

Report on the

**Regional workshop to assess preliminary
results of health research systems analysis and
tracking resource flows in health research**

Cairo, Egypt
25–27 February 2003



World Health Organization
Regional Office for the Eastern Mediterranean
Cairo
2003

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Document WHO-EM/RPC/009/E/L/09.03/67

CONTENTS

| | | |
|-----|---|----|
| 1. | BACKGROUND..... | 1 |
| 2. | INTRODUCTION..... | 1 |
| 3. | TECHNICAL SESSIONS | 2 |
| 3.1 | Renewed health research policy for development in the Eastern Mediterranean Region..... | 2 |
| 3.2 | Health research systems: an overview and objectives | 3 |
| 3.3 | Discussion..... | 4 |
| 4. | COUNTRY PRESENTATIONS ON THE PRELIMINARY RESULTS OF HEALTH RESEARCH SYSTEMS ANALYSIS | 5 |
| 4.1 | Egypt | 5 |
| 4.2 | Islamic Republic of Iran..... | 6 |
| 4.3 | Morocco | 8 |
| 4.4 | Pakistan..... | 9 |
| 4.5 | Sudan..... | 10 |
| 4.6 | Summary conclusions of the presentations | 12 |
| 5. | MEASURING RESOURCE FLOWS IN HEALTH RESEARCH | 12 |
| 5.1 | Global perspectives on resource flows in health research | 12 |
| 5.2 | Workshop objectives | 14 |
| 5.3 | Multi-country study on measuring health resource flows: Malaysia, Philippines and Thailand..... | 14 |
| 5.4 | Priority-setting in health and health research..... | 15 |
| 5.5 | Institutional approach to estimating resource flows for health research..... | 15 |
| 5.6 | Discussion..... | 15 |
| 6. | GROUP WORK: SUMMARY OF DISCUSSIONS | 17 |
| 6.1 | Resource flows in health research..... | 17 |
| 6.2 | Priority-setting | 17 |
| 6.3 | Format for HRSA final report | 18 |
| 7. | RECOMMENDATIONS..... | 18 |
| | Annexes | |
| 1. | AGENDA..... | 19 |
| 2. | PROGRAMME | 20 |
| 3. | LIST OF PARTICIPANTS | 22 |
| 4. | FORMAT FOR HRSA FINAL REPORT | 27 |

1. BACKGROUND

Following the endorsement of the Regional Committee (resolution EM/RC48/12.8) to support Member countries to develop and strengthen health research systems and capacities, the WHO Regional Office for the Eastern Mediterranean (EMRO) embarked on a renewed policy for health research and development. In 2002, the Regional Office, in collaboration with UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR), began undertaking the mapping of health research profile of the countries of the Region. The main purpose of the exercise was to promote an environment of national consensus building, ultimately leading to efficient governance of the national health research systems within the Region.

Proposals from Member States were invited to carry out a comprehensive and systematic situation analysis of their health research systems. The aim was to focus on four broad components described below:

- ?? The key actors including a) the research institutes (key research groups and researchers), b) the research funding agencies, and c) the research users (policy makers, health administrators, and the public) in order to understand their role, linkages and resource (including financial) flows in health research.
- ?? The processes involved in health research planning and prioritization, as well as in the conduct of research.
- ?? The research products and outcomes, particularly in terms of quality, dissemination and use, especially so in reducing inequities in health
- ?? The overall environment of national health research and the role of private sector and civil society in supporting research, and their expectations of research contributions to improvement of health.

Proposals from five countries of the Region, namely Egypt, Islamic Republic of Iran, Morocco, Pakistan and Sudan were received and supported by the Regional Office. The research effort began in earnest in 2002¹.

2. INTRODUCTION

A regional workshop to assess preliminary results of health research systems and tracking resource flows in health research was held in Cairo, Egypt, on 25–27 February 2003. The objectives of the workshop were to:

¹ WHO-EM/RPC/005/E/L. Report on the Regional Workshop on Health Research Systems and Methods for Assessing Monitoring Health Research Systems Performance. Cairo, Egypt, 28–31 January 2002

- ?? report on the ongoing multi-centre study on Health Research Systems Analysis (HRSA; Research Mapping Exercise) by the five countries mentioned above to; a) present discuss and share preliminary findings of the study, b) develop a final report format and c) set deadlines for completion of results and submission of final report;
- ?? share the experience with other countries in the Region and motivate them to participate similarly; and
- ?? conduct a workshop on tracking resource flows on health research to demonstrate how to track health research and development (R&D) funds in a middle-income country. Using an accounting framework which traces the flow of funds from sources to users, the overall objective was to examine and understand basic methodology for tracing and measuring health R&D funds in a country, as a tool to streamline the allocation of health R&D funds.

Dr A. Assa'edi, Assistant Regional Director, WHO/EMRO, opened the meeting and delivered a message from Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean. In his message, Dr Gezairy stressed on the central role of health research in economic growth and improving health and the commitment of the Regional Office to support health research in the Region. He reminded the participants of the immense challenges of current trends in disease burden, response of national health sectors, lack of financial resources and the ramifications of emerging new world order and its impact global health. He argued for increased emphasis on issues such as the relationship of macroeconomics and health, world trade order, the rich-poor gap, and issues of parity, equity and justice.

In his message, Dr Gezairy strongly advocated for increased investment in health research. He underscored the importance of channelling of research funds towards addressing priorities, and need for accountability and transparency in the delivery of the desired returns and payback, in order to justify the allocation of scarce of resources to research and development rather than to health care provision.

Dr H. Malik Afzali (Islamic Republic of Iran) and Dr Mohammed Hassar (Morocco) were elected as Chairman and Rapporteur, respectively. The workshop agenda, programme and list of participants are included as Annexes 1, 2 and 3, respectively. The final report format, developed and approved by participants during the workshop, is attached as Annex 4.

