. Here, the academic and research institutions developed the research products (prototype vaccines), while the industry transformed the prototype vaccine into commercial products. Another

example is the joint USAID/Indian Council of Medical Research (ICMR) initiative in supporting collaboration between private and public institutions for HIV/AIDS vaccine production for India.

There is another aspect which merits attention. This is the issue of the *rotavirus vaccine* production. The vaccine was developed in the USA, and tested in some developing countries of Asia and elsewhere. The production was stopped due to some complications even though there was potential usefulness of the vaccine in developing countries where the disease is much more prevalent. Partnerships must be promoted to handle other development areas that can affect health. Also, the ethics of international collaboration, require special consideration. An important issue involves the level and quality of communication and dialogue among the different constituents within the health research system. The multiplicity of players, deficient rules and mechanisms usually lead to deficiency in transparency and accountability in the governance of health research. A national health research forum or similar coordinating mechanism with full involvement of all stakeholders is essential for ensuring good governance.

(2) Strengthening research capacity

It is well known that the lack of health research capacity, both technical and managerial, as well as absorptive capacity of users of research results is a major problem in many developing countries. Different countries have different levels of capacity in each of the above mentioned areas. Therefore, efforts to strengthen capacity should be in line with the different needs.

In addition, *capacity building* for health research that helps generate knowledge should be differentiated from the capacities to adapt and apply the existing knowledge. Some countries might need strengthening of the former category and others the latter. Health research capacity must be strengthened according to certain identified areas and priorities.

(3) Maintaining stable financing

Mobilizing appropriate resources for development of health research systems during the period of economic and political crises is the biggest challenge. The economic crisis in Asia led to the reduction in government investment in health research. In such a situation, due to uncertainty of financial resources, most of the health research systems have an unattractive career structure. Thus, there is a need to advocate for more investment in health research to effectively respond to such a crisis.

4.4 Knowledge Production and Application

Some forums, mechanisms or platforms at the national or institutional levels should be created to promote and clarify ideas of health research inputs with regard to health systems and policies. Also, there are challenges concerning the relationship between research and industry and commerce, including the issue of intellectual property rights, which need to be addressed.

(1) Knowledge application

Oral rehydration treatment, including the use of scientific formulae for oral rehydration salt (ORS) was developed in the mid-1960s at the SEATO laboratory in Bangladesh (later known as the International Centre for Diarrhoeal Diseases Research, Bangladesh - ICDDRB). But this technology for saving millions of lives was widely available to the world only 10-15 years later. Another example of delay in making knowledge available to the public by some decades was related to "why BCG is not effective for protection against adult tuberculosis". Efforts made to classify health knowledge as public domain would prevent such gaps in information.

Innovative methods to digest the research findings from health, biomedical and other sciences for the public and potential users are needed. One approach tried with some success is to translate the analysis of complicated scientific materials in appropriate "**media**" that may be acceptable to users, e.g., in Thailand, the findings of a series of complicated anthropological studies have been translated into short videoplays and story books that are easily acceptable by the community. The successes prompted medical and nursing schools to use the materials to teach research and ethics.

In knowledge management, advocacy for evidence-based policy has potentially a negative political connotation and must be handled with care while building up the research systems towards evidence-based health actions. The Indonesia/ADB health development project on intensification of communicable disease control enabled local health care providers and the community to make effective use of evidence-based information for local health improvement, through local operations research activities.

(2) Knowledge as public good

One key challenge in knowledge management is to encourage health knowledge as a public domain. Health concerns transcend national boundaries and knowledge and technology are being transferred from one

source to another rapidly. It is imperative that the outcome of health research systems should remain within the public domain. Each nation should develop appropriate regulation/legislation on commercialization of health research results.

5. STRATEGIES FOR HEALTH RESEARCH SYSTEM DEVELOPMENT

The following strategies are suggested to deal with the challenges.

5.1 Analysing National and Local Health Research Systems

Countries need to analyse the situation regarding the role of their health research system within the overall national and local health systems, identify their strengths and weaknesses, and develop case studies indicating successes and failures. This should be carried out within the strategic framework of the objectives, functions and structure of health research systems. This will then allow countries to look at possible options to improve their own health research systems and then choose a strategy, that will take their health research systems forward. Countries have to include the statement of health research policy as part of the national and local health policies.

The first step to make an appropriate analysis of the existing national and local health research systems against the strategic norms is to organize health research fora on a periodic basis. The health research fora would provide avenues for health researchers, policy-makers, the public and other stake-holders to make an overall review of the health research systems, agree on health research priorities and provide guidance for research and collaboration needed. Such guidance and collaboration are a key input to the development of national and local strategies and plans of action for health research system development so that health research can be the "brain" of a health system.

