Report on the Latin American Regional Consultation on Health Research For Development

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Chapter I

Latin American Regional Consultative Meeting

Held in Buenos Aires, June 26-28, 2000

In preparation for the
International Conference on Health Research for Development, Bangkok, 2000

Hosted by the Argentine Republic Ministry of Health
Convened by the Council on Health Research for Development (COHRED)

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Meeting proceedings

The meeting started with a presentation by Dr. Ernesto Podest on the situation in Argentina. This showed a history of accumulation of knowledge and creation of critical masses in the 1950s, which reached such levels of excellence as to achieve three Nobel prizes, and later on, its falling apart, and the consequences of this process. The CONICET researcher s career was explained, including its shortcomings. This is one of the few cases in Latin America where a salary is assigned to researchers based on the body of their production, not attached to a specific project.

Next, presentations were made by the international agencies attending the meeting.

The Commission on Health Research for Development (COHRED) and the Global Forum for Health Research made brief summaries of their histories, and the situation diagnosis that had led to their creation. The main driving forces in both cases were the observations that health research had not been a priority, had not focused its attention on the most relevant problems of local populations and had not contributed to development.

Dr. Pellegrini, Head of the Research Coordination Unit of the Pan American Health Organization presented a paper, based on a more infrastructural approach and pointing to the fact that although national investment in research and development has increased in the past ten years in most countries of the Region, it is still insufficient, as is the Region s presence in the international scientific literature.

During the discussion that followed, several issues were dealt with:

1. The fact that the diagnosis made in the presentations should also be subject to discussion.

2. The understanding of Latin American processes in most international agencies is very inadequate. This may be because of the Region s complexity, but there is a mismatch between many recommended solutions and self-perceived needs.

3. There are important contradictions between international agencies guiding economic models and those in the social area, such as the World Health Organization (WHO). It is hard to ask health research to solve or alleviate the problems created and/or increased by other sectors.

4. Inequity is the main problem within the Latin American context. Much conceptual work is still required on the definition and operationalization of the equity concept, in terms not only of class, but of gender also. This concept should permeate the whole practice of health research.

5. The existing scientific model has its supporters, and there is no consensus about some proposals that are often heard, such as the benefits of a greater private sector participation in the financing of health research. There is no proof that this would increase equity.

6. Problems related to human resources for research:

   i. There is still a need to discuss and define the type of training required for carrying out research in different disciplines.

   ii. The difficulty of reinserting highly trained scientists who have spent some years abroad, often with scholarships from their own countries.

   iii. The existence of different corporations in the field of health research, including at least the groups related to Science and Technology Development, Health Systems and Services, and Technology Assessment (Knowledge dissemination). None of these groups should or could be ignored.

7. There was an agreement regarding the need to create/strengthen structures oriented to:

   i. priority setting for public expenditure in research and development, improving the participation of public health (broadly defined to include all health research with a population approach) within health research;

   ii. gathering and distributing research funds;

   iii. disseminating locally produced knowledge;

   iv. contributing to the training of researchers in a planned and continuous manner.

Some **false contradictions** came up during the discussion, and they were identified as such:

- **Research vs. action**. The group did not consider it a valid opposition, as action is grounded on knowledge, which needs to be increased and updated.

- **Basic and Clinical research vs. Public Health**. It was clear that nobody means to decrease the funds available for basic science, or endanger the existing centers of excellence, but to strengthen an area of special social relevance that is presently underrepresented. A research culture favors all areas of knowledge.

- **Immediate application of results vs. research for the future**. Research that can be applied more or less immediately is nevertheless based on previously accumulated knowledge, and both are valid. In our area of knowledge, public health, an orientation to problem solving is required, be it at the micro or macro levels, and of more or less immediate acceptability.

The following relevant points came up but were left for later discussion:

- There was a consensus on the need for priority setting in health research, but there was still no clarity regarding the most appropriate methodologies and tools to do it, particularly regarding alternatives to disease-based tools for priority setting.

- The reasons why health research is marginal in Latin America.
- The most appropriate criteria to judge science. Should judgement be based on its contribution to equity, its intrinsic quality, or something else?

On day 2, groups that had been conducting case studies either at country level or within networks made presentations. All of the results presented were preliminary, but they greatly contributed to the understanding of health research in the Region and to the discussion that followed.

The **Chilean group** carried out a survey among a representative group of researchers in order to understand their perception of health research. This showed quite a negative perception, since the most frequent answers were that research has not contributed to change in medical practices, or improved the quality of life of populations, or been useful for monitoring inequity.

The **Network for Latin American and Caribbean Women's Health** made the next presentation. The survey included 130 reports of research projects and 21 interviews. Results showed that with few exceptions, there has been no research with a gender approach. The projects were found not to be very comprehensive, and not to focus on the health problems of women. Most were case studies using a qualitative methodology and considering few cases. The issues most frequently dealt with were sexual and reproductive health (mainly fertility surveys), violence against women, and mental health. The subjects were mainly urban poor adolescents.

The combination of quantitative and qualitative methodologies is quite frequent, as is the use of secondary data. Advances have been made in the development of gender-sensitive health indicators. From the theoretical point of view, some of the papers reviewed showed interesting new approaches, and a complex analysis of power relations. Among the obstacles found, a resistance to using gender as an analytical category was prominent. The lack of a critical mass of researchers on the subject was also noticed. The paper remarked the need to deepen the understanding of the gender concept, the need to include it in all studies, to develop new sensitive indicators and to foster concern for equity in all stages of research.

The **Mexican case study** had three main objectives: to make a situation analysis of health research in Mexico, to understand its relationship with health policies, and to contribute to the process of priority setting in health research. A wide consultative process with the most representative Mexican research institutions is underway. This case study is still in the data collection phase, and results presented at the meeting were mainly about global scientific indicators.

Finally, the **Cuban case study** was presented. Cuba has been carrying out priority-setting exercises for the past ten years. The country has a national scientific policy, and health research priorities fit within it.

The need to give priority to infrastructure was also a concern in this case. Finally, science and technology planning in Cuba is programme-based in the cases of national, branch and territorial programs, while some projects, such as biotechnology or vaccine production are not programme-related.

A discussion followed each presentation, and served as the basis for the group work that followed.

Four groups were formed:

1. Group 1 dealt with the relationship between research and health policies. Its members were Drs. Podest , Machicao, Medina, Illanez and P rez
2. Group 2 discussed the subject of financing for health research. It was formed by Drs. Palma, M. S nchez, Dutihl, Mu oz and Gagliardi
3. This group, dealing with priority setting was formed by Drs. Possas, de Francisco, Gerstenbluth, Reyes and D. S nchez
4. The fourth group concentrated on inequity, and its members were Drs. Cabrera, Gonz lez, Zeled n, Chapman and Kerker .

On the final day the groups briefly met again and wrote summaries of their conclusions, which were then submitted to the plenary, and constitute the **Consensus Diagnosis and Recommendations of this Latin American consultative meeting**.

Consensus Diagnosis and Recommendations

1. So that health research may contribute to development with equity, it must be based on the following values:

   i. Ethics

   ii. Solidarity

   iii. Social and gender justice

   iv. Human rights.

2. It is therefore necessary to strengthen research oriented to the understanding and solution of social problems and population needs, and aimed at overcoming inequities.

3. The Latin American presence in the international scientific literature is extremely limited: 2.09% of the world production registered in the database of the Institute for Scientific Information (ISI) in the year 1996, and just 1.37% of the articles registered in MEDLINE for the same year. Scientific production is larger than this, and there has been an accumulation of knowledge in some relevant areas, but its translation into publications has been quite limited.

4. Latin-American countries are very diverse in terms of infrastructure, human resources, availability of financing for health research and technological development. This is evident in the uneven concentration of scientific production, with Argentina, Brazil, Chile, Mexico and Venezuela responsible for almost 90% of the Latin American publications registered in MEDLINE and ISI.

5. This diversity is seldom recognized in the diagnosis made about the region by many international agencies.

6. There is a tension between health research and health policies. Health research does not contribute as much as it should to the establishment of new health policies, while the latter do not often favor research. Health policies that allow for the development of research policies focusing on social problems are greatly needed.

7. Ethical intervention mechanisms must be created. These include the democratization of information and knowledge, increased community participation, and the creation of spaces for interaction of the different stakeholders in health research.

8. Despite the growth in science and technology spending that has taken place in recent years, financial resources for research are insufficient, with different situations according to countries, and the use of existing funds could be improved. Research is still considered mainly as an expense instead of an investment, and stable mechanisms for financing it are missing in most countries.

9. The tools generally used for priority setting are different at the national and international levels. While the former show a greater weight of a mix of political will and researchers lobbying, the latter are mainly disease-based and need to be critically reviewed.

10. This revision should incorporate the theoretical and methodological contributions of the Region, oriented to health determinants and a democratization of decision-making processes.

The participants in the consultative meeting propose therefore:

1. To strengthen health research that has a social approach, whether it is basic, applied or operational, increasing its participation in the total research budget.

2. To speed up the trend of the past ten years, increasing the availability of funds for research.

3. To define mechanisms that facilitate the training of human resources, including researchers, decision-makers and research managers. This includes the creation of regional post-graduate courses and research methods programs, but is not limited to it.

4. To establish appropriate mechanisms to stop the present brain drain process Latin American countries are subject to, facilitating the repatriation of scientists.

5. To create networks, both at the national and international levels, in order to ensure a greater visibility of research in the public health field, the exchange and accumulation of knowledge and the contribution of regional researchers and other stakeholders to priority setting.

6. To strengthen the appropriation of knowledge and decision-making on health research by general society, through the systematic dissemination of information.

7. To consider the possibility of creating a Latin American scientific journal, of high scientific level and with the objective of increasing the region s participation in world publications as well as of favoring the dissemination of knowledge generated in Latin America.

8. To create mechanisms to retrieve much of the existing Latin American production in health research, which is presently of difficult access, and facilitate its dissemination.

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Chapter II

Results Of Group Work

Interaction Between Knowledge And Policy

Financing And Critical Mass

Priority Setting

Inequity, Health And Discrimination

English summaries of Spanish documents

Working group 1:
The Interaction Between Knowledge And Policy.
The Role Of Health Research.

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Situation Analysis in Latin American Countries.

Health research has become a cornerstone to improve health conditions of the people,[1] and it is widely used by health care systems throughout the world. During the Regional Consultative Meeting carried out in Buenos Aires in June 2000, a situation analysis about health research, knowledge and policy was carried out by participants from International Organizations: COHRED, Global Forum for Health Research, PAHO; NGOs such as the Caribbean Women Health Network; and Country Representatives from Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Mexico, Nicaragua and Uruguay.

The preliminary findings of the Latin American region situation analysis regarding the interaction between health research and decision-making can be summarized as follows:

There is disparity among countries to carry out health research. In the region, there are few countries carrying out health research. Formal agreements exist between COHRED and countries from the Caribbean region (Barbados, Trinidad and Tobago, Jamaica, and Curacao). Mexico began its activities in 1990.[2] However, this country has not integrated a national health research commitment, although it has been carrying out health research activities within its health care institutions.[3,4] There is little information from other countries of the region regarding health research, although there are five countries Argentina, Brazil, Chile, Mexico and Venezuela that are responsible for most of published papers in medical journals these countries are carrying out most of health research activities in the region.[5]

The main disparities among countries are related to infrastructure, personnel, financing, and technological development. There is a wide variability of health care systems in the region and of resources, i.e. variability of doctors per

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1000 population goes from 0.14 in Haiti to 2.99 in Argentina.[6] Although, most of the health care systems are state-ruled, there exists a lack of long-term strategic planning for integrating health research within its formal infrastructure.

There are weak interactions among stakeholders and few interinstitutional linkages, both within countries and among countries. Integrative efforts to carry out health research have been carried out mostly by international health organizations and by organizations with focused regional mandates. In Latin American countries, as well as in most of developing countries, health research is critically limited. The institutional structures to carry out research are weak and highly dependant of external support. Most of allocated resources to carry out research are devoted to pay salaries and maintain infrastructure. There are few resources to train people or to actually carry out health research. This has led that resources to conduct multi-country projects or interinstitutional projects within countries are practically unavailable, unless international organizations and donors provide the necessary funds.

Limited links between decision makers and researchers. The tendency of most health care systems was towards maintaining efficiency to fulfill demand of services by the people under its responsibility. Just recently, issues regarding effectiveness and equity have become an important component of health systems policy, mainly promoted by the international health sector reform movement.[7] Increasing recognition of the importance of including R&D within the routine activities of the health care systems is promoting a gradual change and gaining advocacy from decision makers.[8,9]

Current view is that health research can be conducted under specific *operational principles* in which four key actors should participate: Policy makers, Researchers (from different disciplines), Users, and donors (public and private). Since the inception of the research activity, a close link between decision-makers and researchers should be established. An important component is the identification of the problems that can be addressed by carrying out research activities, and its subsequent prioritization by the aforementioned four actors. This can gain advocacy from the decision makers both to support the research activities, but also to adopt the results or the techniques tested during the research projects thus giving the possibility of being applied in health programs. Examples of this process have been documented in Mexico[10] and in African countries.[11]

Health research results are limited and their applicability is unsustainable. There is an existing gap between results from health research and their use in routine activities of the health care systems through program implementation.[12] This can be explained by a variety of constraints such as: quality of proposed research, lack of economic resources available, poor managerial training, fear of change within health personnel to adopt proposed techniques or criteria, and a number of bureaucratic obstacles. All of these factors can become the use of research results unfeasible and unsustainable.

To overcome these constraints, activities to look for advocacy from the decision-makers not only to support the health research activities, but also to apply of the results, according to the available resources should be proposed. This would be carried out after a careful analysis of determining population health care needs, costs, and effectiveness of the proposed changes when applied into routine activities and the potential impact of the intervention on the quality of health care provision.[13]

Health research is poorly identified as a support for strategic development.

Most of the times, research activities are conducted because of external pressures and temporary crisis. Current vision of different stakeholders is most related to a utilitarian point of view rather than viewing it as a long-term commitment. Good insight of the situation, where decision-makers and stakeholders know the possibilities and perspectives of health research is indispensable to implement its results.