3. TECHNICAL SESSIONS

3.1 Renewed health research policy for development in the Eastern Mediterranean Region

Dr Abdel Aziz Saleh

The main challenges facing health research are:

- ?? globalization

- ?? macroeconomic environment
- ?? political changes with global free trade and communication
- ?? rapid advances in science and technology
- ?? environmental degradation.

Despite the huge amount of money spent in the Region, there has been a poor return on investments in health research over the past 30 years. This is largely the result of the constraints facing Member States, including:

- ?? lack of systems approach
- ?? weak systems and institutions
- ?? lack of value placed on health research as an investment for development
- ?? research environment and financing resources
- ?? poor leadership, management and coordination.

Given the existing state of regional health research, it is extremely important for the countries of the Region to begin developing their respective health research systems. Dr Saleh reviewed briefly the regional policy for support to health research and development health research. The initiative of mapping of health research systems profiles by countries is an important first step in the direction of ascertaining the existing situation, determining needs and setting future directions. It is important for national needs for health research to be based on valid priorities.

3.2 Health research systems: an overview and objectives

Dr Somsak Chunharas

There are three main (yet distinct) approaches for review of health research systems, all of which share the goal of improving health research contributions to health development:

- ?? Research mapping (input) approach, i.e. description of institutions and people involved in health related research.
- ?? Health research systems performance (outcome) approach, i.e. ascertaining outcome and impact of research.
- ?? Health research profile (process) approach, i.e. how well the countries are doing with respect to health research.

Key stakeholders in the national (health) research infrastructure these include the research funders, users and the researchers. It is important to understand how health research functions and how the different elements of health research and key players interact. Focus should therefore be to optimize investments where they are most needed, as it is impossible to improve all components. Hence it is extremely important to set priorities.

3.3 Discussion

During the discussion it was underscored that significant efforts are needed in countries not only to develop research, but also to promote its utilization and application for the overall health development. The challenge is to keep pace with the knowledge and be part of it. Building capacities and skills should be linked to and lead to institutional development, stability and sustainability, as well as enhanced abilities for management, transparency and accountability within the system. Collaboration and cooperation in research between developing countries and between research centres is extremely important and must be encouraged. By conducting research, even small institutes can be a great source of contribution and service to the community.

It was pointed out that in spite of having qualified and experienced professionals the overall production of research is declining. Management and stewardship in research are crucial. Ministries of health are assuming new and additional roles of training researchers, managing research institutes and providing financial support. Ministries of health need to focus on both improving institutional capacities and developing mechanisms for assigning clear responsibilities, accountability and authority within existing societal norms, values and ethics.

The example of Islamic Republic of Iran was discussed, where the researchers are not only very strongly urged to publish in international journals, but also encouraged to have research integrated within the system in a way that it is being utilized and not just producing knowledge.

One major concern, “internal brain drain”, was raised, referring to research being carried out in a country on issues that may not be of national relevance or priority, but are of interest to the funding (donor) agencies. To avoid such situations, it was suggested that the financiers and managers should be involved in developing plans that contribute to the national priority-setting exercises.

Dr Saleh informed the participants that the Regional Office is working towards improvement of dissemination of the research knowledge so that it can serve as a basis or evidence for pragmatic development of health policies and health care planning at local, national and regional levels. Dr Chunharas suggested in order to adopt the systems concept, it is important to start by improving the management component of both the research funding agencies and institutions.

4. COUNTRY PRESENTATIONS ON THE PRELIMINARY RESULTS OF HEALTH RESEARCH SYSTEMS ANALYSIS

4.1 Egypt

Dr H. A. Hammam

Goal

To help formulate evidence-based priority driven health research plan in Egypt aiming at advancement of health related scientific knowledge and equitable health promotion

Specific objectives

- ?? Carry out a strategy oriented situation analysis of health related research in Egypt
- ?? Prepare a research inventory
- ?? Review policies, legislation and funding resources
- ?? Assess specific aspects of the different stakeholders in national health research systems
 - resources (institutional, human and financial)
 - ethical considerations
 - knowledge management
 - impacts of health research (on health economy and development)
- ?? Investigate priority-setting mechanisms and process in health research
- ?? Propose revised roles of different players, based on the above analysis

Methodology

- ?? Review of health research sites (centres) in the country;
- ?? National and regional workshops, consultative meetings, presentations and sharing outcomes with key stake holders and decision (and policy) makers; and
- ?? Instruments of research; structured questionnaires, key informant interviews, group discussions, forums.

Preliminary results

Six workshops were conducted across the country from September 2002 to January 2003. Over 500 members of the civil service and researchers from universities, pharmaceutical and vaccine production institutes participated in these workshops.

Over 5800 research articles were published during the five-year period 1997–2002. 88% of these were published in local journals. Over 60% of published research was experimental or clinical in nature. Schistosomiasis and hepatitis research dominated in the infectious diseases, while over 65% of research on risk factors focused on issues of environment, nutrition and diet. With regard to health systems research area, more than 80% focused on management and administrative issues, 15% on social issues and 1% on health economics.

Research facilities in 75% of the 49 national research institutes were examined. Three-quarters of these had internet facilities. A little over half had research databases and about the same number had peer-reviewed mechanisms for research publications. Over a quarter of the research institutes had more than 300 researchers and 30% had fewer than 40 PhDs. 62% of the institutes did not have a public health professional in their research teams.

67% of the research institutions receive funding for research from local or international sources. About 14% self finance and about the same proportion receive research funds from the Ministry of Health and Population. The contribution of the National Academy of Science and Technology research in these institutes is around 12%.