The Regional Office should provide the necessary technical support to Member countries to carry out the situation analysis and provide a forum to share their experiences in understanding and improving the contribution of health research systems, which would further enhance the performance of health systems. Coordination by the Regional Office will have an added comparative advantage, having already developed a common framework to collect and analyse information. In the situation analysis, there might be some problems due to inadequate or lack of information, e.g., lack of information

on resource flows and lack of a comprehensive health research-financing scheme. Strategies can be formulated to tackle those components which would help to identify knowledge gaps, fragmentation, and redundancy.

Common indicators for measuring the performance of a national or local health research system could also be developed to make a comparative analysis. Efforts should be made to compile knowledge about health research systems and their interaction with the health systems. This includes the various components of health research systems, the relationships between them, and effective management of knowledge and its relationship with the health systems.

5.2 Strengthening Capacity of Health Research Systems

Considering the essential requirements of the national and local health research systems as well as the capacities needed for their good performance, different ways and means of strengthening the capacity of health research systems have been identified. The following strategies might be adopted to strengthen the needed capacity.

- **Mobilization**: Can the countries mobilize resources from within?
- **Networking**: A single country might not have enough capacity, but it could be strengthened through networking. One example is the establishment of the HELLIS network to increase access to health literature and library information material to countries. Networking among institutions and individuals within a country or across countries in specific research area is another example. Networking and partnerships with mobilization of potential resources can assist countries in capacity strengthening.
- **Country-focused plan for capacity strengthening**: Development of technical skills and competence in research development and management, negotiation skills, leadership skills and networking are major areas for strengthening.
- **Catalytic role of WHO**: The Regional Office could act as a catalyst or facilitator and should work closely with countries in their capacity development. For example, a significant cadre of experts has been trained through intercountry, national and local training workshops on ethics in health research with Regional Office support. *How would the countries use these experts to cope with the ethical issues of health research in their own countries?*

- **Clearing house of experts:** There should be a listing of regional experts and participants who have gone through such specific training. Countries can take turns to carry out training workshops/courses through cost-sharing mechanisms.
- **Clearing house of modules**: WHO could also act by itself or designate selected national and local institutions or a WHOCC, as a clearing house for health research training material, including educational modules, for countries.
- **Refinement of tools and methods**: A compilation of health research tools, methodologies and guidelines should be encouraged. The Regional Office can coordinate the use and refinement of these tools for use in the Region.
- **Use of information technology:** It has to be emphasized that in response to rapid changes and advances in information technology, countries will need to strengthen their capacity on how to make effective use of information technology for research system development, including the capacity to screen important emerging knowledge and technology.

Capacity strengthening has to be seen as more than training. This involves the creation of an environment for a learning organization, through partnerships among producers and users of health research. Such a partnership will empower both the producers and users. In a ***learning organization***, mechanisms have to be developed to monitor, evaluate, summarize the lessons learnt and provide feedback to the players. Information technology can be utilized to strengthen the "learning organizations" around national, regional and global priority areas addressing not only the resurgence of infections and diseases associated with poverty but also problems where advances in science, such as genome technology, can help. The capacity thus developed can be applied to other areas as well.

One possible strategy is to conduct health research, while education programmes are initiated in parallel, for interaction with the public. This community education will enhance the understanding of stakeholders about the role of research in addressing pressing health issues and help develop a strategic alliance between stakeholders.

Similarly, a regular forum to facilitate stakeholders' interaction and empowerment of people by effective use of the media are other important

strategies. WHO has provided a platform and opportunity for national and local health/medical research councils and analogous bodies, within the framework of the regional ACHR, to identify partnerships and strengthen interaction among themselves to create their own agenda.

(1) Technical and managerial capacity

Strengthening the technical and managerial capacity and capability to ensure ethics in health research is a high priority both for managerial and technical personnel responsible for health research, especially members of ethical review committees at the institutional or national level. This need has been expressed in many forums, including the regional and global ACHRs.

The second area relates to strengthening capacity for health research promotion and development, associated with new science and biotechnology, like human genetics or research informatics. The 26th session of SEA-ACHR, held at Thimphu in April 2001, had a scientific debate on human genetics and its implications in health and health research. An inter-regional consultative meeting was organized by WHO at Bangkok in end July 2001, where the discussions concentrated on what the regions would do to strengthen capacity in the area of human genetics and how ELSI issues would be addressed globally.