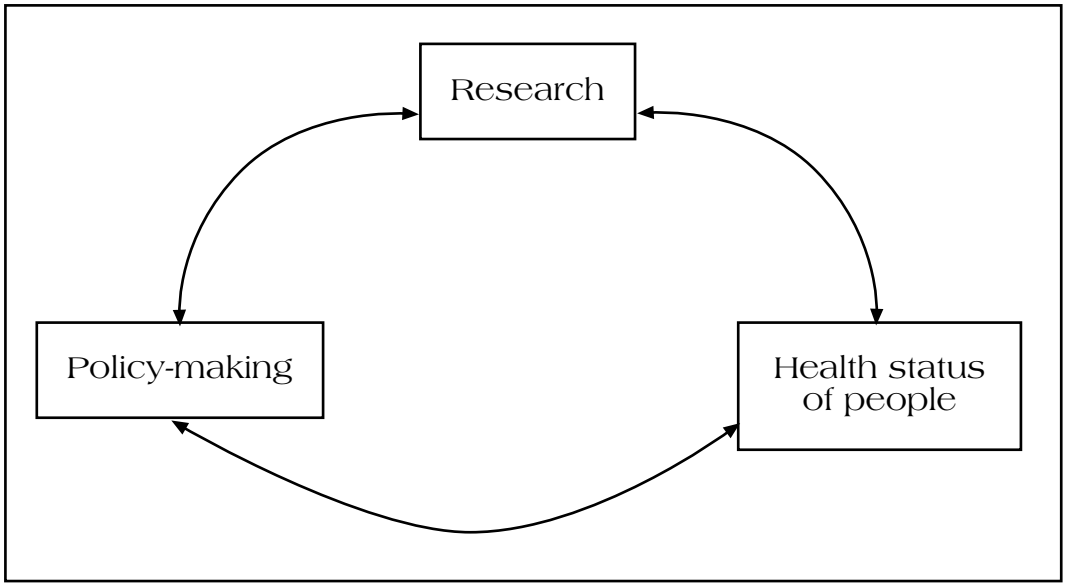
Challenges

There is a growing recognition among the countries of this region about the need to look for advocacy from the stakeholders to support and finance health research activities.[14] The countries of the Latin American region share common health problems and networking should be boosted through organizations with focused regional mandates, such as PAHO, and by governments, academic institutions and health care systems. In this way, resources and alternatives of solution can be shared among countries of this region. Besides that, interaction among research groups that are tackling, most of the times, common problems in different countries should be strongly encouraged.

Technical support, investment in training human resources in countries with weak or not well-developed health research infrastructure, is highly advisable.

There is a consensus regarding the obsolescence of current models to carry out research in Latin America, where there is a predominant biomedical perspective, and there is strong competition for resources among the different research disciplines. PAHO has stated that evaluation of projects should be established in a public, objective and rigorous manner, and following a strict methodology.[15] However, a project methodologically sound is only one step of the process, because the main point should be focused in the perspective of the project that should aim at improving health conditions of the people.

Figure 1: Interaction among three basic components: Research, Policy Making and People's health status



There is a close link among three components (Figure 1): People s health status, policy-makers and research. In the Latin American region, health research will become an important asset in the near future. The state will continue playing its role to set research policy and to provide support. Additionally, the state should facilitate possible interactions between different stakeholders, in which financing and academic institutions will have a substantial participation. The challenge is to strength the capacity of all stake holders to harmonize its resources and goals to set up the grounds to carry out sound health research, thus making possible to have a positive impact of the health of the people.

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Working group 2: Financing and critical mass

Financing

1 Present situation

Economic resources for research are lacking, and there is no proper utilization of the few existing possibilities.

There have been reductions in expenditures for research, which is in accordance with the socio-economic situation of Latin American countries, a phenomenon that is not equally present in all countries. Research systems are frail, which binds them to political changes. At times of economic crisis, research is one of the first sectors to be affected, since it is often regarded as superfluous when compared with things that governments prioritize, such as the payment of external debt, or strengthening financing systems.

Some research programs have closed because of lack of demand for them, little economic support for researchers and system frailty.

In some countries there is a will to increase research expenditures, while in others research funds are barely nominal, and bearing in mind the fact that there is a decrease in our buying power, research expenses have decreased.

At least 70% of Latin American research is financed by public funds. They are generally conveyed through science and technology institutions, except for some countries, where there is a dual model including Ministries of Health and specialized science and technology agencies. In some countries, Ministries of Health may not use their resources for research, amongst other reasons, because they are used corruptly. In some health sector reform processes, resources have been divided up into several agencies and regions in the countries.

The public sector shows a mixture of what could be properly considered research and a series of other actions oriented to program assessment, quality assurance, follow up, epidemiological surveillance, etc., which, though called research because they generate knowledge, are not regarded as health research by this group. Including them would mislead us in terms of overestimating the amount of funds allocated to research.

The poor recognition of health research from the social sciences is translated into few possibilities to have access to financial resources, which usually favor basic health research. Health research from the social sciences is mainly funded by international cooperation and carried out by non-governmental organizations and interest groups, less able to gain state financing, so that it is generally more limited in terms of budget and coverage. On top of this, some international agencies have refused to fund projects in Latin America.

State-funded research is starting to consider the need for research from the human sciences, particularly regarding policies, health systems and clinical epidemiology, although social and cultural level and its relationship with populations health/disease research still shows a low profile. Hence, most State funds are allocated to basic research, while international cooperation funds go to applied research and human sciences. There is little development of clinical and applied research, bearing in mind that those who review projects also belong to basic sciences in the health field, which limits the take-off of other strategies and research subjects.

Private enterprise investment is growing, and its contribution is hard to measure. It generally responds to its own needs and is mainly destined to quality assessment and organizational improvement. There is also an extra difficulty in defining and measuring technological development and investment as a part of health research investment. This sort of investment seems to be growing in the private enterprise, and often receives State support, sometimes as loans. Multicentric studies are mainly financed by the pharmaceutical industry.

As it is, the financing system does not favor the creation of new research groups, since the curriculum of the research team usually receives a high punctuation in any selection criteria. Some universities are starting to change this, thus favoring investment in new groups.

Technical quality is often favored over relevancy of the research subject. It is important to stress that States, because of their social function, should privilege projects that bear in mind the research needs of countries and regions.

Poor dissemination of results is often due to a limited publication of research results.

2 Underlying values

Research ethics: ethical criteria, as well as the support of ethics committees, are gaining importance as fundamental criteria at the time of requesting research funds.

Scientific integrity (ethics, conflicts of interest, authorship, publications) must be an important criterion for the acceptance of a project.

Research should be considered as an investment, not an expenditure.

Research should contribute to improving living conditions of the people and social relationships, and not merely respond to intellectual curiosity or financing agency priorities. The use of public funds should be directed to the resolution of the community s needs.

Researchers must contribute in the transformation of power relations, both in priority setting, and in the definition of research strategies and resource

allocation. That is, research should not go on strengthening traditional power groups in health research, both in terms of process and results.

Equity should be understood in wide terms, and not just as a redistribution of income and benefits among poor and rich, which means to speak about different inequities, such as gender, regional, ethnic, racial, age or others, such as those existing between different sciences in terms of researh, research groups and research strategies.

Intersectorality and muldisciplinarity should be a must, since many health problems do not belong exclusively in the health field.

The participation of interest groups in health research priority setting and project evaluation teams should be fostered.

3 Operational principles

- Creation of mechanisms for research follow up, which facilitate their incidence on public or institutional policies.
- Resource mobilization
- Construction of indicators to measure impact of research.
- Creation of instances to promote the utilization of research results and guarantee their social and economic assessment.
- Change in regulations that do not allow some health institutions to finance health research.

4 Actions

- Health research financing should not be circumstantial, but besides seeing to emergencies, it should respond to a rational planning of research, according to each country s needs.
- To create more stable financing mechanisms, decreasing their dependence on government will.
- To have all countries openly announce research opportunities.
- To design positive actions in order to favor equal opportunities for different regions within a country, different population groups and research teams, without affecting research quality.
- To take advantage of a time when governments are talking about the importance of research and the need to increase investment in this field, as well as the recognition achieved by research in recent years.

5 Obstacles/opportunities

- Training of researchers in financing management, improving their skills to compete for funds.
- Research evaluation systems do not differentiate among different types of projects. Calls for projects should be more specifically directed.
- Some agencies policies excluding Latin America from their research priorities.
- Poor monitoring of government to make sure that funds are adequately used.
- Poor management skills for obtaining new and better resources for research.
- Except for Argentina, countries do not have a researcher s career. There is still a need to recognize that research may be a full-time activity, though it may be combined with teaching (practical application of knowledge).

Critical mass

1 Present situation

Lack of enough human resources for research.

Lack of Latin American training opportunities in research, which forces many professionals to train abroad, far from the Latin American reality, increasing costs and facilitating brain drain.

There are some efforts to train new researchers, either in their countries of origin or abroad, but their funding has generally been insufficient. Some countries also lack the opportunity to offer an adequate work environment for researchers that go back to them.

Academic and administrative burdens often diminish time actually devoted to research.

Training of researchers is not interdisciplinary, neither does it facilitate a multidisciplinary approach of different health problems.

Human sciences are not integrated in the health research field.

There are not enough fully trained resources in such areas as: public health, health systems, social and human sciences in health research.

There is also a lack of resources in statistical methods.

Some professions enjoy greater recognition in health research, which is translated into uneven competence conditions with other sciences that also conduct research.

2 Underlying values

- Group work capacity.
- Scientific integrity.
- Leadership.
- Proactivity.
- Self-management capacity.

3 Obstacles/opportunities

- Incapacity of the system to generate new openings for qualified personnel.
- Lack of a formal recognition of the researcher career.
- Lack of enough training programs for research in Latin America.
- Inventory of research opportunities in the region, to facilitate access of researchers from different countries.

4 Actions

- To strengthen training in clinical research methods.
- To obtain financing for re-insertion of researchers in their own countries, including proper working conditions, once they are trained.
- To provide economic incentives for publication.
- To facilitate and strengthen researchers networks in the region and to carry out workshops for the generation of research projects.
- To create discussion lists and chat groups amongst health researchers.
- To widely disseminated essential national health research.
- To sensitize researchers to the need to compete for funds. Also, to sensitize financing agencies to support this type of research.
- To create incentives for those groups of researchers who carry out essential national health research.
- To include or improve training in research methods at the undergraduate level in order to promote health research.

Working group 3: Priority setting

1 Situation analysis

Two different levels may be considered:

a National: this is a process generally guided by researchers, and where local political decisions, either regarding health or scientific development, come into play.

b International: We may differentiate priority setting processes in agencies such as the Pan American Health Organization (PAHO), which deeply knows intra-regional differences, from those of other agencies, which assume a non-existing uniformity.

The reasons why Latin America contributes with only 1-2% of world research were discussed.

2 Process

Priority setting methodologies are diverse. The group devoted an important portion of its time to the consideration of some tools widely utilized these days by different agencies, among them:

a DALYs:

- They may be useful, jointly used with other indicators. They combine information on mortality, which exists in most countries of the world, and morbidity date, still insufficient in most countries.
- Information systems should be greatly improved if we wish to use them.
- Weighting was seen as an important problem.

b Economic efficiency approaches:

- They may be more applicable to interventions than to research due to the time inherent to the research process.

c Priority related to social problems:

- The group discussed the greater explanatory power of social determinants, in comparison with priority setting methodologies based on diseases.

Visibility and representation

- **Networks:** the possibility of creating networks to increase the visibility and validity of priorities identified by public health researchers (presently quite marginal in the decision-making process) was discussed.
- **Information:** networks allow for the exchange of information, the accumulation of knowledge within a region and joint analysis of findings.

Property

Importance was assigned to the incorporation of actors from the academia and the development of mechanisms oriented to the democratization and transparency of decision-making on scientific policy (in this particular case, health research).

3 Strategies

Social and population based approaches, opposed to disease based approaches, could be a more cost- effective way of transferring knowledge into societies because they center on population health.

The public health space should be defended in the context of research in general.

- A need was perceived to defend the regional voice:
  - Publications: Public health specialists should publish more in order to increase their visibility and gain access to widely distributed scientific journals.
  - To a certain degree, this means to modify qualification criteria of some journals, increasing their sensitivity to social issues in health research.
  - To have an active, coordinated presence in international fora.
- To rescue the continent s scientific production.
- Finally, and though it may be temporarily counter-cultural, the group agreed that the role of the State in the defense of the populations health status has to be rescued, not limiting it to the concept of public goods.

Working group 4: Inequity, health and discrimination

1 Situation analysis

The Alma Ata (1978) objective of health for all by the year 2000 has not been reached in most Latin American countries. Many factors are accountable for this.

We define equity in the framework of social justice and human rights as the search to overcome injustice, both socio-economic and cultural, and the elimination of the different forms of oppression and vulnerabilities based on different aspects, including sexual differences. This implies the need for all necessary efforts as well as the identification and creation of ethical intervention mechanisms vis vis all types of social and cultural inequalities, that are neither abstract, nor supposedly neutral.

Geopolitical differences among countries, as well as those within countries, give rise to inequities such as the ones found among regions, areas of residence, age, socio-economic class, gender, and others. The existence of an adjustment model, globalization (which has deepened social inequities), the burden of internal and external debt, the unorderly population growth, poverty increase, environmental degradation, problems derived from the health systems, gender discrimination, corruption, instability of some democracies, amongst others, show a somber future regarding the Alma Ata purpose.

A lack of health planning, scarcity of human and economic resources, and the absence of political definitions are factors directly influencing the present conditions of health and poverty of the Region. To this we must add the inequities of research itself as a field of knowledge and power relations, based upon principles and abstract rules that ignore individual and contextual differences. We should point out to the unequitable allocation of research funds, the privilege of certain approaches and types of research over, for instance, applied research meaning to provide a response to our countries social reality and the public health agenda.

A vigorous effort should be made to diminish these multiple inequities and in this sense, heath research oriented to problem solving and above all applied and operational research may produce qualitative differences in human development.

2 Values

- Ethics.
- Solidarity.
- Social justice: regarding recognition (problems related to the political and economic structure) and redistribution (cultural injustice).
- Human rights: dignity, freedom, equality.

3 Operational principles/actions

- To create and consolidate health policies that allow for the definition of research policies with priorities according to public health needs and which guarantees the use of research results in policy-making. Equally, to measure the impact of actions, through the construction of significant indicators inequity.
- To define criteria for resource allocation.
- To consider gender not just as an analysis category and a tool for a more comprehensive look at problems, but as a horizontal approach, which, in a framework of equity, proposes a critical review of research as a field of knowledge and power relations. From a gender perspective, research should contribute in three basic levels: health-disease problems, problems derived from the sector s institutions and the health system.
- To generate research capability both regarding training and infrastructure. Creation and consolidation of a critical mass.
- To place research within a social, political and cultural framework. What is research carried out for? What do we research with? What do we research? Who carries out research? How?
- To include communities in the research process. To foster the creation of a solidarity triangle (central and local government and the community).
- To use the knowledge Latin America has already produced.
- To carry out research on the socio-cultural determinants of the health-disease processes in the population. In this sense, to carry out studies with a gender approach that would allow for the understanding of health as a locus where gender conflicts are expressed.
- If equity is considered fundamental, different social categories of analysis, such as age, social class, race, ethnic origin, etc., should be used.
- To develop health systems and services research, as well as the assessment of current practices.
- To create networks of researchers and data bases.