The final report and recommendations will follow when the research is completed.

4.2 Islamic Republic of Iran

Dr H. Malek Afzali

Specific objectives

- ?? Identify the health research policy development processes
- ?? Understand the health research financial flows
- ?? Ascertain priority setting mechanisms, types of research carried out and means of dissemination and utilization of research results
- ?? Study the overall research environment
- ?? Determine the researcher(s) profile and capacity building in health research
- ?? Determine the degree of linkages, coordination and cooperation between the health researchers, managers and users of research
- ?? Ascertain the practice of ethical codes and norms in health research
- ?? Review mechanisms of monitoring and evaluation in health research

Methodology

Study is being carried out through several multidisciplinary teams supervised by the PI, Coordinator and three other co-investigators. The strategic approach is review of documents and records; key informant interviews; surveys; and group and panel discussions.

Results

There are a total of 114 research institutes (53% public medical research centres, 41% are public university associated and the remainder are Ministry of Health and Medical Education affiliated bodies). There are a total of 11 413 researchers, with almost 90% belonging to the public universities. 30% of the researchers are females and more than 70% are under 50 years of age.

Research emphasis in basic sciences was high (2%–38%), a little over 20% on noncommunicable diseases, about 15% on health systems research and about 6% on important noncommunicable diseases. The number of research articles from Islamic Republic of Iran in

peer-reviewed journals showed a 2.5 fold rise from 1997 to 1999. The research and development effort has yielded over 2100 registered inventions, in almost an equal distribution both in country and abroad. Several guidelines in health systems planning have evolved, and at least two of the 42 industrial research projects have eventually led to mass production.

Significant impact of health research has been noted in disease control programmes. These include control and prevention of iodine deficiency disorders, growth monitoring in children, primary health care provision, integrated disease control programmes, mental health and reproductive health and family planning.

Mechanisms for developing policy-making and planning for health interventions are in place guided by several national organizations. Ethical review boards and committees have been established at national and local level. The national Centre for Ethics in Medical Research has established 26 guiding principles covering research in human subjects.

The National Council for Research and Medical Commission within the Ministry of Health and Medical Education carries out priority setting in health research at the national level. The universities and other research organizations also have their own priority-setting mechanisms for addressing key areas. 62% of the universities had conducted at least one priority-setting exercise. The process of priority-setting in Islamic Republic of Iran is mainly based upon consensus opinion of experienced researchers, experts and executives within the health domain, and updated about every 4 years.

More than 95% of the researchers have received preliminary training in research methodology through designed workshops, and over 90% received a degree of advanced training. The quantum of printed literature available to the researchers was low (only 33.4% of the needed medical journals were available), but 87% of the researchers had access to internet at work, and 73% at home.

The government mainly funds health research in Islamic Republic of Iran. Health research funding in Islamic Republic of Iran has increased at an annual rate of 47% since 1991. In 2001, 12.7% of public health funds were allocated for health research (0.04% of GDP). International agencies account for 16% of funding and the scientific organizations and NGOs combined provide about 20% of the total health research funding. Most funding goes to projects related to health systems research (22%), basic research (17%), noncommunicable disease research (17%) and communicable diseases research (6%)

4.3 Morocco

Dr Mohammed Hassar

Objectives

- ?? Describe the planning process and coordination mechanisms of health research at the national level including priority-setting and funding
- ?? Identify the main contributors for the public and private sectors and civil society (contributions, roles, resources and areas of action) and ascertain adequacy of resource allocation to priority health research problems and those addressing equity in health care and delivery
- ?? Understand the methodology applied and tools used
- ?? Describe the various types of research carried out, and to what extent priority health issues are covered
- ?? Assess dissemination and utilization of the research results
- ?? Stimulate a dynamic interaction within the health research systems among various contributors

Methodology

- ?? Collection and analysis of existing documents
- ?? Identification of publications in international journals
- ?? Collection of information on health research projects (1996–2001)
- ?? Key interviews and focus group discussions of different key groups and stakeholders
- ?? National workshop on analysis of results and national programme formulation

Results

Data were gathered from 24 (3%) of the institutes/organizations, 4 (50%) of focus group discussions and 11 (46%) of key interviews. The key interviewees included decision-makers, heads of research and teaching institutes and international organizations. The analysis of data collected is not yet complete, but important information patterns are emerging. The strengths and opportunities for health research in Morocco include:

- ?? Existence of human competencies, motivated, 'critical mass'
- ?? Adequate legal context: reform of the Higher Education Act
- ?? Availability of international financing, collaborating channels
- ?? Better role of the Ministry of Health in promoting and coordinating research
- ?? Greater transparency
- ?? Interest of faculties (sciences and social sciences) in health research. Further analysis of the results is under way and will be presented at a later date.

4.4 Pakistan

Dr Tasleem Akhtar

Objectives

To map and evaluate the performance of the existing health research system in Pakistan, to identify its strengths and weaknesses and suggest measures for making research more dynamic and responsive to the information needs of the health systems specifically and overall development of the country.

Specific objectives

- ?? Prepare inventory of health research resources in the country
- ?? Document functions, strategies and resources and research outputs of the existing health research institutions and individual researchers
- ?? Identify and document health research training programmes in the country
- ?? Identify financial research resource allocation and utilization of funds and capacity for mobilization of funds by the system
- ?? Document the perspective of the key stake holders as regards needs of the system and improvement of performance of the existing system
- ?? Study the mechanisms of dissemination of information and utilization of health research by different end users of research
- ?? Document the gaps in the system as regards capacity, other resources, demand for research and knowledge management
- ?? Use the result of the study to mobilize funding and develop proposals and projects for development of the system

Methodology

The Pakistan Medical Research Council is carrying out the study using a mix of qualitative and quantitative research methods, including surveys, KAP studies, document reviews, key informant interviews, focus group discussions, seminars and literature search.