The third area is strengthening the capability and capacity regarding health research laboratory management and health research related legislation, including those applicable to experimental animals. The fourth area relates to revitalizing the training courses on health research methodologies in order to improve the skills of national and local staff, especially in the planning, management and use of health research.

Another gap in health research is the lack of technical and managerial capacity in health- related social science. The capacity could be strengthened through training in social science research methodology, which addresses local health issues. There are a large number of social scientists already available in most countries, but very few are working in the field of health research. Therefore, efforts should be made to create a critical mass of social scientists to work within the health research systems to address various priority health issues.

In the SEA Region, the major limiting factor is the scarcity of the people to take responsibility for governing these technical areas. Countries would get people interested if they had a long-term human resources policy for health

research. If the policy is strong and resources are available, people would become interested. WHO should interact with the countries so that they can create an appropriate *plan of action*. Once health research scientists are interested, there will be a need for capacity development, which could take the strategy forward. Finally, the research community needs to use a language that is understood by the people and stakeholders so that research involving frontier sciences can move forward according to the needs of the countries.

Developing countries should develop health research capacity for advanced and novel technology to deal with their health problems in a concerted manner. In spite of the resource constraints, developing countries have tremendous research capability and biodiversity. Research and clinical institutions in the developing countries themselves would have to come together and target their efforts towards priority *frontier areas*. Through regional and international health research networks and bilateral collaboration with developed countries, health research in the frontier areas can be further strengthened. Most countries also have to link *information technology and networks* with biotechnology as well as forming *institutional networks*.

WHO should facilitate south-south or north-south technical cooperation. *Participation in the development and implementation of regional health research on priority health issues* could be a possible mechanism to get agreement on health research priorities and to work in collaboration with institutions and researchers. Involvement in intercountry research programmes in areas such as *thalassaemia, kala-azar, human genomes, drug-resistant malaria, arsenic poisoning, herbal medicine* and *snakebites,* would help researchers to strengthen their capacity. Interregional partnerships could be explored to strengthen networks of institutions and expertise relevant to global problems such as *multi-drug-resistant tuberculosis or genetic diseases*.

(2) Research management

The crucial element is strengthening research management capacity, which is lacking in most countries of the Region. It is much more important to strengthen this capacity on the supply side rather than on the demand side.

The supply side includes the actual management capacity of researchers and managers of health research institutions. They all need to improve skills in research management, visioning, leadership, negotiation, communication and advocacy, team building including capacity to work in a *multi-disciplinary environment* involving medical, social and management sciences and research evaluation. WHO-SEARO may establish an expert group to look into various

issues of research management and to develop appropriate regional and national strategies for strengthening research management capacity, especially in the above-mentioned areas. Through collaboration with WHO and regional networks, countries might work together with experienced institutions to develop appropriate training modules for improving managerial skills in evaluation, leadership, negotiation, team building, etc.

Accountability and ensuring scientific discipline and ethics in a review mechanism for health research proposals are important issues for strengthening capacity on the supply side. Review of health research proposals is done at *all levels* - local, institutional and national. All health research proposals must pass through scientific peer reviews, which should consist of researchers, funding agencies and users of research. A framework for future research should be the basis for capacity strengthening. The research review committees should also be responsible for reviewing the health research process and results, to ensure that quality and impact emerge from the process.

Periodically, the national health research forum might need to make an evaluation of health research carried out during a specific period. Aspects of quality, efficiency, effectiveness and impact of health research in relation to overall health systems development would be covered. Appropriate tools and methodology for evaluation of health research are also needed.

The demand side issues usually relate to the absorptive capacity for research among users, such as policy and decision-makers, fund providers, the community and the media. Even before planning and designing health research, research scientists would have calculated the risk of investment and the expected benefits arising out of the health research (Note: Many empirical studies have shown that an investment of one dollar in research can give a return of 20 dollars). Usually, fund providers and policy-makers would like to see these estimates before they agree to support the research. The users have to be involved in the development of health research from the very beginning, especially in identifying relevant research areas and appropriate resource allocation.

One important area of health research management is the preparation of research results into acceptable packages and ***publication of research findings*** relevant to specific policy issues of the countries. Such a capacity for research management should be enhanced. However, it is felt that issues related to publications and utilization of health research results should be separated. Publication of research results are normally aimed at securing

scientific validity through peer review. Many publications on research studies are not scientifically scrutinized these days. Similarly, editorial boards of institutional, national and international scientific journals also require appropriate training for peer review. Documents to encourage the utilization of research results have to be synthesized from scientifically valid work into different packages for targeted users.