4 Obstacles

- Lack of health and research policies.
- Low utilization of research results for policy-making and the scarce number of adequate studies.
- Resistance to change by traditional groups in health research.
- Scarcity of resources and their use not in accordance with public health needs.
- Little use of the gender category in research from the health field.
- Brain drain.
- Low development and incorporation of technology.

5 Opportunities

- The existence of accumulated knowledge in the Region.
- To organize spaces such as national fora including NGOs, advocates, consumers, academia, agencies and the State, to guarantee transparency.
- To use and strengthen existing human resources.

6 Vision

Health research for development has as a main interest the creation and socialization of knowledge to respond to social realities and the public health agenda in its full complexitiy and diversity, since it arises from the recognition of inequities and the search for their solution, as a social imperative. It also tends to the creation of tangible and intangible technologies and their incorporation to the countries in the Region, in a south-south cooperation spirit.

7 The function of international support mechanisms

International financing is not in line with the needs and priorities of countries, while at the same time, international support mechanisms haven t achieved strong articulation among themselves, including their purposes and actions. That is why it would be important to reorient their actions and:

- improve mechanisms of access to health research financing sources
- refine international support mechanism (financial, technical cooperation, etc.) so as not to duplicate efforts on the same priority

- request donors to channel funds towards those projects which articulate different components in order to respond to the complexity of the deep inequities of our Region: intersectoral, multidisciplinary, multicentric projects, among others
- strive for a better resource allocation within countries (decentralization of resources and projects) based on a better dissemination of information on financing mechanisms.

Chapter III

Regional Assessment And Overview - A PAHO Background Paper

Science For Health

Notes on the organization of the scientific activity for the development of health in Latin America and the Caribbean[a]

Alberto Pellegrini Filho[b]

a This article is a summary of the scientific publication of PAHO published in Spanish with the title Ciencia en pro de la salud: Notas sobre la organizaci n de la actividad cientifica para el desarrollo de la salud en America Latina y el Caribe .

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1 The organization of the scientific activity in Latin America and the Caribbean

1.1 Brief historical review

A brief historical review of the organization of the scientific activity in the Region will help us to understand the origin of its approaches and orientations, as well as the dilemmas and difficulties that it faces. The organization of the scientific activity represents the intervention of the society in the dynamics of development of the science, usually done through the State, under the influence of some privileged actors. In this brief review we will take as starting point the years 50/60, when the organization of the scientific activity is more clearly defined as a subject of public policies.

The approach promoted by Economic Commission for Latin America and Caribbean (ECLAC) in the 60s and 70s, putting science and technology (S&T) as important factors for the social and economic development of the countries of the Region, constituted the basis for the establishment of a system that tried to integrate S&T in the general dynamics of development, starting with the creation of centralized governmental agencies, namely the Research or S&T Councils, responsible for the coordination of these systems (Amadeo E., 1978).

Notwithstanding some important achievements such as the increase in the publications of the region and the strengthening of the scientific infrastructure, particularly human resources development, at the end of the 70 it starts to emerge the limitations and difficulties for the action of the central organisms of S&T and for the implementation of the S&T systems.

In first place, the model of development adopted by the countries of the Region, characterized by protectionism, which leads to little stimulus to quality, competitiveness, and creativity, it is not the most adequate for the promotion of S&T activities; in fact it constitutes an environment hostile to these activities (Amadeo E., 1978). In addition to that, the plans prepared by the Councils of S&T were strongly marked by an supply side approach , which means, they were limited to promote the national scientific capacity, without being concerned with the creation of mechanisms that made it possible to disseminate and apply the knowledge that was generated. There were also difficulties of instrumental character, with little availability of complete, reliable, and timely information to feed the process of planning, as well as difficulties of financial order, since no country managed to reach, at the end of the 70s, the figure of 1% of the GDP that, at the beginning of the 60s, had been set as goal for the financing of the sector.

With the financing crisis that undertook the entire Region in the 1980s, these difficulties tended to worsen. The reduction of the public spending, one of the principal ingredients of the adjustment policies implemented in the Region, is going to find in the sector of S&T a quite easy target, due to its relative

isolation of the rest of the society. By its great dependency of the resources of the State, the scientific and technical infrastructure created in previous years had its survival threatened. The scientific output that has been increasing between the years 73 and 84 came to a standstill or presented a clear reduction both in the scientific output in general (BID, 1988) and in the scientific output in health (Pellegrini A., 1993), with recovery after the end of the decade. There was also observed deterioration in the working conditions and a growing physical and intellectual isolation of the scientists of the Region, with an intensification of the brain drain (Vessuri H., 1994).

1.2 Problems and current challenges

Once passed the acute period of the economic crisis and of the policies of adjustment and once it becomes evident the exhaustion of the so-called models of development adopted by the countries of the Region, the 1990s are characterized by important changes in all the spheres of social life, particularly in the role of the State and in the processes and actors involved in the public policies, including S&T policies.

New frames of reference and ways of thinking are necessary for the definition of S&T policies adequate to this new context. Some guidelines for these policies presented below are earning consensus and its implementation will depend on an appropriate mixture of strategies, policies, and investments, in accordance with the history and culture of the country, to its resources, and to the characteristics of the government and of civil society (Sagasti, 1994; Avalos, 1990; Guimar es, 1997; Pellegrini, 1998):

- the countries of the Region should define strategies that permit an advantageous insertion in the dynamics of the global economy and, at the same time, permit the improvement of the social conditions (particularly reduction of poverty and inequities) and environmental conservation, identifying the role that S&T should play in order to support these strategies;
- the development strategies should recognize that democracy, development, and the capacity to generate and utilize knowledge are inseparable and should be closely articulated;
- it is necessary to define a new role of the State in the formulation of S&T policies, strengthening its capacity as manager of social agreements and promoter of a collective definition of priorities. The policies of S&T should be consolidated as public policies, submitted to the public debate, which implies the creation of spaces where the variety of interests of several social actors involved in the activities of S&T can be expressed;
- the necessary articulation among the processes of research, development and production requires an institutional reorganization and creation of mechanisms that stimulate the development and the transfer of knowledge and technologies such as the establishment of legislative standards to

facilitate agreements and contracts of technology transfer, the creation of technological parks, etc.;

- in order to have access to the new knowledge and technologies wherever they are, it is imperative to create abilities of negotiation on industrial and intellectual property rights, as well as to strengthen international cooperation;
- the S&T policies cannot be limited to national boundaries, having to adopt a global perspective, including the promotion of regional integration;
- the S&T policies in most of the countries of the Region adopted a horizontal and concentrating character. The current context requires a selectivity and, at the same time, a decentralization of the activities of S&T, particularly in countries with great economic, social and cultural diversity;
- the allocation of resources should no longer be done according to the false alternative between basic or applied research. They should be target to areas and projects that promote the expansion of the knowledge frontier and, at the same time, respond to social demands;
- it is necessary to redefine the forms of data collection and analysis of information on S&T activities, as well as to develop indicators that make it possible to evaluate the quality and impact of these activities.

In order to assess the amount of efforts and the viability of facing these challenges, some general data on the situation and trends of S&T in the Region are presented below.

1.3 Situation and Trends[c]

The spending on R&D in Latin America is relatively low when it is taken into account its relative weight in terms of population or GDP. However, between 90 and 96 the growth of this expenditure was 57%, greater than 8.5% observed in the USA, 43% in Canada and 30.5% in Spain. This expenditure is quite concentrated, since in 96 nearly 82.5% of the expenditures refer only to three countries: Brazil (60%), Argentina (12.5%), and Mexico (10%).

With regard to the expenditure of R&D per inhabitant, on the average the countries of Latin America spend nearly 22 dollars. USA spends more than 10 times this amount, Canada 12 and Spain 5 times. A positive aspect is that the spending on R&D per inhabitant in Latin America grew 41% between 90 and 96, while in USA this increase was of barely 2%. With respect to the expenditure as percentage of the GDP, on the average Latin America spends 0.5%, figure only exceeded by Brazil (0,76%), Chile (0,64%) and Costa Rica (1,13%).

c Most of the information presented in this section was provided by the Ibero-American Network of Indicators on Science and Technology (RICYT), created by the Ibero-American Program of Science and Technology for Development (CYTED) in 1995 (http://www.unq.edu.ar/ricyt/)

With respect to the origin of the resources, the State is the principal source of the financing, contributing on the average with more than two-thirds of the resources (72.6%), contrary to the USA, where this proportion is contributed by the private sector. The Universities in Latin America are the principal locus where these resources are executed for the development of R&D activities, contrary to countries like USA, Canada and Spain, where companies occupy this position.

The number of full-time equivalent researchers of Latin America reach a total close to 125,000, while the USA, with nearly 60% of the population of the Region, has 8 times more. Also in regard to this indicator a strong concentration is observed, since almost two-thirds of the researchers of Latin America are in Brazil (50,000) and Argentina (28,500). The average number of researchers in relation to the population economically active in the Region is 0.75 per 1,000, which is significantly less than the observed in Spain (3.25), Canada (5.51), and USA (7.37).

The number of graduates at masters and doctorate level reveals the expressive effort that the countries of the Region have been making. During the decade of 90 the graduates with masters and doctorate degrees have increased by 51% and 65%, respectively. The United States, that have near 8 times more researchers than the Region, presents a smaller superiority with regard to the number of graduated doctors, nearly 4 times.

The scientific output of the countries of Latin America in terms of publications corresponds to 2,09% of the world production registered in the database of the Institute for Scientific Information (ISI) in the year of 1996. This proportion is relatively low if it is compared with 2,23% of a country of medium scientific development, as it is Spain. It is also quite concentrated, since only two countries, Brazil (0.82%), and Argentina (0.42%) respond by nearly 60% of the scientific production. However, there is a significant growth, since in the period 1981-1993 Latin America responded by nearly 1.5% of the world production and in the 1970s by nearly 1% (Garfield, 1995).

In 1996 the Latin American researchers presented a productivity of 15.1 articles per every 100 researchers, less than half of the 38.9 articles produced by every 100 researchers of Spain. In terms of publications per inhabitant the difference is very significant, since Latin America produced 4.1 articles per every 100,000 inhabitants in that year, while in Spain this figure reaches 51.7. The productivity in terms of resources allocated to R&D is also quite low, since in 1996, 2.1 articles were registered in the ISI per each million dollars assigned to R&D, while in Spain this same quantity of resources generated 4 articles.

In general terms, these indicators point out the weakness of the region to generate and master the scientific and technological knowledge. However, there are clear trends of growth both in the indicators of inputs and those of products, particularly if it is compared with the situation in the 1980s.

In regard to the resources devoted to R&D, there are positive trends not only in terms of increase of amounts and diversification of sources, but also in the way these resources are spent. During the period 61/87 the resources for R&D from the IDB and World Bank were devoted to the creation of research capabilities in universities and public research centers, mainly through fellowships for graduate-level abroad and investments for laboratory construction and equipment, libraries, centers of computation, etc. Starting in 1988 there is an increase in the volume and a change in the structure of the programs of S&Ts financed by these organisms, with reduction in the financing of programs of infrastructure, increase in resources aimed at applied research and creation of funds for technology development and innovation.

Another important trend is the growing concern over selectivity and quality, through the strengthening of the mechanisms of review of research projects, support for the consolidation of expert groups and establishment of careers of researcher with rigorous criteria of evaluation of performance.

At the meeting of the Advisory Committee on Health Research (ACHR) of PAHO in July 1998, representatives of the S&T Councils of Brazil, Costa Rica, Mexico, and Venezuela presented the main strategic orientations of their policies. Among these it should be pointed out the importance that is being given to social demands as basic reference for the definition of research agendas; the establishment of alliances with various actors, including the private sector, for the financing and execution of research; the creation of collaboration networks between researchers; the establishment of systems of evaluation of individual scientific output; the decentralization of the activities of S&Ts and the promotion of regional cooperation agreements.

It deserves to be also pointed out the impulse that recently has taken hemispheric cooperation in S&T, with the creation of a series of mechanisms to strengthen international cooperation in this area, such as the Common Market of the Scientific and Technological Knowledge (MERCOCYT), the Program Bolivar, the Specialized Meeting of Science and Technology (RECYT) of the MERCOSUR and the Ibero-American Network of Indicators of S&T (RICYT) created in 1995 by the Ibero-American Program of Science and Technology for the Development (CYTED).

As it can be observed, during the 1990s there were important changes in the forms of organization of the scientific activity in the Region in response to the challenges generated by the profound transformations in the economic, political, and social structures of the countries of the Region. The following section seeks to analyze in what way these changes are reflected in the organization of the scientific activity for the development of health.

2 The organization of the scientific activity for the development of the health in Latin America and the Caribbean

We utilize the denomination scientific activity for the development of the health instead of scientific activity in health, to emphasize the improvement of health conditions as the essential goal of this activity. After having analyzed the situation of the organization of the scientific activity in general and before examining the specific aspects of this organization in the field of health, we will present a brief sketch of the health situation of the Region, trying to identify the demands to the science that derive from this situation.

2.1 The health situation and its trends

Two fundamental elements characterize the health situation of the Region: the rapid demographic and epidemiological changes or transitions (Omran, 1971), and the inequities between groups and individuals, both in the profiles of morbidity and mortality, and in the access to health care.[c]

In regard to the demographic aspects, three trends are very important: the decline of the rates of birth/fertility and of mortality, aging of the population, and the rapid urbanization.

There exists a historical trend toward the progressive reduction of the specific rates of mortality in all the age groups and in all the countries, but the differences between different countries or social groups tend to remain or to increase. Individuals and groups of the population within the countries of the Region present important differences in their health situation, which can be defined as inequities, since usually they express unjust and avoidable differences in the living conditions of those groups and individuals.

Examples of inequities abound. In Brazil the Infant Mortality Rate (IMR) in the period 87-95 was of 46.1, but in the southern-southeastern of the country was of 32.3, while in the northeast was of 71.8. The IMR in the urban area in this same period was of 41.2, while in the rural area was of 60.8, being that in the South-southeast rural area was of 28.8 and in the rural of the northeast was of 84.4. The percentage of children below 5 years with deficit of growth in this same country in 1996 was of 0.9 for families with an income of 160 or more american dollars a month, while in the ones that received less than 20 dollars this percentage was of 28.9 (NUPENS/USP, 1998, cited by Dachs, 1999).

c Inequities are understood as the differences between individuals or groups of the population that in addition to systematic and relevant are also avoidable, unjust and unnecessary (Whitehead, 1992).