Results

The research began with a national seminar on health research systems in July 2002, in which the participants included heads of research institutes, senior scientists and health managers. The concept and the study on health research systems analysis was introduced to the participants and debated at the national level. A report on the seminar has been written.

The results presented at the meeting focused mainly on describing the institutional profiles. A total of 261 institutions were identified (73% in public, 14% in private and the remaining in the nongovernmental organization sector). The institutes included universities (and departments), medical schools, postgraduate medical institutes, nursing institutes, provincial and district health centres, nuclear medical institutes and Pakistan medical research centres.

In the public sector, 18% had autonomous status. The existence of governing bodies or advisory committees was identified in 38% of public sector, 38.5% in private sector and 50% in the NGO sector institutes/organizations.

Research as a function was listed in 45% of institutes in the public sector, 35% in the private sector and 15% in the NGO sector. PhD qualified institutional heads were identified in 23% of the public sector and 27% of the private sector organizations. There were none in the NGO sector. The proportion of professional staff in public, private and NGO sector organizations was 0.48, 0.53 and 0.70, respectively. Overall, 44% of the organizations had libraries (43.7% in the public sector, 51.4% in the private sector and 38.2% in the NGO sector). 62% of facilities had internet facilities, distributed evenly in all three sectors.

The overall annual budget allocations showed that 46% of organizations in the public sector received budgets in excess of US \$85 000. This proportion was less for public and NGO sectors (27.5 and 17% respectively). The amount of allocations specifically for research within these organizations was very low. 36% of the public sector, 22% of the private sector and 41% of the NGO sector organizations did not allocate any funds for research. 8% of all organizations were spending amounts up to US\$ 16 000 on research annually and only 2 (1.1%) of the institutes had research expenditures in excess of US\$ 85 000 per year.

PhD and M. Phil level training programmes were being carried out in 15 (8%) of public sector institutes and 8 (21.6%) in the private sectors institutes. Over 7500 publications were listed in the medical health journals from Pakistan, 9% of there were in indexed journals and the remaining in national medical literature indexing services.

4.5 Sudan

Dr M.A. Awad El Karim

General objectives

To critically assess the current situation of health research and to develop appropriate mechanisms for enhancing and improving health research in Sudan.

Specific objectives

- ?? Document the history of health research in the Sudan;
- ?? Evaluate the health research management systems including mechanisms for collaboration between different research partners;
- ?? Identify and evaluate the charges of functions of institutes involved in planning and implementation of health research;
- ?? Assess the documentation, publication, utilization and dissemination of health research;
- ?? Ascertain priority-setting mechanisms at institutional and national levels;
- ?? Assess the mechanism of research funding;
- ?? Evaluate the contribution and participation of the private sector and the community in health research;
- ?? Assess the work environment for health research and training facilities in the countries;

- ?? Assess whether health research covers the least developed and the poor communities in the country.

Methodology

The methodology comprised three main studies over a two-year period:

- ?? Sub-study1: evaluation of institutions involved in health research.
- ?? Sub-study2: publication, dissemination and utilization of health research results.
- ?? Sub-study3: number, volume and impact of the health research directed towards solving the health problems of the least developed communities.

All 26 states of Sudan were included in the study. The instruments of data collection included structured interviews, focus group discussions, secondary data and observations.

Results

A total of 34 research institutions exist in the country, and information was obtained from 28 (82%). The focus of research in these institutes was biomedical, clinical, health systems, veterinary, epidemiological genetics, herbal plants and medicines and agriculture. 115 researchers were employed in these institutes, 53 (46.1%) having doctoral degrees.

In addition to research, the institutes provide services for training and capacity building, service delivery in specialized areas of diagnosis and therapy and control of epidemics. 23 (82%) of the institutes had defined institutional priorities for research, focusing on: a) endemic infectious diseases; b) micronutrient deficiency disorders; c) malignancy; d) development of laboratory diagnostic techniques for parasitic diseases; e) health economics; h) food production; and i) sustainable development.

21 (75%) institutes had computer facilities and 24 (85.5%) had library facilities. Internet facilities were present in 19 (67%) of the institutes. 6 (21%) of the institutes were issuing periodicals and 24 (85.5%) were contributing to international periodicals. Collaboration activities in health research were being undertaken both with international and national organizations (in 79% and 86% of cases respectively).

Funding sources for the institutes were both national and international. 13 (46.4%) were funded by the government, 7 (25%) by private sources and 3 (11.8%) by the community. The main international donors included UN agencies (28.8 %) and regional agencies (14.4 %). Some funding was also provided by EEC, World Bank and NGOs (3.6 % in each case)

The attitudes and habits of professional health staff towards reading and application of literature were evaluated. Only 13.2% (77/507) claimed to have read articles (on subjects of key endemic diseases) that were selectively chosen and presented. The main reason cited for

not having read the articles was the non-availability of the respective journals. However, in about 10% of the cases the articles were not read despite being available.

4.6 Summary conclusions of the presentations

- ?? The studies are currently well under way in the five countries. The countries are in different stages of data collection, analysis and reporting.
- ?? Although there will be diversity in the information collected, there should be some core set of data that could be comparable. There is need for common and clear definition of variables used in the study. The format for final reporting of this exercise should have an underlying common framework developed as guidelines.
- ?? The need for setting priorities at all levels, i.e. donors, policy-makers and managers and researchers was underscored. Usually the donors do have clear priorities, which often echo their interests. It is therefore important that the donor interests are aligned with the national interest for better development and utilization of research endeavours.
- ?? Lack of information exchange was highlighted as vital. The great digital divide is limiting access to information, and therefore not only microenvironments within health research systems are important but also equally necessary are collaborative efforts for supporting health research.