For example, different policy and advocacy packages were developed for policy-makers on "The reforms for Civil Servant Benefit Schemes in Thailand", from the analysis and synthesis of more than ten scientific publications. These packages are in a form that users (decision-makers) can understand. The packages include recommendations on actions to be taken or not to be taken as well as the consequences of those actions. Therefore, a series of research questions must be packaged to answer some policy questions at the outset.

The use of health research results are normally not in the domain of health researchers. What is in the hands of health researchers is the *dissemination and effective communication of research results* in an understandable form. There are two possible means of effective communication. One is the dissemination of results in appropriate scientific journals for the scientific community. Another is the dissemination of research results to non-scientific users such as policy makers and the general public. The challenge is how to transform such knowledge in scientific journals into relevant forms or messages that can be understood by other users. Academics or research scientists often do not have such skills. Thus, the capacity of researchers and to package research results for various users needs to be strengthened.

(3) Resource management

Strengthening management capability for mobilizing resources for health research systems development, as part of capability strengthening, might be the key in strategic areas such as: (a) negotiation and coordination at the country level, (b) impact assessment, and (c) cost-effectiveness of investment. Some issues, as stated below, on which capacities in researchers resource management should be developed need to be clarified.

- How can a country measure its capacity (financial and human resources) in a given context to identify the gaps and imbalances in research resources to deal with the priority agenda? Research resource flow analysis might facilitate answers to this question.

- How can a country avoid a situation where the research agenda may be driven by external agencies? Proper negotiations will ensure that health research flows in the right direction.
- If a country has many clinicians or public health specialists or epidemiologists but only a few biomedical researchers, the persons and capacity available might influence the priority research agenda. In other words, how can a country identify the extent to which the existing research capacity determines the research agenda? What can be done to correct the imbalances and the gaps? Balanced representation at the national health research fora and wider consultation can help correct the imbalances and gaps.
- How do we ensure that the existing research infrastructure and human resources can be utilized for the new frontiers of health research? The existing health research institutions could be strengthened and scientists reoriented, rather than starting new research facilities. Countries in the Region could also share facilities and expertise.

It is essential that the development of national and local health research systems emphasize the utilization and impact of health research. Research producers must be able to show the impact of health research through publications and utilization. It would be difficult, to otherwise seek more funds, especially in times of economic crisis.

By creating a good health research system, research institutions can be strengthened, which can be an important measure against brain drain. Career opportunities, research motivation and incentives, opportunity to upgrade and improve knowledge, appropriate research infrastructure, such as libraries and research laboratories, are necessary to retain scientists in the country. These measures could also motivate research scientists who have migrated to developed countries to return and strengthen national health research systems.

5.3 Managing Knowledge

Knowledge as the output of national and local health research systems should include new research findings, information, education, and solutions. All these should provide desirable inputs for the health system. Finally, there is a need to align the knowledge output of the health research system with the values and principles of the broader system and society.

(1) Knowledge management

The generation, validation and use of knowledge as well as services resulting from that knowledge ought to be in the public domain. Measures must be taken to make the knowledge accessible and to appropriately link it to permit its effective use. Public and private partnerships have to be enhanced to tackle problems associated with patent and intellectual property rights, and to make knowledge a public good. Some investment is warranted to reduce the digital and other divides which hinder effective accessibility to knowledge.

(2) Information networks and web sites' linkages

Creating effective information networks using the latest technology could enhance effective management and use of knowledge. Effective linkages of such networks will permit extensive use of available knowledge. A compendium of various reports related to the national and local health research systems could be made available, including information on country portals or web sites for each country. The Regional Office could closely work with the country portals, which are controlled by government and nongovernmental agencies. The portals could also be strengthened to assume the role of knowledge management. Some mechanisms could be established for ensuring the validation of all health research documents that are put on the web sites. The information disseminated through the web sites could be case studies and success stories as well as examples of failures, with linkages to validated knowledge from the professional, folk and popular sectors. Training on information technology management to support knowledge management is warranted.

The Region has a diversity in languages and thus there is a need to improve the efforts of the countries to enhance knowledge dissemination. WHO is working closely with the ministries of health and local publishing houses in order to make available many scientific documents in local languages. Low priced reprints and sale of WHO documents and publications have been arranged with local publishers.