In Chile, the children of mothers with no schooling present in 90-95 mortality post-neonatal 12 times greater than that of the children of mothers with 13 or more years of schooling (Hollstein, RD et al., 1998, cited by Dachs, 1999). In this same country the life expectancy at 20 years for women grew 2 years in the period between 1985-87 and 1994-96, but all this gain was concentrated on the women with 13 or more years of schooling (Vega, J, 1999, cited by Dachs, 1999).

This complex sanitary situation poses big challenges to the health systems and services of the Region, which always suffered from serious deficiencies of coverage, equity of access, quality and efficiency. Even though almost all the countries recognize explicitly the universality of the right to health, between 10 to 50% of the population, according to the countries, lacked in mid- 97 regular access to basic health services (OPS, 1998a).

In recent years and as a result of the processes of modernization of the State, the majority of the countries began to reform its health systems. Although these reforms differ in content, amplitude, and rate, present certain common features, such as, the decentralization, the emphasis on the regulatory role of the State at the expense of its functions of financier and provider of services, the increase of private providers and of schemes of private insurance, the targeting of care to vulnerable groups through basic packages of care and the creation of mechanisms of social involvement in the control and planning of health actions.

The resources available for the health sector in the region are relatively limited and poorly distributed. The average National Health Expenditure (NHE) for Latin America and Caribbean in dollars of 1995 was of 240 per capita, ranging from 9 dollars in Haiti up to 795 in Argentina. The same occurs with the percentage of the total NHE with regard to the GDP that, with an average of 7.3% for the Region, varies from 3.5% in Haiti or 3.9 in Belize, up to 10% in Uruguay or 9.8% in Argentina. The composition of the NHE in Latin America and the Caribbean for 1995 presents on the average a predominance of the private expenditure on the public, respectively 59% and 41%, being observed an inverse relation between the level of income of the countries and the private expenditure, or, in other words, the importance of the private expenditure tends be lower in the countries with greater per capita income (OPS, 1998a).

The organization of the health systems and services of the Region usually tends to reproduce, when not to strengthen, the pattern of inequities. Most of these systems segregate the groups of the population, linking them to different modalities of care and to different suppliers, according to its ability to pay. This institutional fragmentation is accompanied by a relatively greater financial charge for the poorer, which spend nearly 6% of their income on payments of the pocket for health care, while the average for the developing countries as a whole is 2.4%. For countries as Ecuador and Colombia the expenditures of the poor come 17% and 12% of the household income, respectively (Bengoa R et al., 1998).

2.2 The demands to Science

The complex health situation of the countries of the Region poses important challenges to health research. One of them is the need to understand the determinants of this situation.

The international scientific literature shows important developments in the construction of explanatory models to analyze the relationships between the way in which a given society is organized and the health situation of its population (Evans RG; Barer ML; Marmor TR, 1994). One of the principal challenges of these explanatory models is the establishment of a hierarchy of determinations among social, political, economic factors and the mediations through which these factors affect the health situation of the people (Victora C. et al., 1997).

Another important challenge in conceptual and methodological terms with respect to the determinants of health situation is the distinction among the determinants of the health of the individuals and those of population groups. In fact, some factors that are important to explain differences in the state of health of individuals not necessarily explain differences between groups within a society or between one society and another. In other words, it is not enough to add the health determinants identified in studies with individuals in order to know the determinants of the health at the society level. For example, the important differences of mortality between social classes cannot be explained by the same factors that explicate the differences between individuals, since if we control these factors (smoking, diet, sedentary lifestyle, etc.) the differences between classes remain almost unaltered (Rose and Marmot, 1981). While these factors are important to identify which individuals within a group are subject to greater risk, the differences in the levels of health between groups and countries are more related to the degree of equity in the distribution of income as well as the array of relations of association and cooperation among individuals, the so-called social capital.

The response to these challenges requires that the research approach to health problems be done on several dimensions and levels of analysis and incorporates the extraordinary progress of the various biological and social disciplines. The daring to try to learn the health problems in all their complexity is what makes it possible to continue to develop the theoretical and methodological instrumentarium in this field and to establish solid scientific evidence to support health interventions (Pellegrini A., 1999a).

The complexity of the health problems obliges to adopt a conception of health research that rejects reductionism as the only possible strategy in science, adopting, on the contrary, a position that tries to unite the simplicity and the complexity, surpassing the dilemma between the reducionistic thinking, that does not see more than the elements, and the global thinking, that does not see more than the whole (Morin E., 1983).

Through the expansion of its subjects, disciplines, and approaches, health research should be developed toward a new paradigm that includes, at least, four key elements: the *transdisciplinarity,* which means the capacity to travel and to construct bridges between different disciplinary fields; the *complexity,* that is the challenge that implies achieving an effective knowledge of complex totalities without resorting to simplifying abstractions; the *multiplicity,* that is an attitude of opening that rejects monolithic assumptions, monopolies of thinking, and controlled approximations, and, finally, the *praxis*, the need that the research findings be translated in practice and that the explanations are done with a view to identify sensitive points for greater impact of the interventions (Pellegrini A, Almeida N, Trotsle J, 1998).

In the following section we will analyze the current health research situation in the Region, trying to evaluate its capacity of response to these challenges.

2.3 The capacity to respond

The S&T policies implemented by the countries of the region previously mentioned, had important impact on the field of health, facilitating as in other fields, the creation and strengthening of a scientific infrastructure. However, like in other fields, these policies suffered from serious problems such as the lack of resources of all types, the weakness of ties between the production and the utilization of knowledge, the absence of criteria for selectivity and quality, the centralization of the decision-making process and other problems already indicated. These weaknesses limit the capacity of health research in the region to follow the scientific and technical development and to face the complex problems already mentioned.

A first important limitation of health research in the Region is its low production and high concentration. Latin America is responsible for barely 1,37% of the articles registered in 1996 in MEDLINE, the most important international database in health. In the case of the Science Citation Index of the Institute for Scientific Information (ISI), the articles of the Region correspond to nearly 1.5% of the scientific output in health indexed in this base (Garfield, 1995).

With respect to the distribution of this production, Argentina, Brazil, Chile, Mexico, and Venezuela are responsible for nearly 90% of the publications of Latin America and the Caribbean, both with respect to the Science in general, and to the field of the Health Sciences. Only Brazil and Argentina are responsible for nearly 60% of the production of Latin America indexed in MEDLINE in 1996 (RICYT). This concentration is also observed in the English-speaking Caribbean, being Jamaica responsible for 75% of the publications of this subregion (Alleyne G et. al., 1995).

The degree of concentration is not homogenous for biomedical, clinical, and public health research. Clinical research, with greater tradition in the region, is distributed in more uniform way, while public health and biomedical research present a high degree of concentration. Brazil and Argentina are responsible for nearly 70% of the articles published in each one of these two areas. Both

by the great diversity of situations and problems, and because its role to provide scientific basis for health interventions, Public Health Research, that includes epidemiological and health systems research, should be widely widespread, fact that is not observed, at least in the production registered in the ISI.

The analysis of health problems at individual level predominates largely, since barely 2.7% of the articles produced by Latin American authors and indexed in the ISI can be classified as of public health research. Neither there is a correspondence of this production with the prevailing health problems. At the beginning of the 90s, the articles in epidemiology (66% of which produced by Brazilian authors), were dedicated 83% to the study of infectious diseases, 4% to chronic diseases and 13% to other subjects (mostly maternal and child health), indicating that the epidemiologists of the Region, that publish in journals of international circulation, present a pre-transitional scientific output (Pellegrini, Goldbaum, Silvi, 1997).

In addition to these limitations in the quantity, distribution, type, and quality of the scientific output of the Region, there are also problems of epistemological and methodological nature, not necessarily exclusive of the Region, which are characteristic of the state of development of the field of health research as a whole, limiting its ability to grasp the complexity of health problems.

The dominant paradigm, the so-called risk approach , suffers from serious limitations, being one of them the individualization of the risk, i.e. the fact of giving special importance to the study of the risks linked to the characteristics of the individuals, ignoring the social and environmental influences that affect the health of the populations. Another limitation is the idea that the risk is individually determined, i.e. that the lifestyles and the behavior are matter of individual option independent of the social context (Diez-Roux AV, 1998).

The predominance of the individual approach to the analysis of health problems is not only an epistemological or scientific matter, but also the expression of more profound conceptions on the relationships between individual and society. These conceptions tend to reduce the society to a mere sum of the beliefs, decisions and actions of individuals. When socioeconomic-cultural variables are considered, they are habitually treated as attributes of individuals and not of groups or societies (Corin E, 1994).

In recent years the awareness of the limitations of this paradigm is growing and a new scientific trend is observed, based on more comprehensive explanatory frameworks and new methodological developments (Susser M, 1998; Krieger N, 1994). Among these it is worth mentioning, as an example, the so-called contextual analysis or multi-level analysis, that tries to combine the analysis of the characteristics of the individuals with those of the social groups to which they belong. The conceptual basis for this approach is that the social groups are legitimate units of analysis; that the properties of these groups are different from those of the individual members and that the contextual variables can have effects independent of the individual

characteristics or modify the way in which individual characteristics affect the health situation of the group (Diez-Roux AV, 1998).

In recent years, there is an increase in quantity and quality of the studies on the relationships between the health of the populations, the inequalities of the living conditions and the degree of development of the web of ties and associations between individuals and groups (social capital). A recent review of international literature was able to select near 400 references of studies of this type in the last 5 years, documenting their achievements in the knowledge of these relations (Wing S, Richardson D, 1999).

Notwithstanding the importance of the inequities in the health situation of Latin America and the Caribbean and the need for the study of its determinants, a literature review of the scientific output of the authors of the Region in national, and international journals, as well as in the so-called gray literature , did not detect a similar trend (Almeida Filho N, 1999).

Taking into account the characteristics of the health situation of the Region, the challenges to research posed by this situation, and the limitations of the capability to faces them, in the following section some guidelines are presented with a view to expanding this capability.

2.4 Guidelines on the organization of the scientific activity for the development of the health

In previous section there were some guidelines presented for the organization of the scientific activity in general, which serve as reference for more specific orientations related to the field of health. We understand by scientific activity the group of processes of production, dissemination, and utilization of the knowledge and, accordingly, when we refer to the organization of the scientific activity for the development of health, we refer themselves to the work to organize, strengthen and to orient these processes with a view to the development of health.

2.4.1 The definition of priorities

Notwithstanding the still existing resistance to the definition of research priorities to preserve the autonomy of the science , in reality Science is not located above the society, moving according to initiative of independent scientists, but in fact it responds to demands put by the various sectors of this society. The problem is to know who define these demands, with what criteria and to respond to whose interests.

The definition of priorities of research should not be understood as a task of exclusive responsibility of experts. On the contrary, it should be viewed, as a social task, involving various actors with their interests and perceptions, expressed in a space that facilitates the construction of consensus. In order to achieved this participatory process, it is necessary a change of the

behavioral patterns of traditional actors such as the State, the researchers, the producers of services, the health professionals and others, used to relationships and rules pertaining to another context. In this situation, the State, in addition to financing agent, should assume the capacity to promote opportunities for the expression of the variety of interests and prospects of the various social actors in order to define collectively the pathways to follow.

This democratic and participatory process of identification of problems also includes, of course, a technical dimension. In the case of health this dimension would be given by both, the characteristics of the health situation in a given society and the internal factors responsible for an intrinsic development of science. Although strongly influenced by its social environment, the development of science has its own dynamics determined by the knowledge previously developed and by the questions that this same knowledge itself generates. The problems located in the crossing between those generated by the health situation and those generated by the development itself of the most dynamic areas of the science, would be those which should deserve priority in the research efforts (Pellegrini A, 1994).

In recent years several international agencies and committees have prepared health research agendas or have developed methodologies for definition of research priorities. Among these initiatives it is important to mention:

The Report known as Investing in Health Research and Development prepared by the Ad-hoc Committee on Health Research Relating to Future Intervention Options (Ad Hoc Committee, 1996). The main objective of this report was to define guidelines to orient investments in R&D in health at national and international levels. The Ad-hoc Committee was integrated by 37 members of several countries and its activities were financed by various multi and bilateral agencies dedicated to the promotion of health research.

The methodology adopted by the report to orient the allocation of resources for R&D consists of the following steps:

- What is the magnitude of the problem? This question is answered through the calculation of the burden of disease, according to an indicator known as Disability Adjusted Life Years (DALY);[e]
- Why the burden of disease persists? According to the response to one of the three alternatives: a - lack of knowledge on the disease and its determinants; b - lack of instruments for combating it; c- impairment in the use of available instruments, the type of necessary research is identified;

e Each DALY indicates the loss of a year of healthy life for reason of disability or premature death. The years of life lost by premature death correspond to the difference between the age in which the death occurred and the life expectation at birth in a developed country: 82.5 years for woman and 80 for males. The disability is evaluated in terms of expected duration and severity. The number total of DALYs in a population in a given year indicates the burden of disease of this population for this year .

- Is there sufficient knowledge about the problem to consider possible interventions?;
- Will the interventions that ultimately are developed be cost-effective? Can they be developed in the short-term and at a reasonable cost?;
- How much effort and resources are currently dedicated to the problem?.

Notwithstanding its methodological contribution, the report has been subject to some criticisms. The DALY, combining in a single indicator mortality, morbidity, and disability, represents significant progress, however, the available information, particularly on morbidity is insufficient in most countries and the judgment on duration and severity of the disability is marked by great subjectivity. The assignation of a different value to the DALYs lost, according to the age, with a smaller value towards the end of life for economic reasons, has generated criticisms from the ethical standpoint. In addition to these problems related to their construction, the usefulness of the DALYs for different purposes, including the definition of research priorities, was not still tested.

The methodology proposed by the report implicitly identifies health with reduction of specific diseases and the cost-effective interventions that are taken into consideration are limited to the health sector itself, ignoring interventions that could affect extra-sectorial determinants. Finally, the report does not make any mention to strategies to reorient the allocation of resources in the context of the developing countries, where several other factors should be considered for this purpose. There are in these countries a clear need for investments in the strengthening of their scientific infrastructure in health, articulated to the strengthening of their scientific infrastructure in general, which not necessarily should be limited to the immediate objective of development of cost-effective interventions to diminish the number of DALYs lost.