5. MEASURING RESOURCE FLOWS IN HEALTH RESEARCH

5.1 Global perspectives on resource flows in health research

The discussion was led by presentations from Dr Somsak Chunharas, representing the Council of Health Research and Development (COHRED), Dr Ritu Sadana from WHO/HQ and Dr Andres De Francisco from Global Forum for Health Research (GFHR).

Dr Chunharas emphasized that the proper use of financial resources is crucial for effective HRS, and financial distribution of resources is an important indicator of inequity in health research. Good information on resource flows can help mobilize additional resources for health research and can facilitate better use of available resources. Over the years, COHRED has developed tools and methods for assessing financial resources.

Dr Sadana gave an overview of the global efforts being undertaken regarding health research systems analysis. She mentioned the ongoing research to develop tools and indicators for assessing HRSA being carried out in several countries globally as a pilot venture. Once completed, these studies would lead to a refined methodology/instruments to be used in the main study in which several countries from each Region will participate. The outcome of this will not only be beneficial to the countries who will have a clear understanding of their health research systems in terms of their structure, function and needs, but the information will be used for the World Health Report 2004, "Knowledge for better health".

Dr De Francisco highlighted the efforts of GFHR with special reference to tracking financial flows in health research. He stated that it was a difficult and time-consuming task because the information is scarce and fragmented, instruments for measuring health research resource flows are not uniform or standardized and there is great diversity in health research elements. However, he said, it was essential to ascertain and monitor investments in health research for the sake of allowing the countries to target and better allocate funds on priorities for health R&D. Hence, this is an essential step in reducing inequity, particularly the 10:90 gap. Citing for GFHR report on "Monitoring Financial Resource Flows for Health Research" he stated that the health R&D expenditure is about 2.6% of total health expenditure worldwide. Of the US\$ 73.5 billion spent on HR 1998, only US\$ 2.5 billion (3%) was public funding by developing countries. He was highly appreciative of the policy for health R&D in the Region, where 2% of the biennial budget has been allocated for health R&D.

Discussion

During the discussion, difficulties in measuring health resource flows, particularly in developing countries, were highlighted. The distinction between private and public funds is perceived differently in each country, and there is no global standard proportion of private versus public funds for health research. In the Islamic Republic of Iran, for instance, 95% of research funds come from government (public) sources. In most countries of the Region in general, discussions about finances and money in public is culturally (and for several other reasons) not well accepted. Information on wealth and resources is not accessible. Priorities are not well defined and allocation of funds is therefore not in accordance. On occasions when money is readily available, it is not used adequately. The other weakness in the Region is the lack of ability to write good quality research proposals that can attract donor attention. Political factors and lack of relevant technical expertise also impede research in developing countries.

It was pointed out that there is a close link between economic activities and health research activities. Teams engaged in collecting data on health indices are useful contact points for obtaining basic information and data health. Those interested in health research should liaise more closely and develop partnership with those from other civil sectors undertaking related activities so that focus on the main needs and priorities are promptly addressed.

The case of research on measuring health resource flows in some south-east Asian countries was mentioned, in which the synergistic contributions and partnership of COHRED and GFHR were instrumental in implementing the different research activities. To a query regarding the appropriateness of research in the Region, it was felt that that the magnitude of issues and problems should be viewed within the different cultural contexts and available facilities and resources for research. It is for this reason that international organizations should work closely with countries, learn from them and build collaboration and partnerships.

The need to build health research capacity is not always easily understood, especially by policy-makers in developing countries, as priorities for the utilization of the already-depleted financial resources often lie elsewhere and research is not considered a priority. However,

there is evidence that countries that have invested in health research have profited, both in terms of improving delivery of health care and in terms of economic development. This was exemplified by cases such as Brazil's investment in research in Chagas disease, and Cuba's investments in genomics research and biotechnology development.

Transparency and accountability in research is not easy or simple. Funds for different research expenditures are difficult to track to be judged if they are being spent equitably and justifiably. The prime objective of both COHRED and GFHR is to work with the countries and help develop mechanisms for better harnessing and channelling of funds for health R&D

5.2 Workshop objectives

Dr Sithirakorn

Dr Sathirakorn stressed the need for developing methodologies for tracking, tracing and measuring health research funds, as a tool to streamline the allocation of health R&D funds at the country level. The key objectives of the workshop were for the participants to understand the research components, develop strategies for primary and secondary data collection and tools/instruments for capturing the information required. He emphasized the need to develop clear definitions of terms while designing survey instruments. He gave illustrations of creating data sets and the type of information needed for measuring and monitoring resource flows in health research. He reiterated that a number of information sources usually exists within country and these should be identified and maximally utilized. Alternately, efforts to collect information through research are required, but it is important to recognize and analyse the feasibility of such an approach before embarking on it.

5.3 Multi-country study on measuring health resource flows: Malaysia, Philippines and Thailand

Dr Sithirakorn

Research was undertaken in three south-east Asian countries, namely Malaysia Philippines and Thailand, as a collaborative effort between the countries, COHRED and GBFR. The objectives of the study included: a) identification of sources, users and uses of health R&D expenditures; b) estimating the amount and type of HR&D expenditures; c) assessing if HR&D expenditures are aligned with priorities; and e) formulating future strategies for HR&D expenditures. The study results showed that HR&D constituted 0.4% to 0.11% of the total budget of the governments, 0.6% to 0.9% of the total health budget and 0.01% to 0.05% of GDP in the three countries (1997–1998 figures). The public sector was the main contributor to (as well as user of) research funds, and the main sources of funds were either Ministry of Science and Technology or Ministry of Health. The contribution of private sector to HR&D was under 20%. Among the three countries studied, Malaysia ranked best in terms of aligning financial health resources to research priorities. Dr Sithakorn concluded by underscoring the need for understating the rational undertaking studies on health resource flows in the countries.