The Library at SEARO, in close collaboration with its HELLIS (Health Literature and Library Information Services) network, has been updating Index Medicus for South-East Asia (IMSEAR), which provides detailed information on research abstracts and an index of selected national scientific literature published in countries of the Region. The Library, in collaboration with other WHO Offices' Library networks and the HELLIS network has also provided,

through its web site, an interactive document search, supporting many researchers in the Region. Existing linkages and the HELLIS network could be further expanded to cater for exchange of information on health research results in grey areas (especially unpublished research information). Countries would also be able to access (on demand) the network of the UN Library Consortium not only in abstract, but also in full document form. The recent initiative of the UN Health Inter Network (HIN) and its potential use could be further explored. Through this initiative, India started implementing HIN activities as a pilot project in early 2001. This will facilitate an internet-based network of health related areas to be connected freely, making optimal use of them. UN agencies, ministries and national and international health literature providers are fully involved in this two-year initiative.

(3) Exploring new frontiers

Promotion of research culture among producers and users of research should be explored as a strategy to expand creativity in knowledge generation and knowledge management and to improve research ideas and products. The involvement of emerging developments, both in the scientific and social arena, will require innovative efforts to explore new frontiers. The exploration will need new capacity and capability in areas such as genetics and genomes, poverty reduction, role of law and social empowerment in enhancing health, and reducing disparities among social groups and nations. Despite the need to explore new frontiers of science and social movement, *the primary responsibility for health research agenda setting lies with the health research systems of specific countries.* In this context some questions about knowledge generation need to be addressed.

- Does knowledge facilitate the promotion of equity?
- What kind of research or portfolio of research within the health research system is aimed to achieve the values of priority driven, need-based equity?
- Is there a way to determine the ratio of health research related to the health status in a country, and relate it to the overall social development context?
- Is there a way for countries to determine the appropriate ratio between different types of health research, so that they can identify whether or not the direction of health research fits the country's strategic needs?

- If the country is undergoing health care reforms, what would be the appropriate ratio between policy and system research and investigator-driven research?

(4) Balancing the types and areas of health research

Very little has been said on the types and areas of health research to be undertaken by countries in the Region in five to ten years' time. The prioritization of health research areas and the development of detailed strategies for health research in each priority health problem could be addressed at many technical fora.

The question is to determine to what extent a balance is needed between:

- the different potential types of research,
- the biomedical, clinical and public health spectrum,
- the investigator-driven and systems-driven (problems related to policy, planning and delivery of services designed to improve health and equity),
- goals-oriented and non-goals oriented,
- operational research designed to improve health activities versus health research designed to generate knowledge,
- health research to answer the 'what' questions versus 'why and how' questions, and
- disease-based research activities versus policy and system orientated research?

During the last few years, South-East Asia Region has organized various technical expert working groups and task forces on making pregnancy safer, regional vaccine policy and vaccine research policy, and research in HIV/AIDS. A balance is needed between health research to generate new knowledge and health research for the application of existing knowledge to local needs.

The current strategic framework will focus attention on strengthening national and local health research systems. At appropriate fora, the SEA-ACHR and the countries could identify and make recommendations on the specific

types and areas of health research. The countries could also involve themselves in global health research prioritization that embraces new developments in science.

5.4 Priority Support to National and Local Health Research Systems

Different strategies need to be adopted by each country to meaningfully enhance country focus in the use of health research to support health systems. This will entail increased support for health research from the government. A compendium of examples on how countries get their resources for research could be developed.

(1) Priority support at national level

At the country level, the possible steps to increase support for research are:

- ***Analysis of resources and resource flows for health research***: Countries could use the methodology for analysis of resource flow, developed by GFHR/COHRED/WHO in order to have a balanced investment in health research. *Countries may need to* ***organize donors' meetings*** *and getting consensus with them about health research needs.*
- Development of ***training courses*** in countries where health/ medical research councils and appropriate agencies can share a common burden within the countries as well as between the countries of the Region.
- ***Information sharing*** on health research development should be promoted through various ways.
- ***Flexible funding mechanism*** can facilitate systematic review, priority setting, mobilization of resources, reduce redundancy, and design a transparent system for resource allocation, quality control, dissemination and utilization. Accountability and transparency in funding mechanisms are key operating principles. Health research projects with efficient coordination and strategic alliances are well funded. A good funding mechanism is critical for bringing about strategic alliances for good quality research work. More funds could be allocated to a health research project, which can make an impact.

Thailand has recently passed a law that the government should provide funding support for health research through a flexible and transparent funding mechanism. The law provides for flexible funds to establish the Health System Research Institute, the Thailand Research Fund, and the National Science and Technology Development Fund. The resource flow study on various funding mechanisms helped the government to review its contribution to health research compared to other countries. This led to an increase in operational funds for research. While an increase in funding might not always occur, the message is clear: governments have to invest in health research to nourish a "good brain" for a health system.