Another initiative that deserves to be mentioned is that of the Global Advisory Committee of Health Research (ACHR), advisory body of the Director-General of WHO, made up of scientists of high international prestige in various disciplines. In 1998 the ACHR published the report A Research Policy Agenda for Science and Technology to Support Global Health Development (ACHR, 1998).

Based on what it designates as the five principal territories of the human health: conditions of health/disease; health care systems; food and nutrition; environment and sociocultural characteristics, the Agenda identifies the imperatives and the opportunities for research both within these territories and among them. After analyzing the progress of the science in various disciplines and types of research, the Agenda mentions the necessary methodological developments, identifies the role of the principal actors involved in activities of S&T, and ends with the proposal of creation of Intelligent Research Networks or IRENES , based on the new technologies of information and communication as the main strategy for the implementation of the agenda.

The Agenda adopts a broad approach, emphasizing problems of global importance and its macrodeterminants, as well as the importance of international cooperation in S&T to surpass them. Nevertheless, despite these positive aspects, the Agenda does not explore all the potential of this approach. The intention of placing emphasis on research on determinants of the global problems that affect different population groups is not totally satisfied: when priority problems for research are listed, what effectively appears is a list of diseases and when the determinants of these problems are mentioned, they are limited to individual behavior risks. Another problem is that the macrodeterminants, the territories , and their impact on the global health problems are presented without a conceptual framework that explores the relations among them. Finally, the relations of cooperation at the global level, facilitated by the IRENES, are not conceived symmetrically, but as a way to promote the interest of the researchers from the north to the problems of the south , based on the argument that it will be very difficulty for the countries from the south to create a scientific infrastructure capable to face these problems.

The third initiative of this type was promoted by the IDRC (International Development Research Center) of Canada, with support of COHRED (Council on Health Research for Development) and PAHO. This agenda, called Priorities in research of the public health in Latin America (S nchez DM, Bazzani R, G mez S, 1998), concentrates on the problems of the Region and on the role of the public health research to surpass them.

The methodology consisted of the invitation to a group of experts, which, through techniques of consensus, tried to identify major sociopolitical-economic trends of the Region and its relation to the health/disease/care situation, pointing out the deficits of knowledge of these relations. The selected trends were: the demographic and epidemiological transition; the increase in the poverty and in the inequity; the changes in the lifestyles and family structure; the environmental deterioration and the reform of the health care systems. For each one of them it was analyzed the existing information and knowledge on the magnitude of the problem and its implications for health, indicating the gaps in knowledge and possible lines of research to fill them.

As in the previous cases, this initiative does not take fully advantage of its potential. The chapters are quite heterogeneous with regard to the fulfillment of what was proposed, particularly by the absence of a common methodology to select the problem, identify the existing knowledge, as well as its gaps, and indicate future lines of research.

As a whole the three aforementioned initiatives represent an important progress in terms of methodology for definition of research priorities. However, its common fate was to be consolidated in interesting documents without succeeding in being adopted as guidelines for national and international organizations dedicated to research financing and promotion. Probably this can be in part explained by the fact that in the preparation of these documents only the scientific community was involved, without the participation of other

actors. In other words there were given special importance to the technical aspects at the expense of the political aspects of the process of definition of research priorities.

Despite that limitation, initiatives as these can be important methodological instruments of support for the processes that are occurring in several of the CONICYTs of the Region. As it was mentioned, they are adopting a more proactive attitude in the promotion of research, which means, instead of waiting in a counter for proposals coming from the spontaneous initiative of the researchers, they are promoting research competitions, and organizing multicenter projects oriented by agendas of priorities constructed with broad social involvement.

In spite of the importance of research priorities, they are not synonymous of a policy of science and technology in health. Beyond a mere priority list, this policy should include a series of other elements, some of them discussed below.

2.4.2 Institutional Development

One of the most important elements of the organization of the scientific activity is its institutional basis, here included both the institutions in charge of the coordination, financing, and definition of S&T policies, and those responsible for the production and dissemination of knowledge.

The process of creation of institutional structures devoted to the organization of the scientific activity in the health sector starts in the decade of 80, when various countries, with support of PAHO, created, in the ministries of health, units of research, responsible for that task. These units would function as focal points for the health sector, within the National S&T Systems coordinated by the CONICYTs. What happened with the majority of those units it is that they never managed to accumulate sufficient technical, political and financial power, nor acquired leadership and legitimacy to define health research policies. These, explicitly or implicitly, continued to be defined by the central organisms of S&T, with greater or smaller involvement of the researchers of the sector.

Given the centralizing tradition of the S&T policies in the Region, the institutions that effectively carry out scientific and technological activities, namely the Universities and the Public Organizations of S&T in Health (POS&TH), usually are understood as mere executors of the policies defined by the State at central level. With the abandonment of the centralized planning, these institutions become recognized as privileged actors who should participate actively in the definition of S&T policies and plans.

The Universities:

Nearly 50% of the resources for S&T in Latin America are executed by the Universities, which are also responsible for 70 to 80% of the scientific output

(OPS, 1992). Currently, these Institutions with their significant amount of resources and experiences face important challenges. In fact, with the notion of knowledge society , the Universities are now perceived not only as creators of knowledge, but also as important agents of the economic growth, since they appear as the mechanism through which a country increases its human capital in order to compete in the global economy.

For complex problem solving through interdisciplinary approach, a trend that is being observed at world level is the creation of networks of peri-university institutions such as research institutes, consultants, companies, which are organized around the campus and establish relationships among themselves according to specific projects. In this environment the University is no longer an institution with clear limits, becoming instead a nucleus involved by peripheral relations. The working teams tend to be organized in accordance with specific problems, breaking the department borders and disciplines. New technologies of information and communication make feasible a new organization of work, ensuring fluidity to the nucleus-periphery relations and facilitating the creation of virtual regional universities (The Economist, 1997).

In the Region the changes in the productive sector and in the macro-economic environment create new opportunities to increase the ties between the academy and the productive sector of goods and services. In fact, a series of mechanisms to strengthen the ties between research, technology development, and production, has been implemented, as for example, the creation of funds of S&T.

Another challenge that the Universities of the Region face is to respond to the major demand on massive education. A new system with centers of excellence specialized in research, coexisting with others whose principal objective is to form good professionals is in process of implementation (Lobo R, 1999).

In spite of these new opportunities, in many Universities, it has been observed reactions against these changes, due to a series of reasons, among them an exaggerated politicization of any decision, the bureaucratization of the processes and the predominance of corporate interests (Colli W, 1999). In some Universities the auto-preservation and not research or the teaching becomes the principal concern and the researchers and educators highly committed with their work are forced to live with staff members that barely collect its salaries (Macilwain C., 1999).

This situation has been generating the need to the establishment of systems of performance evaluation based on productivity. However, in some cases these systems in turn also cause distortions, when they give exaggerate importance to publications in international journals and force an artificial homogeneity of areas or disciplines with different patterns of publication, damaging those of greater local interest, such as public health research, and discouraging other activities as the education itself.

The Public Organizations of Science and Technology in Health (POS&TH):

The POS&TH are organizations with great tradition in the scenario of S&T in health in the region, many of them created at the beginning of the century.

These organizations share the characteristics to be: public; nonprofit, but interactive with the world of the production; have an administrative autonomy higher than that of other units of the public administration; operate in the field of the science and the technology and, as such, characterized as organizations talent-intensive; combine a significant number of different semiautonomous units with different logic of operation; carry out a great diversity of activities of teaching, research, epidemiological surveillance and production of goods (sera, vaccines, drugs) and services (health care and laboratory).

The POS&TH arise, usually, from the need to answer to a demand on a given public good or service that the market does not provide adequately (Binsang R, Katz J., 1997).

The POS&TH face today the great challenge of remaining update with the new advances of the scientific and technical development and, at the same time, maintaining its social legitimacy, by responding effectively and efficiently to the problems of the society. In a meeting with Directors of POS&TH in 1997, the following recommendations were made in order to face this challenge (Pellegrini, 1999b):

- Administrative autonomy: the POS&TH should seek greater autonomy and administrative flexibility, which implies reviewing its legal situation and relationships with the State, for example, the establishment of contracts in which the allocation of public resources is done according to goals and results;
- Human resources: The area of human resources constitutes one of the most affected by the bureaucratic rigidity imposed on the POS&TH, which can lead to the loss of skilled professionals, low motivation, and inability to attract strategic professionals. More flexible policies are necessary in this area, including the establishment of monetary and non-monetary incentives conditioned to the performance of professionals and working groups, as well as greater flexibility for the contracting and dismissal of personnel;
- Definition of institutional priorities: Mechanisms of negotiation and consensus that promote social control over the institution should be established in order to allow that the institutional priorities respond to the interests and needs of the society and not the private interests of internal or external groups to the institution;
- Assessment of outcomes: The POS&TH should establish mechanisms and criteria for assessment of the impact of its activities and make public dissemination of the results of this assessment as a way to bring closer the world of the science to that of the needs and demands of the society;

- Knowledge and technology transfer: in order to face the changes in the mechanisms of regulation of the intellectual property and the growing regulation of the information and knowledge flows, the POS&TH should develop their capacity for technological management, which involves among others the creation of professional structures for the negotiation of contracts of technology transfer and for the promotion of agreements of technological cooperation;
- Strategic administration: the POS&TH should create internal units of analysis and strategic management, as well as promote the development of capacities for management among its staff members and leaders.

2.4.3 Financing and Human Resources

Financing:

It is not necessary to say that financing is one of the most important instruments of a S&T policy. Presently it is even more important due to the lack of resources to respond to the growing demand for grants and the increasing importance given to quality and selectivity. New trends can be observed in relation to financing, both at macro level, the amount and sources of funds, and at micro level, the criteria and mechanisms for their allocation.

With regard to the macro level, there is a general trend of increase of the resources dedicated to R&D and a diversification of sources, particularly an increase of the importance of private and external resources vis- -vis public resources. Funds with public and private resources have been created to promote S&T activities and their ties with the productive sector. Information on the magnitude of these trends in the health sector is not available hampering the assessment of their progressive or regressive impact in this sector. There are indications of increase of private funds of large international companies for clinical trials of new drugs by local researchers. These tests have been generating ethical concerns, given the utilization of vulnerable groups of the population for experiments in which they suffer the potential risks, but barely will benefit from the results, due to the high cost of the new drugs (Macklin R., 1999).

A clear trend at macro level is the increase of external funds on the part of multilateral agencies as the banks of development. In the case of the health sector, the World Bank and the IDB have been financing several projects in most of the countries of the Region for health sector reform. These loans represent an additional source of resources for health research, since many of them include a component dedicated to finance research projects, particularly operational studies. There is a need to evaluate the utilization of these resources and their impact in terms of production and use of knowledge, as well as with respect to the strengthening of the research capacity of local institutions (Pellegrini A, Almeida Fo. N, Trotsle, J, 1998).

With respect to trends at micro level, v.g., criteria and mechanisms for allocation of resources, it was already mentioned the initiative of several S&T national councils to prepare agendas in order to orient the application of resources. In addition, these organisms are utilizing more frequently inductive modalities of financing of projects, such as call for proposals , without abandoning the support for proposals submitted at the spontaneous initiative of the researchers.

The concern over a more strict evaluation of the quality of the proposals, both intrinsic, related to the scientific merit, and extrinsic, related to its relevance and importance, poses the need for establishing criteria and mechanisms that permit a suitable evaluation in regard to both dimensions. It is also necessary to find forms of evaluation that give opportunities to projects that represent new fields of research and for this reason, imply greater risk . In developing countries, in spite of the need for more imaginative approaches, the review process tends to be conservative, to defend rigorousness where there are no scientific traditions (Vessuri H., 1993).

The peer review, recognized as the mechanism of evaluation par excellence, has been receiving various criticisms, among them the fact that it puts in the hands of the scientific community the decision to use public funds without the corresponding responsibility for public accountability. It seemed that the peer review produces better results in fields and disciplines relatively closed, where there is high degree of consensus and the intrinsic dimension of quality is most important. In interdisciplinary fields with great cognitive diversity, as is the case of public health, where the projects cannot be evaluated without taking into account policies and programs, this mechanism presents deficiencies. To overcome them, there are some experiences with two levels of evaluation, one for the intrinsic dimension, peer review , and another one for the extrinsic, odd review , term used by Avalos to call the attention for the need of participation of other actors (users, decision makers) to review the pertinence and social relevance of research projects.

Human resources:

Several countries of Latin America made in the 1970s a notable effort for the formation of researchers both through the creation of training programs at master s and doctorate degree in almost all areas of science, and through the concession of fellowships for studies abroad. Unfortunately this effort of formation was not duly articulated to a clear policy of absorption of those resources, leading, among other consequences, to the so-called brain drain .

Currently there is an awareness that is not enough to train researchers and that it is equally important to give them adequate working conditions. In almost all the countries of LAC that have scientific communities of significant dimensions there were implemented scientific careers. In these careers, the researchers are classified at levels in accordance with their formation and scientific output and the remuneration and incentives are established

according to these levels, regardless the institution to which the researcher is linked. The monitoring of the scientific output of the researchers defines the ascent, maintenance or descent of level. The positive aspects of the system are evident, but as previously mentioned, depending on the indicators utilized to measure quality and productivity, distortions can occur, particularly in areas as the public health.

In addition to the need for consolidation of training programs (particularly at doctoral level), as well as the improvement of working conditions and remuneration, the development of human resources for research also requires exchange and cooperation among researchers. The scientific community and the governments of the countries of LAC, with the support from UNDP and UNESCO, have taken several initiatives for the establishment of exchange networks, being one of the oldest the Latin American Network of Biological Sciences (RELAB), created in mid-seventies. Starting in 1994, with the support of UNESCO, ICSU and the Academy of Sciences of Latin America, several other networks were formed in different areas of the knowledge, which are coordinated by the Coordinating Committee of the Latin American Scientific Networks (see www.unesco.org).

In the field of public health it is worth mentioning the Research Network on Health Systems and Services of the Southern Cone, supported by IDRC, and the Network of Health Economics and Financing (REDEFS), supported by the World Bank and PAHO. Both, created in mid- the 90s, are made up of scientists and institutions of their respective areas and carry out a series of activities, particularly of human resources development.

All these Networks, in addition to promoting specific activities of training and exchange of researchers, publications, creation of databases and others, are fulfilling an important role of regional integration and are functioning as interlocutors between the scientific community and the Councils of S&T. The new technologies of information and communication offer enormous possibilities to strengthen these initiatives of organization and exchange.