5.4 Priority-setting in health and health research

Dr Andres De Francisco

The key advantages of a combined approach matrix (framework) for priority setting in health and health research are that it: a) brings together systematically the current knowledge and information as it relates to specific disease(s) or risk factors; b) identifies future gaps and challenges; c) correlates the priority setting steps to key factors/determinants of health status; and d) allows identification of common factors. He illustrated the application of the combined matrix (framework) for prioritization using epilepsy, malaria and indoor air pollution as case examples.

5.5 Institutional approach to estimating resource flows for health research

Mr Andrew Kennedy

The diversity in numbers, nature and types of health research institutions in countries is huge. These may be in the public sector, private sector, university settings, related social sectors, hospitals etc. They may be engaged in research in different disciplines of health related sciences and their profiles vary from country to country. Similarly, the sources of funds in these institutes may also be very divergent. It is therefore important to develop methodologies to be able to identify the number (or estimates) of different institutes that are engaged in health (or related) research endeavours. In his presentation, Mr. Kennedy highlighted the different approaches that could be used to identify these institutes, such as possible sources of information of research institutes, methods for computing estimates of their number, the difficulties and possible sources of errors in doing so.

5.6 Discussion

During the discussion it was stressed that priority setting is a difficult task because of lack of information. It is important therefore to explore to establish a regional agenda for priorities for health research. It was pointed out that a clear distinction should be made between the priorities for health care and those for health research, which should be complementary to the former. First and foremost, the health research priorities must address national needs and therefore should be country specific. Countries must make efforts to build linkages and draw lessons from the experiences of other countries, which have undertaken the process of priority setting in health research, as well as from international organizations like GHFR, COHRED and others.

With regard to the issue of tracking resource funds for health research, it was pointed out that it is not always easy to access the sources of information on funds, and the problem is more acute in developing countries for a number of reasons. As the allocation of funds is not usually based on empirical evidence, funds spent on research projects are not always correlated with the relative need or importance. As a result, research on some issues that may be ranked high on priority, does not receive adequate funding. It was further mentioned that the distribution/allocation of funds should be equitable.

In many cases, the availability of finances is not the main factor hindering research. For instance, in countries of the Gulf Cooperation Council, funds are readily available; however, management of health research and lack of human resources in health research are some of the major reasons why so little is accomplished. The capacity for research is also linked to the size and the population of the country. All participants agreed that vision and stewardship are important to be able to use wisely the money and share it equitably among the users. The example of Egypt was cited which has a council of the wise (experienced) people who make significant contribution in guiding the health research direction in the country.

The need for conduct of basic research was highlighted. It was argued that it is important for the countries to allocate financial resources and build facilities and other resources in basic research even though it may not necessarily be a priority. Building sustainable capacities in health research is paramount and those researchers specifically interested in basic research should be given adequate incentives to prevent brain drain.

It was agreed that conduct of studies on financial resource flows in health research is important for building evidence to inform policy, to monitor allocation practices of financial resources, as well as for mobilizing additional resources. However, such studies are difficult to undertake as not all information is readily available and when it is, it has to be disaggregated and needs proper analysis. For this, it is essential to develop the necessary skill and capacities within the countries. It was pointed out that the initial focus of the study on resource flows in health research in the three countries exemplified was mainly the users of resources. The in-depth analysis is for the later stage. Guidelines for conducting research on resource flows, survey methodologies and tools for investigation have been developed and have been published.

It was agreed that identification of health research institutes and assertion (or estimation) of their quantum was an essential first step towards obtaining valid information on resource flows in health research. It was pointed out that in developing countries, because of the relatively fewer number of health research entities, it is easy to identify the concerned organizations or institutes, however, in the industrialized world (as well as in several developing countries), this may not be easy, simply because of the large number of organizations and the diversity in the range interested stakeholders involved. In such situations it is essential to use tested and tried tools and instruments to identify health research institutes. The difficulty of obtaining information through different means was discussed and it was argued that this should not hamper our ability to undertake this task. The use of correct and appropriate tools and definitions was necessary. There was unanimous agreement on the need to obtain as much information on resource flows and institutes as possible. It was further pointed out that proper analysis, interpretation and presentation of such data and information are also very important.

In conclusion, there are useful lessons to be drawn from the experience of the study on measuring financial flows in health research by the three South Asian countries. In order to be successful, there is need for having a high response rate by using definitions that are clearly understood and by seeking data for the most recent years. There is need to minimize double accounting which can be cross-verified by the resource flow accounting approach. The option

of using the internet should be explored further. Finally, sustained monitoring should be the goal, and cost factors should not be overlooked. One way to achieve that is to look out for any ongoing or planned national surveys by countries on which queries for information on resource flows could be piggybacked.

The Chairman requested EMRO to support the countries in carrying out research on measuring financial resource flows and priority setting mechanisms in health research, as these are extremely important for proper management of health research.

6. GROUP WORK: SUMMARY OF DISCUSSIONS

6.1 Resource flows in health research

The group emphasized the need for studying resource flows in health research and underscored that even having some information on this subject was extremely useful. The ultimate goal should be institutionalization of the process into a regular reporting format (preferably on an annual basis) at national level. The use of the information will be beneficial for the equitable distribution, monitoring and usage of the often scarce and depleted funds for health research with alacrity and equity. The key questions countries must address in this respect include; adequacy in capacities to use funds, incentives (and competition) to conduct research and the availability proper tools and instruments for conduct of research. A starting point could be to initiate training workshops in resource flows and build national capacities to do so. Sustainability and continuity of health research is an important issue that is often compromised as a result of the mobility of researchers. Research must be shown to be important for the overall development of society, which in turn must realize the need for allocating resources and their justifiable expenditure. Tracking resource flows in research will facilitate evaluation and assessment as well as transparency, equity and equal opportunity. Institutions should endeavour to publish annual reports. Information on national health accounts in countries is a useful source of information, but is insufficient because health research is broader and more diverse than health systems.