(2) Environment conducive to good research system

The creation of a good health research environment is important for the creation of a good research system. Isolated programmes to create researchers without research system development will be ineffective since the researchers produced would not have stable career and job opportunities. Research institutions could use any opportunity to press for support for evidence-based policy. Improved communication with the stakeholders to create an appropriate understanding among the people about the need to support health research system, in response to the changing political environment, can help create a healthy atmosphere for good research environment. The challenge of health research systems development is how to support the health system.

Career development of researchers, research managers and research coordinators can be considered as part of health research system development. The system and the environment should be part and parcel of the same development, which would take care of both innovations and agenda-based research. It is difficult to have a good research career without a good research system.

As an example, Thailand's HSRI has facilitated some large-scale long-term research projects like those dealing with empowerment (decentralization) or issues related to reduction of imports and improvement of self-sufficiency in health technology. These projects would entail the involvement of several disciplines of scientists, such as genetics and other biotechnology scientists, clinicians and social scientists. Also, HSRI has supported many multi-disciplinary research programmes in which Ph.D. students worked as apprentices on research questions which can contribute to long-term national health development, as well as area-based research programmes to strengthen the capacity of local researchers. At the community

level, researchers in specific catchments have been engaged in problem-and need-driven research relevant to local problems for eventual decentralization and sustainability of the health care system. There is a need for creating a research environment for pairing health care providers and practitioners with academic institutions in conducting health research to tackle local problems. This would help build research capacities for both researchers and providers and orient academics and health care providers in formulating appropriate research questions.

A focus on research culture and career structure of the researchers can improve the research environment. The Thailand Research Fund (TRF) has supported inter-disciplinary and basic research in all branches of science. Recently, TRF received approval from the Thai Cabinet to launch the Royal Golden Jubilee Project commemorating the 50th anniversary of the ascension to the throne of His Majesty the King. TRF gave sufficient no-bonded research grants to each student for Ph.D. studies in Thai universities. Each grant covered the student's stipend, tuition and research allowance, and also a budget to pursue elective studies, research and data analysis in any collaborating university abroad. The efforts will enable Thailand to improve its research capacity and the university infrastructure, in addition to producing researchers.

(3) Enhancing partnerships

Partnerships and twinning countries or institutions must be based on equal partnerships to address special complementary needs and mutual benefits. In designing a partnership package, it is important to guard against enthusiastic promotion of specific interventions perceived by one partner as useful. Rather, an equal partnership should be based on a good design of a two-way dialogue, which could avoid dominance of one partner. Some guidelines for good partnerships might be needed. A good partnership must respond to the legitimate needs of the partners in terms of knowledge generation, transfer of technology and capacity strengthening. Partnership efforts should also be monitored.

Establishment of collaborative networks of health research institutions within the context of the national health research system will maximize the outcome of the system. It would also facilitate the sharing of expertise and optimising the utilization of resources. Such partnership will also attract larger multi-centred health research funds from international development partners. One such example is the creation of national and regional health research

networks including India, Nepal, Thailand and Sri Lanka with support from the Rockefeller Foundation.

Of late, WHO Regular Budget resources for health research have been diminishing. The extra-budgetary funding for WHO has also decreased during the past decades. Recently, however, there have been good prospects of attracting funds for health research. At the international level, the consortium approach, with WHO as the focal point for coordinating development partners in health research, could be encouraged. WHO is expanding its partnerships to a wider range of development partners, such as the World Bank, Global Alliances, UN Foundation, Bill and Melinda Gates Foundation, etc., for research and development for its global programmes such as leprosy, polio eradication, HIV/AIDS, and TB control. WHO has used its technical leadership to persuade development partners to support the global, regional and national health research agenda.

The role of the Regional Office and WHO Representatives could be identified within the framework of the strengths and limitations of expanding partnerships. One critical role is as an *honest broker to help channel resources for health research*. In doing so, Member countries should have their own research agenda ready for WHO to advocate on their behalf. Regardless of WHO acting as a convener of development partners to support health research efforts, the principle of country-focus must be maintained. International collaboration in health research should deal with health problems that extend beyond international boundaries. Countries should coordinate donor activities at the country level; conduct resource flows analysis to understand the situation and cooperate in international efforts for research on international issues.

A key objective of regional partnerships is to mobilize support to countries in different stages of development. Research capacity development should respond to different and distinctive needs. As changes are rapid and unpredictable, countries should have the capacity to respond rapidly to changing research needs. The first step in developing a partnership is to identify cross-cutting needs of development partners and set priorities for research issues related to the concerns of the development partners. Later, partnerships might be formed to address the special needs of some partners. Finally, countries with poor resources and infrastructure need more attention in capacity strengthening. WHO can use some of its country and intercountry budget to facilitate the formation of partnerships in the Region to promote the

development of national health research systems rather than supporting only intercountry research projects.