2.4.4 Dissemination and Utilization of Results

As it was previously been pointed out, one of the most serious problems of the organization of the scientific activity in LAC is the gap that exists between, on the one hand, the processes of production of knowledge and, on the other, those of dissemination and utilization. The weakness of the chains of transmission between those processes causes a relative isolation of research and of the scientific community from the rest of society, making science a vulnerable target in moments of resources cuts. As it was also pointed out, this problem is due in great part to the fact that S&T policies in the region were focused almost exclusively with the supply side, that is, support for researchers and projects, with low concern about the processes of dissemination and utilization of results.

The notes that follow deal with three aspects related to this problem: the situation of the scientific publications of the region; the ties between research and the definition of health policies and the role that the new technologies can play to create closer ties between knowledge production, dissemination and utilization.

The PAHO s Latin American and Caribbean Center of Information in Health Sciences (BIREME) is responsible for the creation and maintenance of the database LILACS (Latin American Literature in Health Sciences), dedicated to collect and to disseminate the literature in health sciences of the region. This literature is quite underrepresented in international bases, for example, MEDLINE indexes only 45 Latin American titles and SCI nearly 15. LILACS includes near 600 scientific journals of 37 countries of the region and utilizes the same criteria for indexing of MEDLINE in order to guarantee compatibility between both bases.

In the mid- 90s, BIREME and the Research Coordination Program of PAHO made an evaluation of 311 titles of Latin American journals. Forty-five of them were indexed both in LILACS and in MEDLINE (group-MDL) and 266 exclusively in LILACS (group non-MDL). A comparison between both groups was made, taking the MDL group as gold standard .

Based on the score reached according to a series of variables, the journals were classified in very good, good, average and deficient. Of those of the MDL group, 46.7% reached the degree of very good, while barely 3.8% of the non-MDL made it. No title of the MDL was classified as deficient, while 20.3% of the non-MDL were included in this category (Castro RCF, 1996).

Aiming to expand the dissemination of the LAC scientific output and to stimulate the improvement of the quality of the journals of the region, BIREME has launched the project SciELO (Scientific Electronic Library on Line) that consists of the publication in electronic format of the principal journals of LAC, including indicators of their use and impact (www.scielo.br) (Packer A, 1998).

Another aspect of the problem of the dissemination and utilization of the results of research is the use of these results to support the definition and implementation of health policies. There are a series of barriers and difficulties in regard to that. One of them is the poor comprehension of the decision-making process that leads to the definition of policies. This usually is understood as a linear process, with several sequential stages that involve a series of decisions made by a privileged actor, the ¨decision-maker¨, which acts rationally, utilizing the best available information. According to this perspective the problem would be limited to deliver to this decision-maker information adequate and timely.

In reality, the dynamics of the decision-making process is quite different, since it involves various actors, with different interests, who act politically and not always made rational choices based on evidence. In order to increase the use of research results in the process of definition of health policies it is

indispensable to know the social actors involved in this process, identifying for each of them the sources of information in that they rely, the type of information they are interested in, how they evaluate the information, what motivations they have to make specific decisions and with whom they interact, compete or ally themselves. These elements are fundamental to define strategies, channels, and opportunities for the dissemination of research results (Bronfman M, Trotsle J, 1999).

What is required is not to neutralize the apparent chaos of the decision making process in health, but to support the action of the different actors with solid scientific evidence, diminishing the enormous inequities in the access to information and knowledge and promoting a broader social involvement in the construction of collective health.

Despite some progress, there still exists in the Region a great inequity in the access to information and knowledge in health. The new technologies of information and communication offer enormous possibilities for the reduction of those inequities. The great challenge is how to incorporate and master these technologies in a way that their potential is effectively fulfilled and the inequities are not expanded. This challenge implies important changes of the strategies of action of organisms such as PAHO. The management of knowledge which is the raison d tre of these organisms, in the past practically was synonym of the transmission of the knowledge incorporated in their staff members through activities of technical assistance. The management of the knowledge consistent with this new era should correspond to the creation of platforms, definition of methodologies and formation of networks of institutions responsible for the capture, codification and incorporation of all types of information (gray literature , scientific information, numerical bases, directories, etc.) into the common platform, open to broad access to all sectors of the society.

PAHO, taking advantage of the experience gained by BIREME, is implementing this new conception of management of the knowledge, through the creation of the Virtual Health Library (VHL). Operated in the Internet, the VHL is a virtual space where the most relevant sources of health information are included, with direct and universal access. Different types of users can interact and navigate in this space without geographical or time limitations.

The sources of information are generated, updated, stored, and operated on the Internet by producers and intermediaries in a decentralized way and obeying common methodologies. This decentralized character is one of the most important strategic elements of the construction of the VHL, since it permits a widespread mastering of the modern technologies of information and communication. Another central objective of the VHL is the reduction of the inequities of health information, what should be reached with the creation of public spaces for access to the Internet and a combination of the VHL with other means of dissemination to sectors still not connected to Internet (OPS, 1998b).

The possibility of including in a single platform the conventional and non-conventional scientific information, regional and international, in full text, together with numerical databases, directories, multimedia support for education and decision-making, news and lists of discussions, etc. permits an interaction between different types of information and knowledge, as well as between different actors, helping to break away from the traditional process of definition of agendas and policies in reduced circles of decision.

The VHL helps to construct a space of knowledge (L vy P , 1997) where everybody with their knowledge and experiences can participate. In this space the people are not included according to a profession or social status, but because have experiences and knowledge. This space of high ethical meaning, since it does not exclude anybody, permits a collective effort in the creation of healthy environments and behaviors, more equitable, effective and efficient health systems and participatory agendas of research that respond to multiple interests and needs.

3 Final note

Throughout these notes percolates the idea that for the development of the entire potential of the scientific activity in health in Latin America and the Caribbean it is necessary to rethink the bases and the forms of their organization. The challenge is double: to have the capacity to develop, interpret, and adapt new knowledge and technologies and, at the same time, to create democratic opportunities for consensus-building that make it possible that this capacity is put at the service of the improvement of the health of the peoples of the region.

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Chapter IV

Summaries Of Reports Of Consultations And Analysis Within Regional Networks And Individual Countries

Latin American And Caribbean

Womens Health Network

Chile

Mexico

Cuba

Brazil

Health Research For Development And Gender Approach: A Necessary Focus For Equity In Health

Executive Summary

Within the FRAMEWORK of the International Conference on Health Research for Development, Bangkok October, 2000, the Latin American and Caribbean Women Health Network (LACWHN), with the financing, support and permanent advice from COHRED, has participated actively in the consultative process and through the Steering Committee of this Conference, in order **to promote and strengthen the inclusion of the gender perspective**. This perspective is a fundamental issue that must be considered across the different studies of health for development as an category of analysis and in the research as a field of knowledge and of power relationship, taking into consideration that this refers to an essential approach for the achievement of equity and that the different policies of the health sector and the research undertaken in it, are not neutral with respect to the impact on the health of the population, nor account for the complexity that the achievement of equity in health assumes.

With this purpose the **LACWHN carried out an approximation to the balance on HEALTH RESEARCH WITH A GENDER APPROACH IN FOUR COUNTRIES OF LATIN AMERICA** (Peru, Bolivia, Colombia and Chile). The current preliminary version of the document that collects this balance, prepared by Ana Cristina Gonzalez V. and Marcela Sanchez B. will be discussed, validated and complemented in a second phase, through workshops and focal groups in Mexico, Argentina, Nicaragua, Brazil, Chile, Peru, Bolivia and Colombia, with the financial support of the Global Forum for Health Research for Development.[a]

The METHODOLOGY consisted of the self-completion of 130 forms in the four mentioned countries, that covered information on the researchers, general data on the research; financing organizations; methodological issues, results of the research, obstacles, utilization of research in the design of public policies and other institutional actions and their coverage; impact of research in terms of equity and social justice and finally, suggestions for the next decade in health research for development with a gender approach.

In addition, 21 key personal interviews were made with ngos, the Academy, cooperation agencies and government institutions, that collected issues related to the national strategy of health research with a gender approach,

a This document has been prepared with the reports prepared by Manuela Ramos and Flora Tristan in Peru; CIDEM with the support of other women in Bolivia and SISMA — MUJER in Colombia.

definition of agendas, role by cooperation agencies, prioritization of subjects and manner in which the latter seek equity as objective, distribution of resources, utilization of research with gender approach in the definition of policies, disclosure, actors involved, forms in which the demand for research is encouraged; obstacles, forms of follow up and strategies for the future.

The balance was made on **FOUR THEME AREAS**, considering that such areas are those in which the LACWHN has had greater conceptual and political development, and have been basic concerns of the women s health movement worldwide, which have been specially strengthened after the International Population and Development Conference (Cairo, 1994). These areas are: **1) Health and Sexual and Reproductive Rights, area of greatest research development, 2) Quality and Access to Health Services, centered basically on the subject of quality, 3) Violence against women, area with greater impact on the design of public policies and transformation in women's situations and gender relations and, 4) Mental Health, field of lower recognition and development, regionally.**

These theme areas were analyzed at the light of five categories: methodological and theoretical results, results of benefits for the participant population, changes in gender relations and changes in the situation of women.

The document describes the evolution and development of the studies with a gender perspective in the Latin American region and formulates, based on the results of the balance, some strategies for the different actors involved in the field of health research (universities, cooperation agencies, government entities, NGO s and individual social and research movements or research groups), intended to build an action/vision plan for the incorporation of the gender approach to the field of health research for development.

Finally, in the form of an appendix are presented the theoretical and political assumptions proposed by the LACWHN as a way to integrate the gender perspective to *the notion of equity in health and as a variable of analysis and questioning to the power relationship in the field of research.* The vision of equity from the notions of Social Justice, Human Rights and Gender is included, as well as a model for the analysis intended to the identification of problems in health research at three complementary levels: Epidemiological profile of women (public health); Institutional issues/problems and Problems derived from the system, that is, from the androcentric ideologies on which the conceptions of health are supported.

As a final input were constructed the data bases of researchers and researches that served as a basis for this report as well as the guidelines used for the collection of the information in this process.

Among the **MAJOR CONCLUSIONS** of the balance, the following are worth pointing out:

- There are incipient relations among interest or pressure groups, researchers associations, researchers and the people who implement public policies. The agencies responsible on the part of the State are practically invisible as mobilizers of the subject of gender in the field of health research.
- In general, the thematic approaches are fragmented; the studies are focused or led from capital cities with gaps and limitations to develop research capacity and interest in other provinces. There are etareous groups such as those of older adult men and women that are not the subject of research, a situation that is similar in the case of specific groups such as native communities.
- Health research with a gender perspective has become a fundamental contribution for the performance of complex social and cultural analyses in populations, making evident the incidence that they have in health, uneven power relations between men and women, as well as the variables of class, ethnicity, age, sexual orientation and the form how they become a risk factor for the health of the population.
- Most of the research has consisted of sociological and behavioral studies that have dealt in detail with the qualitative issued of realities that on occasions have been documented quantitatively, which has served in a decisive manner to understand in a more comprehensive way feminine sexuality and other subjects not traditionally approached in health research such as violence against women.
- The need is emphasized to consolidate a critical mass of researchers and decision makers in the health sector to progress in the incorporation of the gender approach and achieve greater equity in health, not only with the contributions from social sciences but also from health sciences.
- More than a strategy, what it is clearly observed are groups and individual initiatives by some actors of research, both nationally and locally, especially groups and NGO s of women and the academy, but not a common interest by the health researchers or State entities to incorporate a gender approach into research.
- Notwithstanding that many studies have been carried out with a gender approach, these efforts have been made thanks to the NGO s and the academy, mostly by health researchers from social sciences and not from health sciences, which poses the need for agencies interested on the subject of women s health, and for the women s movement itself, to promote the development of lines that have a continuity and respond to a gender analysis of public health and other relevant problems that will contribute to reduce inequities in this life environment.

- An emphasis is made on how research has been centered on evidencing the need to transform gender relations from the services and within them. In some cases, the results of research were to change the service structure to facilitate the access and adapt the services differentially for men and women.

- Most of the studies are centered on socio-cultural aspects related to health — disease processes and to the sectors institutional problems (quality of health care), with the level of criticism to the system that supports health and research (analysis and proposals to correct the inequities in health related to the representation of women in decision making positions in the health sector, curricula of health science schools that reproduce gender stereotypes) being practically unexplored.

- Many of the studies that call themselves with a gender perspective are concentrated in the woman subject and although their analyses are performed from a rational perspective, they have a clear interest in contributing to the correction of inequalities and inequities that women have in the health areas, specially on the subjects of sexual and reproductive health, violence against women and quality of care.

- A considerable development is also appreciate in educational and preventive models, such as ethno-physiological, violence and quality models, among others, but also of laws in the fields that are the subject of this balance, showing the contributions of this type of analysis from an emic perspective. One of the most relevant aspects in this sense is the sensitization and therapeutic action that the application of information collection instruments has in itself.

- It is outstanding the fact that these studies have been a space to open the debate on gender in health institutions with professionals who participate in the research and then with a higher range of professionals, on subjects such as abortion, male participation in reproduction decisions, adolescent pregnancy.

- With respect to men, this research has served to visualize the forms of masculine participation in reproductive decisions. However, it is also observed that the positive attitudes among some males, do not translate yet into changes of behavior.

Finally, based on these conclusions, the LACWHN is in process of constructing its **vision for the Bangkok Conference** and some of the orienting central elements of this vision have been summarized in **strategies for the different actors of research**: universities and research centers, interest groups, government entities and cooperation agencies, as follows:

1. The promotion of the practice of equality at all times of the research and not only in the inclusion of the gender as a category for the data analysis cannot be postponed. That is, that in the conformation of the research teams and in the selection of the approaches and types of studies, it in

the determination of the problems to be addressed, in the way in which the population involved can participate and in the results of the research.

2. To work at a training level with medical students in all research carried out in order that they will incorporate the gender approach. To open spaces and guarantee the succession/continuity of young researchers in health research with a gender approach.

3. To propitiate interdisciplinary actions in order that the gender approach in health will not be incorporated only from social sciences.

4. To carry the analysis of gender to the macro analyses. To get the academic community who performs epidemiological and economic studies interested in the gender perspective. In epidemiology, very traditional approaches are still favored and in the economic field the problem of gender continues being invisible.

5. To promote analyses of the socio-cultural differences: races, ethnicity, ages, socioeconomic, urban/rural strata, of sexual options, etc. In addition, to promote studies in the field of traditional medicine.

6. To create research networks according to thematic interests and socialization spaces, and discussion of research results, as well as theoretical and methodological proposals. To promote the creation or reactivation, as applicable, of an entity that will collect the knowledge in health with a gender approach.

7. To give continuity to research lines and develop ties between the gender perspective and other health criteria for construction of research agendas.