6.2 Priority-setting

The key message from the group was to understand the need for priority-setting in health research since investments in health research are judged against the availability of financial resources. Issues such as cost-effectiveness, equity and research governance are some of the other reasons why prioritization in health research is necessary. Key stakeholders such as policy-makers, health managers, researchers, community, private sector, industry, national donors/funders, health-related civil sectors and professional associations should all be involved in priority-setting. Strategy for priority setting should include: a) having the relevant information; b) defining criteria for priority setting as well as mechanisms and time-tables; c) establishing areas of research within each priority; and d) advocacy for the need for priority setting. There is need for EMRO to support national efforts for prioritization in health research

6.3 Format for HRSA final report

The format for the Final Report by the five countries engaged in HRSA, namely, Egypt, Islamic Republic of Iran, Morocco, Pakistan and Sudan was discussed in the group and presented to the participants. The agreed format is given in Annex 4.

7. RECOMMENDATIONS

1. Measuring and tracking health research flows are important. Countries should undertake activities to build capacities and initiate studies to understand and document the flow of research funds to ensure better accountability and transparency and equitable allocation of funds for health research.
2. Countries should focus on developing health research within their settings. It is important that countries undertake national exercises with support from WHO to carry out their health research systems analysis. This is an essential first step towards development of national research systems.
3. EMRO should support national efforts on setting priorities for health research as well as supporting research on resource flows in health research.
4. EMRO should play an active role in the global research endeavour regarding health research systems analysis; a prelude to the World Health Report 2004; “Knowledge for better health”.

Annex 1

AGENDA

1. Opening address
2. Renewed health research policy for development in EMRO
3. Health research systems: an overview and objectives
4. Health research systems analysis; an update on research being carried out by five regional countries
5. Global perspectives on measuring of resource flows in health research
6. Measuring health resource flows in health research; country perspectives, examples from south-east Asian countries
7. Measuring health resource flows in health research; policy implications and lessons learned

Annex 2

PROGRAMME

Tuesday, 25 February 2003

- 08:00 Registration
- 08:30 Opening of the workshop
- 09:00 Renewed health research policy for development in EMRO
- 11:00 Presentations of preliminary results of the research on health systems research analysis in five regional countries
- 16:00 Discussions and recommendations
- 17:30 Close

Wednesday, 26 February 2003

Session one: global perspective

- 08:30 Global Perspectives on Measuring Resource Flows in Health Research
COHRED (Dr. Somsak Chunharas)
WHO (Dr. Ritu Sadana)
Global Forum for Health Research (Dr. Andres de Francisco)
- 10:00 Discussion

Session two: workshop objectives

- 10:45 Overall and specific objectives of workshop and country case studies (Dr Sathirakorn)
- 11:15 Workshop overview and expectations (Dr Sathirakorn)
- 11:45 Discussion

Session three: country perspective–Malaysia, Philippines and Thailand

- 12:15 Multi-country study on measuring health resource flows: Malaysia, Philippines and Thailand (Dr Sathirakorn)
- 14:00 Discussion

Session four: country perspective– Member States

- 14:30 Institutional approach to estimating resource flows for health research (Andrew Kennedy)
- 15:45 Identifying institutions conducting health research (Andrew Kennedy)
- 16:00 Roundtable discussion of practical issues involved, followed by summary

Thursday February 27, 2003

Session five: country perspective–methodology

- 08:30 Research components (Dr Sathirakorn), project tool: monitoring tables, code book and table formats (Dr Sathirakorn)
- 09:30 Data analyses (Mr Andrew Kennedy)
- 09:45 Discussion

Session six: group work

- 10:15 Group work
- 12:15 Presentation and discussion on group work

Session seven: country perspective–lessons learned

- 14:00 Lessons learned (Dr Sathirakorn)
- 14:30 Discussion and summary
- 15:00 Close

Annex 3

LIST OF PARTICIPANTS

**PARTICIPANTS FROM COUNTRIES ENGAGED IN
HEALTH RESEARCH SYSTEM ANALYSIS**

EGYPT

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WHO/EMRO
Mr Andrew Kennedy, Research Policy and Coordination, WHO/HQ
Ms Hala El Shazly, Administrative Assistant, WHO/EMRO
Ms Amany Kamal, Secretary, WHO/EMRO
Ms Rasha Rateb, Secretary, WHO/EMRO

Annex 4

FORMAT FOR HRSA FINAL REPORT

The substance and the contents of the final report of the research on health research systems will vary for each of the five countries involved in HRSA. However, it was deemed important and necessary that the report be organized in a manner such that:

- ?? It is balanced and easier to write;
- ?? It captures the key elements;
- ?? Comparable assessments can be made to some degree.

General recommendations

- ?? Font size 12, Times New Roman, single space, one inch margin on all sides of A-4 page size
- ?? Pagination: All pages (excluding the title) should be numbered serially (bottom right)
- ?? Figures and tables should appear at the end of the chapter on results (or at the end of each of the chapters where ever applicable and necessary). Each table or figure should have a heading, should be serially numbered. The corresponding numbers should be cited in the text where appropriate.

Layout of the final report

The following layout for the report is suggested.