Using the existing infrastructure like networks of WHOCC and national centres of expertise for fostering good partnerships could be explored. Presently, some WHOCCs are not being utilized to their full potential. The Regional Office can facilitate intercountry cooperation in strengthening the health research system to tackle health issues of the countries by encouraging intercountry collaboration using the intercountry budget. The experiences gained can be documented and shared among the countries.

5.5 Ensuring Good Governance of Health Research systems

(1) National level

Good governance of health research begins with the involvement of people in identifying research problems and priorities and to some extent, deciding on resource allocation. The central importance of ownership and involvement of the public needs to be emphasized. *How this will happen is a big challenge*. *How it will happen in an equitable way is going to be a bigger challenge.* Another challenge is how the public will be more involved in the determination of the broader systems? In order to allow productive and meaningful involvement of the public, there must be some mechanism to develop their capacity to understand the usefulness of health research. If the community is involved only as a token, it would be more harmful.

Documenting the different systems of governance of health research in different countries must be encouraged. As an example, the Planning Commission in India convened health research experts for advice to set the goals for resource allocation. Many ministries were not consulting each other and working independently to draw up their own action plans. The Indian Council of Medical Research, through its own governing body, has its own objectives and plans. So do other academic and research institutions. Many of them deal directly with international donors and carry out health research programmes agreed upon by the external agencies. A series of research studies on the effectiveness of DOTS for TB control and national immunization days for polio eradication (pulse-polio) were carried out in India. However, the main findings, especially policy implications of such research, had not been conveyed properly to the decision-makers. Many of the recommendations from the research studies were conveyed to Indian policy-makers through WHO advocacy. It is, therefore, necessary to analyse the

existing health research systems and suggest an appropriate national architecture, which would promote close interaction and coordination.

In Indonesia, the new Ministry of Health and Social Welfare has created a platform for working together with other health-related ministries. This forum allows some form of cross-discipline interaction and good governance. The acceleration of decentralization efforts in Indonesia is another example that deals with issues of good governance of health research at the grassroot level. These are a few examples that countries are encouraged to share. The National Health Committee in Myanmar, the National Health Council in Sri Lanka or the National Health Research Councils in Nepal and Bangladesh are also engaged in similar coordination functions.

(2) International level

Codes of conduct for international cooperation in health research should be developed to counter the criticisms *by some* that international support for health research has been unfair, inequitable, and exploitative. Further discussions are needed to design actions to address the recurring issues related to intellectual property rights, especially health research related to traditional medicine, drugs and vaccines, since there has already been a lot of discussion in various forums. Many complaints of unfair cooperation are based on experiences. To what extent is there a lack of coordination between international agencies that is harmful to countries? Is this affecting the research agenda of the countries? If so, how much? To what extent is the continuity of knowledge generation in countries affected by donor-driven agenda? Would, coordination help alleniate increasing inequity and impoverishment?

6. FROM STRATEGIES TO ACTION

There is agreement about the values, principles, focus of health research, and health research system. It is recognized that the health research system could be useful and might have added advantage if it is efficient. There is also agreement on the components of health research systems and what they are supposed to do. The question is, what next? What can countries do to move this forward and to make use of the framework as a useful tool?

6.1 Formulating National Health Research Policy

Most countries of the Region have explicit national health research policies. Those who already have a health research policy may need to review and

revise it in the rapidly changing global and national context. Other countries may also need to start the formulation of a national health research policy. An eminent scientist may be appointed for this purpose, under whom a task force representing all stakeholders may be established. The task force should review health research development and formulate a draft policy. This document could be reviewed through wider consultation among policy makers, researchers, institutions, community and civil society, and also through public debates. The final document should be endorsed by the highest constitutional body, usually the Parliament.

6.2 Establishment of National Health Research Forum

The national health research forum is an institution for reaching consensus on identifying the national health research agenda and priorities based on the framework laid down by the national health research policy. The forum will review, from time to time, the performance of the national health research system within which the policy is implemented. Each country may decide the actual structure of the forum according to its needs and existing health research system.

6.3 Review of National Health Research System

In order to understand what is happening within a complex system of development of health research, there is a need for a thorough review of the national health research system. At this juncture, such a review can be undertaken through case studies of health research systems development. It might go beyond mere description of the systems. The analysis should be part of local, institutional or national processes, and should also include the generation of information for better understanding of the strengths and weaknesses of health research systems, which would help to strengthen the effectiveness of the system. In the long run, indicators for assessing the performance of the national health research system can be evolved based on the experience of country case studies.