8. To consider in the research planning and budget, the return of results to the population involved in the study, as well as their socialization and discussion with decision makers.

9. To improve statistical records to see the differences between men and women and analyze with an approach on gender and guarantee the commitment with the use of the research results for the preparation of policies.

10. To make decision makers of policies and programs aware and to train them in the gender perspective and in the relevance of the research approaches that originate from social sciences and their analysis of health problems in order that they will be incorporated into public policies.

Health Research in Chile: The Consultative Process for The International Conference on Health Research for Development

Muñoz, S.[a], *Illanes, E.*[a,b,] *Muñoz, F.*[b]

Introduction

The Center for Training, Research and Managment on Health Based in Evidences (CIGES) of the Universidad de la Frontera, and the Latin American Center for Health Systems Research (CLAISS) explored how the researchers and policy makers perceive the current status of the health research in Chile; envision its future, and the possibility to develop a national research policy focused in relevant health issues.

Study subjects

The Key Informants were selected from three different areas: Relevant Researchers: important researchers from universities and private research institutions; Health Policy Makers: high level executives from Ministry of Health; Public and Private Hospitals; Public and Private Health Insurance Institutions; and Executives from the national agency for funding research (FONDECYT).

Instrument

Three different instruments were developed for the task: 1: Information Package containing information about the study including a brief information about ENHR including e-mail and web site for further questions, and Ad Hoc Questionnaire and a face to face interview.

Results

Health Research in Chile, current status: In Chile there is no program to monitor the health of the most vulnerable people, despite of the recognition of equity in health status and access to health services as the most important goal of present health policies, there is no plan to promote equity through a national health research agenda, there are few studies which make physicians to change their clinical practice, there are no links between researchers and policy makers. There are no specific funds to develop activities to promote the utilization of health research results, and to give incentives for linking

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b CLAISS-Chile.

research outcomes with action and policy changes. There is no clear communication among researchers, Health Ministry, politicians, media, and interest groups.

Health Research Priorities: There is a great agreement in the need for health research to be focalized in national health priorities. A National agenda based on health priorities must be built, and a strategic plan to implement essential national health research must be created. The Ministry of health, health researchers, public health and biomedical professionals must be the ones building the agenda. Among the topics to be included in the agenda are: health problems based on burden of disease, health service research and health system design, public health policy, economic analysis of the health system, economic analysis of health interventions, health technology assessment. Equity, social participation, citizen empowerment in health, efficiency of resource utilization must also be included in the agenda. Continuous evaluation of the agenda, short and long run plan to develop health research in each of the priority areas, and a separate mechanism of funding essential health research must be established. Fresh money is needed to fund essential research and the Ministry of health, International agencies and other national and International donors are among the ones who should be proving it.

Future of Health Research: The need for the future are: new system of incentives to develop research teams capable to face the priorities established in the agenda, essential health research must be strongly stimulated by establishing a new managerial structure dedicated to the promotion of essential health research.

Consultative process and analysis of health research in Mexico

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Background

Health research activities in Mexico began in 1990. The following consultative process and analysis takes into consideration these first efforts and identifies advancements that health care systems have achieved in carrying out research activities addressing health priorities of the population.

This new endeavor took into account the participation of key actors such as medical directors, health care providers, members of non-governmental organizations, scholars, and researchers from a variety of disciplines. Participation of these actors has been aimed at defining a common vision and policies, and to contribute to outlining the requirements and needs related to human resources and infrastructure to carry out health research. All these activities should be in accordance with existing institutional resources and should take place subsequent to a priority-setting process.

In Mexico there are institutions and organizations that are funding, participating and/or carrying out research activities that can be defined as health research. This refers to research that is related to the health needs of the population, is aimed at reinforcing existing infrastructure, and is able to make a sound contribution to defining national health policies.

Objective

The main objective of the consultative process is to establish the current situation of health research in Mexico, and to determine whether this research is influencing current national health policies. This information will be valuable for developing Mexico s agenda, which is aimed at setting up national priorities in health research.

4 Mexican Institute of Social Security
5 Ministry of Health

Consultative process strategies

The consultative process was carried out through consultative meetings; informal interviews and data collected using a structured instrument.

To carry out the consultative meetings an invitation to the following institutions and organizations was extended: The Mexican Institute of Social Security and the Ministry of Health (these health care institutions cover more than ninety percent of Mexican population); the National Autonomous University of Mexico (UNAM), and the National Institute of Public Health (INSP). These are academic institutions carrying out formal training of masters and doctoral students. The Mexican Health Foundation, which is an NGO supporting health systems research and health policy activities; the National Council of Science and Technology, the governmental institution in charge of providing funds for carrying out research and providing scholarships to masters and doctoral students, both within the country and abroad; and the Mexican unit of the International Clinical Epidemiology Network, which is an international organization carrying out clinical research.

The data collection instrument was a modified version of the institutional questionnaire developed to assess current institutional capacity for the production and dissemination of health policy and systems research developed by the Alliance for Health Policy and Systems Research. Additionally, a review of institutional documents and databases was carried out to complete the information.

Results

The health expenditure in Mexico is 4.8% of the GDP and the amount spent on carrying out health research is only 0.5% of the total health expenditures. Additionally, the contribution of Mexico to global scientific production is 0.33%, in terms of peer-reviewed publications. There are, on average, 20 researchers for every 100,000 inhabitants, a low figure when compared with other countries.

Table 1 illustrates the different areas of research conducted by the IMSS,[1] the Ministry of Health (MOH), the UNAM[2] and the National Institute of Public Health (INSP).[3]

Table 1. Main areas of research among public health care institutions and the National Autonomous University of Mexico (UNAM).

Area	IMSS	MOH	UNAM	INSP	Total
Number of projects reported during 1999	3061	329	177	110	3567
	%	%	%	%	%
Basic Sciences	4.3	19.8	84.2	14.5	9.8
Clinical Research	61.1	47.7	5.6	7.2	55.6
Epidemiology	16.6	22.5	1.7	30.0	16.8
Socio-medical research	1.3	6.4	1.1	15.4	2.2
Educational Research	4.2	0.0	7.3	1.0	3.9
Health Systems Research	12.5	3.6	0.0	31.8	11.7

According to the type of research it was observed that most of the research activities are carried out in public health care institutions are related to the clinical research, epidemiology and health systems research areas.

The main areas of health research at the IMSS and the Ministry of Health (MOH) address the following topics: Cancer, Infectious diseases, Tuberculosis, HIV and STIs, Diabetes Mellitus, Vaccine Development, Malaria, Onchocercosis, Childhood Malnutrition, Reproductive Health, including maternal and neonatal mortality, Neurology, Domestic Violence and Environmental pollution.

At the UNAM, biomedical studies in the areas of Neurology, Biochemistry, Pharmacology, Infectious diseases, physiology, genetics and immunology among others, are most prominent. Overall however, they represent a small percentage of total projects carried out by the three institutions.

The National Institute of Public Health is addressing the areas of HIV and STIs, Vaccine Development, Risk factors for developing chronic diseases, antimicrobial resistance, vector transmitted diseases, tuberculosis, health and nutrition, environmental pollution, health services research, health policy, family and health, and health care sector reform studies.

The Mexican Institute of Social Security analyzed the congruence between the main health problems faced by this institution and the number of health research projects carried out during the 1994-1999 period. Table 2 is illustrating the area in which the projects were carried out, the cause of death and the number of projects.

Table 2. Relationship between causes of death and type of projects carried out at the Mexican Institute of Social Security

Area	Place as cause of death	Number of Projects	%
Diabetes Mellitus	1	725	37.2
Cervical Cancer	2	185	9.6
Hypertension	3	383	19.7
Perinatal Mortality, congenital malformations	5	58	2.9
Respiratory Infections	7	1	0.5
Asthma	8	120	6.1
Injuries, road traffic accidents, etc.	9	154	7.8
Chronic renal failure	10	96	4.9
Acute Diarrhoea		122	6.3
Leukemia	1	99	5.0

Sources of funding for carrying out health research

Internal resources support most of research activities carried out by public health care institutions. At the MOH 58.4% of the projects are internally supported, and 32.5% have external support. At the IMSS, there is a specific fund devoted to support strategic projects addressing the main problems faced by this institution, and there is another fund, which was created to provide small grants. The IMSS Research Council spend 64% of its budget to carry out research projects, However, the percentage of projects funded with this resources represent only 16.4% of the total number of the projects conducted in this institution.

The National Institute of Public Health is assigning 60% of its budget to support research activities.[4]

The National Council of Science and Technology (CONACYT) is the main source of funds for Mexican institutions. The CONACYT is a governmental institution that has the policy of supporting high quality projects in all areas of research, throughout the country. Another important source of funds is the pharmaceutical industry. Grants obtained from international agencies or institutions are rather low.

Agreements to carry out Health Research.

There are agreements to carry out health research activities with international organizations among which the following can be mentioned: COHRED, Global Health Forum, International Health Policy Programme, ICHSRI, Comision de Cooperacion Ambiental de America del Norte, Environmental protection agency, March of Dimes Birth Defects foundation, World Cancer Research Fund, Family Health International, WHO, OIT, UNICEF, CDC, Women s Research Institute, and NIH.

It is worth to say that there exist a number of agreements among Mexican institutions and Universities from different countries, among which can be mentioned: Stanford University, Harvard University, Johns Hopkins University, University of California, Columbia School of Public Health, Texas University, Laval University, London School of Hygiene and Tropical Medicine, University of San Diego, Amsterdam University and Universidad de Costa Rica. The agreements with international organizations are intended to carry out collaborative research, supporting and development of infrastructure, training of human resources and academic interchange.

Comment

Current situation analysis is highlighting the strengths and weaknesses of health research in Mexico.

The institutions carrying out health research activities are focusing its efforts to address the main health problems of the population, while increasing its capacity to perform research activities. This was evident in the range of projects that goes from biomedical to health services research in all institutions. However the changing profile of the population,[5] and the emerging health problems, such as addictions and drug dependence, pollution-related problems, and ageing of population[6,7] require to strengthen, or in some cases, carry out capacity building activities to address these areas. Additionally, the architecture of the health systems is changing and a considerable effort[8] in carrying out health systems research is needed.

Institutions are facing a severe constraint in their budgets to finance health research. Most of the grants come from the government and from the budget of the institution itself. There is little room to develop long-term strategic planning, and it is necessary to reinforce agreements with external donors and to look for alternatives to increase the availability of funds.

Current National Health Programs are mostly oriented to Reproductive Health, Children s health, Infectious Diseases (HIV, Malaria, Cholera, Tuberculosis) and Chronic diseases (Diabetes, Hypertension, Cancer) and to improve access to health services especially in rural areas. Health research results have just recently been taken into account to reinforce current National Health Programs, particularly in Children s health.[9,10,11,12] Reproductive Health,[13] Chronic Diseases, and Infectious diseases.[14]

There is lack of linkages between Mexico and the rest of Latin American countries. Most of the agreements and collaborative projects are carried out with United States of America and Canada. Strengthening collaboration through international organizations, such as PAHO, with Latin American countries could be the basis to implement new mechanisms of analysis and definition of health priorities, thus facilitating the possibility of sharing resources and carrying out health research projects.

There is a reduced number of health research investigators, and of consolidated research groups able to address national health priorities. The limited budged and constraints in infrastructure to conduct health research makes difficult to carry out sound projects. Just recently, the CONACYT have lunched the initiative to conform research groups addressing emerging health research projects, and will support long-term commitments, however this will remain as an unmet need if more resources are not assigned to this area.

Dissemination and utilization of health research results is an important drawback. There is lack of resources to disseminate the results to the different stakeholders, this occurs among institutions and among countries of the region. Current databases are not always available and access to publishing results of health research is quite limited. In Mexico, there are journals publishing health research results, such as Salud Publica de Mexico and Archives of Medical Research. Both journals have international recognition; however, reinforcement of activities to disseminate the results, not only through periodical journals, but also using gray literature and Internet resources should be encouraged.

There is a need to raise awareness among different stakeholders regarding the importance of health research, and to define new mechanisms of collaboration, mainly through interinstitutional agreements, to carry out health research-related activities. These would include capacity building, training, funding, and designing and conducting research projects that address the present and future health needs of the population. Reinforcing the policies to carry out health research will allow institutions and organizations to have more resources available. It has been recognized that investing in human capital is always an important asset for the institutions and for encouraging national development.

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Science & Technology for Health (Cuba-2000)

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Summary

In Cuba, progress in scientific research and technological development constitutes an essential and basic component of the strategy for devoting greater attention to health and has, in fact, led to the elaboration, adoption and implementation of new policies relating to the enhancement, incorporation, assimilation and dissemination of research findings into medical practice. All of this has been made possible, thanks to the identification and definition of what is the essential research that should be developed, in accordance with the social targets and, in particular, the improvement of health conditions.

The Latin American Consultative Process in preparation for the Bangkok Conference, embodies, in itself, a platform for the exchange of experience between countries of the region and should, therefore, be impregnated and integrated in the needs and challenges presented by the evolution of Latin American societies in fields of scientific research. It is also interesting to be able to assess, in this consultative process, the mechanisms set up by Latin American countries to develop scientific research in the field of health, that include planning, organization, social actors and forces involved, forms of funding, follow-up and monitoring, protection of results, as well as scientific and technical information, facilitating systematic consultation and publication of results, without neglecting the assimilation and dissemination of their outcome for medical practice.

As a proposal in this consultative process, in addition to illustrating the experience of Cuba in each and every one of these subsystems, (which in their turn form a part of the Science and Technology System of the Health Sector), Cuba upholds the position that scientific activity in developing countries needs not only growth, but needs, in the first place, integration, namely participation in the problems of society. This could be successful, if we envisage the appropriate training of human resources and ongoing

retraining of existing personnel. Another problem to consider is involvement in global problems of research, taking part not only in basic research projects at a top scientific level, but participating in solving specific health problems that each country suffers from; neither of the two should be excluded. The use of information, information technology and telecommunications, and the combination of all these, has become a priority task in very many countries, both developed and developing, in recent times. As regards information, there is another essential initiative: it is not just a question of creating scientific potential but also of maintaining it. Inactive human resources become ever more rapidly unqualified, and to keep them active they have to be fed information, their involvement in exchanges, in research activities etc. has to be facilitated. Cuban experience shows that no material incentive will put the brake on the brain drain as well as a social project that encourages participation, led by a rigorous and dedicated management team. We should not underestimate the fundamental importance of scientific values. Every country must address the challenges of development. Gender constitutes another element as a social category and its incorporation in scientific and technical progress within the sector.