Title page
Table of contents
List of abbreviations used
Executive summary
Introduction
Objectives
Methodology
Results
Discussion
Conclusion and recommendations
References
Acknowledgements
Appendices/annexes

Title page

This should be the first page of the document.

Project title: (upper case, in bold, top centre of page)

Research team: (with title, full name and address of the members, sequential order starting with the PI, lower case, in bold, centre left of page)

Time-frame: (start and end of research)

Executive summary

This should not exceed two pages (single space). The presentation of summary will vary, but as a guideline it would be appropriate to focus on rational, objectives expectations and methodology on the first page; the key results, recommendations and conclusions presented on the second page.

Introduction

- ?? General information about the country (geography, demography, health indicators)
- ?? Description of existing stakeholders in health research
- ?? Rationale for conduct of the research
- ?? Expected outputs and benefits of the HRSA

Objectives

- ?? General (overall)
- ?? Specific

Methodology

- ?? Many definitions may vary from country to country and need to be defined in the context of different country settings; for example, what defines a researcher or even a health professional may vary. Similarly, components of health systems and components of health research systems may be different in countries.
- ?? A brief outline of the study design should be incorporated. For example the study is likely to be a mix of prospective, retrospective, quantitative and qualitative approaches and these need to be clearly mentioned along with explanations for doing so
- ?? The overall sampling frame must be mentioned and how sampling was carried out within the different approaches used. Whether any sampling (or components of it) was carried under statistical assumptions or otherwise, should be articulated
- ?? A brief summary of the tools (quantitative and qualitative) for investigation, related consultations, meetings/seminars should be mentioned (details could be attached as appendices. e.g. questionnaires, summary of meeting minutes and resolutions, if any, etc.)
- ?? It must be mentioned how information on the following four subgroups of functions was captured: stewardship; financing; supporting and enabling environment; knowledge production; and utilization.
 - **Stewardship:** such as how functions of vision, mission and goals (VMG), ethical considerations, priority setting mechanisms and monitoring and evaluation techniques in health research were captured

- **Financing sources:** such as funding mechanisms for research allocation of financial resources and transparency and accountability in utilization of funds for research
 - **Supporting and enabling environment:** such as networking, team-work, working environments, access to information, its distribution and sharing mechanisms, capacity building and retention, motivation/compensations and relevance of research
 - **Knowledge production and utilization:** such as publication of health research especially informing health policy, health practice and public community, development of: drugs, vaccines, products and equipment.
- ?? Data management techniques: a summary of how the data were obtained from different sources, cleaned, entered, stored, analysed, summarized and presented. How data validity and accuracy was maintained and bias avoided during data collection techniques. Tests for significance if used, should be mentioned for the relevant data set.

Results

A summary description of the overall results. Specific results obtained in the following areas should be presented:

- ?? Stewardship in health research
- ?? Financial resource flows
- ?? Supporting and enabling environments
- ?? Knowledge production and utilization.

The specific areas of information to be presented within the above subheadings are given in the methodology section

Discussion

The discussion should be based upon the results achieved in the study. The objective is to have the perspectives of the investigators on the existing mechanisms of health research, its functions, its weaknesses, limitations and strengths. Discuss the best (priority) ways and approaches to address (or build on) these issues. The discussion should mainly focus on the four key areas (a through d) mentioned in the methodology and the results sections.

Conclusion

This should be a brief description on what the authors have concluded/synthesized from the study results and the subsequent discussion on them.

Recommendations

The recommendations should emanate directly from the conduct of the study, with specific reference and applicability to the country. They should form the basis of a future

national health research policy and strategy for the country. The recommendations should be framed bearing in mind their implications in the short term (up to five years) and long term (ten years or longer in time), as well as from the country, regional and global perspective (where possible). Some suggested areas for recommendation include:

- ?? National health strategies and policy
- ?? National health practice
- ?? Public community
- ?? Research institutions
- ?? Research environments
- ?? Funding agencies
- ?? Sustainability and development
- ?? Others??

References

All references should be listed in standard Vancouver style. Alternately, the following order for citation of reference should be adhered to: numerical ascending order with citations in the text marked within the text as shown [#]. The corresponding list of references could be articles, reports, policy or other documents, press releases, or others. Each (numbered) reference should begin with a title, year (in bold) of publication (month if necessary) and source.

Acknowledgements

The role of all those who contributed in the research should be duly acknowledged.

Material flow analysis (MFA, also known as Material Flow Accounting) has become one of the basic tools in industrial ecology, since its pioneering development by Ayres. This chapter reviews progress... This chapter reviews progress in MFA with emphasis on the use of MFA to support waste management and recycling policy. Waste statistics are compiled in most developed and some developing countries, but the basis is insufficiently standardized so that care is needed in making comparisons between countries. OPEN ACCESS. Research Article. Telemedicine in Egypt: SWOT analysis and future trends. Telemedizin in Ägypten: SWOT-Analyse und Zukunftstrends. Abstract. In this new model of healthcare, new technologies in health informatics; disease management; and home telehealth will be highly integrated to provide the right care in the right place at the right time. Ultimately, telemedicine applications are also coupled with eLearning technologies to facilitate the exchange of medical knowledge through virtual seminars, lectures, conferences, eBooks, and other online educational and training materials. Globally, the health sector currently faces several growing challenges that require new strategic approaches and initiatives at national, regional, and in of health research based on the visions of Iran by 2025. Results: All of the indicators of stewardship and capacity building axes are received to their predefined levels. Moreover all of the medical science university research policies are based on their strategic plannings which are extracted from national visions of Iran by 2025. Most of the predefined goals in knowledge production domain had a significant grow trend but for more growth for commitments they should be closely follow. Conclusion: We developed an HRS-based comprehensive evaluation program to our national vision as well as our