A situation analysis can be shared with stakeholders to start discussions about how to move things forward. A *situation analysis starts with what exists, is non-threatening and neutral and links to the notion of planning forward.* It should be context-based and emphasize the notion of country-based approaches. The activity in itself can lead to capacity development. Some external involvement is desirable because it can lend additional objectivity to

the process. It may allow the situation to represent multiple perspectives and facilitate consensus, acting as an honest broker in a situation where solidarity within countries can be improved.

The situation analysis will lend itself to an easier 'knock-on' effect for other countries. It may facilitate some appropriate cross-country comparisons but ***not ranking***. It may promote linkages between countries and enhance regional cooperation. Further, the baseline data and databases (e.g., disease burden and cancer registry, ethical guidelines) can be made available and used as an anchor point for subsequent evaluation of the effectiveness of the national and local health research system in fulfilling its role as the "brain" of a health system. Information on the situation analysis of countries can be made available to the Regional Office.

The framework, layout and tools for the assessment of health research systems could allow some commonality amongst countries. The common framework consists of country contexts; use of policy analysis to understand the supply side; understanding of the stakeholders, their roles, functions, structures or coordinating networks; understanding the issues of financing (source, growth, allocation); and identification of indicators of performance for improving health research systems and measurement tools to identify the level of performance.

Countries can cooperate to define and refine tools to conduct a situation analysis. Countries can adopt different methodologies for review, keeping the basic principles of analysis on specific areas. Once the tools are used, they can be further refined and eventually perfected to address the effective performance of the health research system within the context of the health system and the broader development system.

Monitoring and evaluation should be built into the development action so that the impact of the national or local health research systems can be documented and used as advocacy for sustaining the health research systems.

6.4 Regional Partnerships and WHO's Role

(1) Regional partnerships

Regional partnerships on health research systems development must be strengthened to support countries in their efforts to build national and local health research systems. The operational role of WHO in supporting regional

partnerships have been suggested by the WHO meeting on Research Capacity Strengthening in Developing Countries held in Annecy, France in April 2000. Many of these recommendations are valid even today. Through consensus with the regional partners, WHO can play a pivotal role in strengthening partnerships for health research.

The regional partners include not only the UN Agencies but also the Asian Development Bank, bilateral and multilateral organizations, foundations and other NGOs and development agencies. The partnership covers financial assistance as well as other resources, such as exchange of publications, secondment of personnel and sharing of existing programmes and activities supported by these agencies. It is time for WHO to concentrate on the strengthening of national health research systems.

(2) Role of WHO

WHO should contribute to national and local efforts for the promotion and development of health research tailored to **the distinctive needs and priorities of the countries.** Different strategies would be needed to support the countries.

WHO should act as **a proactive partner in health research development,** seeking opportunities to complement and strengthen what other development partners are doing. WHO and the countries may need to explore possible mechanisms to strengthen regional, national and local partnerships to avoid fragmentation and redundancy of efforts and provide an efficient approach to identify problems in the Region which can be answered by research. Proactive partnership could be expressed in several ways such as provision of meeting points and platforms for discussions, support training, sharing lessons learnt, exchange of software, and providing technical assistance. This would avoid unnecessary duplication and maximize synergy among various players. WHO should provide advice in such cases when countries generate ill-conceived "initiatives" in research capability strengthening that might complicate the already complex situation.

A key role of WHO is to develop **global leadership, advocacy and promotion of health research.** Emphasis should be placed on identifying WHO's stewardship role in advocacy for increased investment (both political and financial) in science and technology generally, and equity-oriented health research in particular, and enhancing coordination of all development

partners at the country level. This implies that the next step for WHO is to prepare a situation analysis of all actors in the Region (UN and non-UN system) and sharing plans of action and results. WHO may also need to develop a mechanism to coordinate potential actors.

WHO should **maximize the use of its current functions, structures and mechanisms** to support capacity strengthening in countries through award of fellowships, support of WHO collaborating centres, selection and placement of short-term consultants, and exchange of research scientists and expertise. WHO should **improve its own coordination of health research** within the Organization.

WHO should continue its **catalytic and normative role in health research, especially on** evidence-based planning, learning and innovation.

Finally, some mechanisms must be designed to monitor the progress and to evaluate the strategies for health research development. A time-frame and responsible groups must be defined at an early stage. This strategy document should not only serve as a guideline but should also be translated into action plans with appropriate incentives, resources and monitoring mechanisms to help the health research system development move forward.

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