The State is responsible for the existence of a Social Cohesion Programme that guarantees equality, solidarity, cohesion in society, that in turn evokes in each individual a sense of involvement, a social contract and responsibility for others. The mobilisation of resources is in itself an important element for the development of research; there is no doubt that state financing is decisive and it is especially true for that research that can have a direct impact on public health issues. It is also true that in developing countries the State cannot allocate the volume of resources necessary to maintain a scientific activity at a competitive level: a part of the financing must be come from the business sector in the industrialised countries.

In Cuba, the science and technology sector has, in recent years, gone through transition processes that, although quite dynamic in their conception, accede to certain explicit and defined policies. That is to say that health receives an important and increasing share of the state budget and is on a par with education as one of the more favoured sectors. The support of financial resources for the science and technology sector, and consequently for the health sector, has been maintained despite the lean years of the Special Period. Consequently, various initiatives can be noted. For example, for more than three decades financing for research was allocated by the State directly to institutions working along specific lines of investigation. Now, in contrast, things are switching from scientific activities totally pre-budgeted to those which are self-financing through specific projects.

For the dissemination and utilization of results we know that publication is one more indicator of scientific progress, but it is not enough. The successive stages that a new research product must pass through to be applied in social

practice, in particular when it is intended for health, and require setting up evaluation and monitoring structures that generally exist in every country up until it obtains its Health Register. From that moment on wards the introduction and assimilation of scientific findings in social practice need the prior analysis of priorities, as well as the development of linkages, leading up to structures and adequate mechanisms that make a more viable process possible for immediate incorporation into social practice.

With all this in view, it is recommended that:

- each country designs its policy for science and the innovation of technology, and within it the health research policy, guaranteeing a budget for its development;
- a national plan for research on health concerns be elaborated, at both the national and global level, that is feasible, economic and compatible with the National Epidemiological Health Framework, in which all the most competent institutions and groups of researchers participate;
- research capacity of all developing countries be built up, with the support of the international scientific community with greater economic possibilities;
- training for groups of health researchers be promoted and/or maintained in each country, encouraged by a policy of salary and moral incentives;
- a national network be created that enables the health community in each country to keep up to date and which, in turn, makes it possible to forge links with other countries in the region;
- both basic research be encouraged, as well as research on technological advancement, the proportions of which must vary according to each country s level of development, the nature of its problems and the characteristics of its scientific community;
- emphasis be placed on the elaboration of research on health systems and services and on the evaluation of health technologies, both of which are useful tools for improving the quality of services and rendering them more efficient;
- alternative sources of financing by private agencies be identified, as well as donor institutions and/or governmental organizations that promote programmes of assistance for research. This must be preceded by the benefits of information technology, with a view to designing a simple, flexible system that allows us to incorporate databases with primary and secondary sources, and to continue to train researchers to identify sources of information and funding, as well as handling the presentation of their findings. This initiative can, in fact, be extended to groups of researchers in all countries of the region.

Science and Technology in Health: New Directions and Priorities for Investment in Brazil[a]

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Brazil has a respected national science and technology system, despite important budgetary restrictions in the last decade. Biomedical research and clinical research are outstanding areas of research in the country in the main research institutes and universities.

However, translating research into action has been an important gap in the national health system (SUS), despite significant efforts since the 1990s to change this scenario.

FIOCRUZ collaborated actively with the Commission on Health Research for Development (CHRD) in the Nobel Conference in the Karolinska Institute in 1990 and in its final report. In 1994, the I National Conference for Science and Technology in Health was organized by the Ministry of Health[c] in collaboration with FIOCRUZ in order to overcome this gap.

These national and international initiatives contributed to involve the scientific and technological communities in the policy debate and to increase national awareness on the importance of health research for development.

A new structure in the Ministry of Health, a Secretary for Science and Technology, was proposed by the researchers in this I National Conference in order to promote the necessary links between R & D, policy making and decision making. Recently, the Ministry of Health proposed a more comprehensive structure as a possibility to overcome this gap, a new National Agency for Health Research, but its structure is yet to be defined.

In 1998, the National Research Council (CNPq) conceived a National Program for Stimulating Strategic Research[d] in priority areas and to support collaborative research among diverse research institutes focusing on common research problems.

Eight priority research areas were selected by the academic community in the 1997 CNPq seminar: Poverty, Social Inequalities and Health Priorities; Emerging New and Resurgent Infectious Diseases; Aging and Non-Transmissible Diseases; Environment and Health; Accidents, Intoxications and Violence: Impacts on Society and on Populations in Productive Age

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(Occupational Health); Health Systems and Health Policies; Science and Technology in Health; Drugs, Vaccines and Kits for Diagnosis: Research, Development, Production and Quality.

Emerging Infectious Diseases, defined as the main new and resurgent infectious diseases worldwide challenging public health in the country, were selected as the first priority area for this CNPq Program. Diverse collaborative research teams in the country have already been funded by CNPq in this area. This has been a successful experience, with active involvement of the scientific community from the initial steps of priority setting to the conception and implementation of the Program. This is a recent experience and it has been planned, after two years funding, a detailed evaluation of results, aiming at the incorporation of its results into the national health system (SUS).

1. Financing health research: the new Sectorial Fund for Science and Technology in Health

The Brazilian government has recently conceived a promising and creative strategy to support the mentioned priorities, the new Sectorial Fund for Science and Technology in Health, which will certainly be a breakthrough in financing health research and development in developing countries like Brazil. This Fund, starting in 2001, will incorporate a significant amount of new private and public resources to finance research and development in diverse priority areas, with additional resources from a small increase in taxation of tobacco and alcoholic beverage industries, which is expected to reduce consumption of cigarettes and alcohol and reduce the demands to health services with diseases related with them. These additional resources from taxation would amount to US$ 100 million per year.

The fund will be coordinated by a national committee with broad representation of the scientific associations, research institutes, funding agencies and industries. New strategies to establish the necessary links directing R & D results into the national health system will be defined. It is expected that this new Fund will promote an expressive increase of available resources to science and technology in health. Its main characteristic will be the stability of funding mechanisms, since it will be less vulnerable to budgetary oscillations.

New national strategies for policy and management of science and technology in health will be necessary to promote the adequate allocation of resources from the new fund, directing the results of research and development activities to society and to the national health system (SUS).

From this perspective, the new National Agency for Health Research should not be seen just as another funding agency. It should be adequately articulated with the other existing funding agencies in the country, avoiding the pulverization of resources and benefiting from their important accumulated experience.

Its main goal and mission should be the incorporation of new and available scientific and technological results, aiming its adequate utilization and application in the national health system (SUS) in order to improve the quality of life of the Brazilian population. It is therefore in the transfer of science and technology to society and to the national health system that the new Agency should concentrate its efforts.

This perspective will certainly require new and more comprehensive approaches to national health research and development, which should be multidisciplinary and multi- professional. New procedures should be conceived to assure adequate priority-setting in the new science and technology policies for health and active involvement of health professionals, researchers, managers in the different government levels and funding agencies officials, supported by adequate indicators and more reliable information systems.

2. Strengthening national research and development capacity

A drastic reduction in funding for science and technology in Brazil in the last decade resulted in detrimental impacts on the long term sustainability of health research in country, particularly in priority areas for policy making and decision making (epidemiology, health policy, health systems research, science and technology in health).

National funding agencies became therefore unable to respond to the rapid increase of the national demands for research and development. Research activities were seriously affected, despite expressive increase in Graduate Programs (Master and Doctor Degree Programs) in the main Brazilian universities and research institutes in the decade. Diverse constraints, such as limited number of fellowships, low salaries, lack of stability of funds to research, compromised research programs in priority areas.

The new Sectorial Fund for Science and Technology in Health will promote an expressive increase of research activity in the country. and new strategies to establish the necessary links directing R & D results into the national health system will be required:

- Collaborative networks;
- Information systems;
- Linking research results to policy and management.

The perspective of new directions and increasing resources will certainly allow a larger and more sustained financial support for research from national and international sources. Other national and external funding resources should also be mobilized in order to increase national research and development capacity.

A percentage of national health expenditure at all government levels (federal, state and local levels) should be committed with health research. External agencies can help, making long-term commitments to research programs and local capacity building in priority areas identified in collaboration with targeted developing countries like Brazil.

3. International initiatives and country needs

In Brazil, global initiatives have often been very distant from the country needs concerning health R & D. More effective international mechanisms to stimulate sustainable international/country partnerships should be conceived to bridge this gap, contributing to increase national research and development capacity in developing countries like Brazil. A good example is the so-called orphan diseases affecting the poor and marginalized populations in developing countries. These diseases do not motivate research and development initiatives in developed nations and therefore are often excluded from international research agendas. International health research institutions are making important efforts to be more responsive to country needs, but despite their crucial role as international references, their demands and their institutional scopes are often generated in international negotiations where developing countries like Brazil often play a minor role.

4. The National Health Research System: Main Challenges

Brazil has a comprehensive national science and technology structure, with a broad range of diverse research institutes and universities. FIOCRUZ is the national institute linked to the Ministry of Health, with research institutes in most Brazilian States and seven graduate programs in diverse areas — biomedical, clinical and public health. The country has several funding for R & D in health: the National Research Council (CNPq); State Funding Agencies (FAPESP, FAPERJ, FAPEMIG and other) but the country lacks a sustainable health research system and permanent mechanisms to support priority national research in the health field. Since 1994 a National Secretary for Science and Technology has been proposed in the structure of the Ministry of Health and recently a National Research Agency has been discussed. It is expected that this new Agency can help to overcome the following obstacles to R & D:

1. **Political commitment** — today is low, distant from country needs, should increase, assuring the necessary social impact of research.
2. **Priority setting** — today is defined by funding agencies, not by health system. Restrict -ed to some funding agencies like CNPq, but should be extended to society and to the national health system (SUS). It is necessary to understand the specificity of the process of priority setting in R & D, which should be differentiated from criteria orienting the process of priority setting in health policy.

3. **Resource mobilization** of existing R & D — limited, should be discussed and increase.

4. **Research and information networks** — subordination to international networks and external agendas, low priority to national issues; missing national networks.

5. **Dissemination and utilization of results** — limited, should increase with help of the internet and mass media.

6. **Coordination of research activities** — initiatives in funding agencies but missing in policy and decision making levels in national health system.

7. **Evaluation of impact** — missing; new criteria and methodologies to be defined.

5. Principles and values: main issues

Equity- Progress is needed in this area. Lack of financial support to researchers and health professionals, with a significant reduction in funds for research in the last three years, in public health areas where salaries are too low, has certainly affected in detrimental ways health research in Brazil. As mentioned before, despite the effective increase recently in resources for science and technology in health in the country, this increase was not proportional to the rapid increase of the demand, stimulated, among other factors, by the expansion of graduate courses in health (Master and Doctor Programs). On the other hand, concerning equity as an object of health research, some progress has been made at the level of priority setting: it was selected, as noted before, as one of the main priority areas of the National Research Council (CNPq).

Ethics — Important progress has been made in this area. New national ethical guidelines for health research with humans beings and committees for ethics in research were created in the main research institutes.

Gender - Important progress has been made in this area. Participation of women in research activity had a significant increase in Brazil in the last four decades, despite persistence of gender bias in academic positions and salaries in some areas.

Health research as part of a healthcare system —This is a crucial cultural issue for Brazil. Contrasting with the fragmented view of many policy and decision makers, health research should be understood in everyday life as an important part of the health care system and as a tool for social development, not just as a distant component of the science and technology system, where only the academics have access. From this perspective, cultural and financial resources should be mobilized to promote the necessary synergy between all the components of the science and technology system and the health system.

Conclusions

The promising scenarios anticipated by the new Sectorial Fund for Science and Technology in Health and by the new National Agency for Health Research will certainly require a new environment for health research in Brazil in the next future.

In order to assure positive impacts of these new investments on society and on the national health system (SUS), it will be necessary, first, to increase the ability of policy and decision makers to mobilize existing resources; second, cultural and educational efforts helping them to understand the peculiarities of the priority setting processes for science and technology in health.

These priority setting processes should be clearly differentiated from priority setting strategies in health policy and health services. However, this distinction is not so obvious. Even in the documents from many national and international agencies the distinct rationale permeating these diverse priority setting processes are not recognized and this differentiation remains often misunderstood.

On one hand, from the health system perspective, a strict epidemiological rationale often permeates decisions concerning health policy and provision of services. A hierarchic classification of diseases, referred to diverse quantitative criteria such as the burden of diseases , is expected, despite some conceptual and methodological problems, to help the decision making process for selected diseases.

On the other, from the science and technology system perspective, the epidemiological rationale is often inadequate and these classificatory criteria are clearly insufficient for the priority setting process for research and development. Here, other crucial issues make priority setting more complex: the innovative process and the stage of development of a given process or product and the possibility of its transfer to the health services or to society should be taken into account.

In addition, it should be noted that in many developing countries like Brazil, the rapid and complex demographic and epidemiological transitions and the co-prevalence of diseases make it extremely difficult to adopt a strict epidemiological rationale in the selection of diseases for allocating resources, even for priority setting in the scope of health policies and of provision of health services.

The rapid increase of the diseases identified as the new agenda (chronic and degenerative diseases related to population aging; new, emerging and re-emerging infectious diseases; accidents, violence, intoxication and poisoning) has been in many of these developing countries simultaneous to the persistence of the diseases identified as the old agenda , related to high morbidity and mortality resulting from the main infectious endemic diseases associated to undernutrition and extreme poverty.

The coexistence of these heterogeneous health profiles in the Brazilian population is favored by perverse and explosive interactions between the rapid urbanization and environmental degradation. This scenario is challenging the society to conceive more creative and impacting strategies, transcending the conventional epidemiological rationale.

Creating adequate conditions in the country for adequate priority setting and resource allocation for science and technology in health is therefore one of the main challenges for Brazil now. New initiatives promoting the necessary synergy among the diverse national research institutes, universities, funding agencies and the national health system will certainly contribute to provide a creative environment, which will help to stimulate scientists, technologists, health professionals and citizens to confront the enormous social challenges faced by the country. In this scenario, policy and assessment of research and development activities can be crucial to improve the quality of life in Brazil and Latin America in the next century.

Acknowledgements

I thank Dr. Albanita Viana de Oliveira, Diretor of the National Research Council (CNPq), Dr. Akira Homma, Vice-President of Technology, Oswaldo Cruz Foundation (FIOCRUZ) and to Dr. Zuleika Albuquerque, Head of the Department of Science and Technology of PAHO, Brazil (Pan-American Health Organization) and to the participants of the I National Conference for Science and Technology in Health for their contributions, in diverse moments of the consultation process, to this document.