

Follow up Meeting to the 1st Latin American Conference on Research and Innovation for Health: Final Report

November 15th – 16th, 2009.
Havana, Cuba



**Pan American
Health
Organization**
Organización Panamericana
de Salud (OPS/OPAS)

**Council on Health Research
for Development (COHRED)**
Consejo Latinoamericano de
Investigación y Desarrollo en Salud

GlobalForum
FOR HEALTH RESEARCH

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Regional Office of the
World Health Organization

Council on Health Research
for Development (COHRED)
making health research work... for everyone



Organizing Institutions:

Council on Health Research for Development (COHRED)
Global Forum for Health Research (Global Forum)
Ministry of Health of Cuba
Pan American Health Organization (PAHO)

Key Words

National Health Research Systems, Research and Innovation for Health, Human Resources for Health Research, Financing for Health Research, Knowledge Transfer and Translation, Latin America.

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Table of Contents

| | |
|--|-----|
| LIST OF ACRONYMS | v |
| MAIN MESSAGES FROM THE MEETING | vii |
| EXECUTIVE SUMMARY..... | ix |
| INTRODUCTION..... | 1 |
| GOALS OF THE MEETING | 4 |
| MEETING TOPICS AND FORMAT | 4 |
| PRESENTATIONS AND DISCUSSIONS | 5 |
| 1 Opening Speeches | 5 |
| 1.1 Welcome Speech | 5 |
| 1.2 Meeting Goals and Process | 6 |
| 1.3 Process and Results of the “1st Latin American Conference in Research and Innovation for Health” | 6 |
| 1.4 Analysis of the development of the National Health Research Systems (NHRS) in the region: A 14-country review..... | 8 |
| 2 Progress of NHRS in the Region | 10 |
| 2.1 Progress made in NHRS in Latin America since the 1st Latin American Conference on Research and Innovation for Health: Results from an electronic survey | 10 |
| 2.2 Costa Rica: Case Study | 11 |
| 2.3 Paraguay: Case Study | 12 |
| 2.4 Policy on Research for Health: Progress Report after the 1st Latin American Conference on Research and Innovation for Health | 14 |
| 3 Challenges for the Development of National and Regional NHRS | 15 |
| 3.1 HHealth Research Web | 15 |
| 3.2 Brazil: Case Study | 16 |
| 4 World Café..... | 18 |
| 4.1 Strengthening of NHRS in the Region | 18 |
| 4.2 Human Resources for Health Research | 19 |
| 4.3 Financing for Health Research | 20 |
| 4.4 Knowledge Transfer and Translation | 21 |
| CONCLUSIONS | 23 |
| REFERENCES | 25 |
| APPENDIX 1 PROGRAM | 27 |
| APPENDIX 2 LIST OF PARTICIPANTS | 29 |

List of Acronyms

| | |
|---------|---|
| CONACYT | National Council on Science and Technology |
| COHRED | Council on Health Research for Development |
| HH.RR | Human Resources |
| HRWeb | Health Research Web |
| ISI | International Science Index |
| LILACS | Latin American and Caribbean Health Sciences Literature |
| MOH | Ministry of Health |
| NGO | Non Governmental Organization |
| NHRS | National Health Research System |
| PAHO | Pan American Health Organization |
| SciELO | Scientific Electronic Library Online |
| UNDP | United Nations Development Program |
| UNESCO | United Nations Educational, Scientific, and Cultural Organization |
| WHO | World Health Organization |

Main Messages from the Meeting

- The development of the NHRS is a gradual and complex process that involves the effective participation of all social sectors and stakeholders, and requires an environment of trust and confidence. The role of leadership of the State is a necessary activity that Ministries of Health and the Councils on Science and Technology should assume; supported by a legal framework defining functions, responsibilities and mechanisms of work among the different parties to strengthen the governance and stewardship of the Ministry of Health in research.
- The formulation of a policy on research for health should be a process which involves the participation and agreement of all civil society actors; the academy, industry, education and technological innovation sectors.
- The development of a research agenda should identify every legitimate speaker of the scientific, technological, industrial and organized community; strengthen the articulation and coordination of the different sectors to foster a common agenda; ensure seamless priority selection processes and fund allocation.
- Far from being conceived as an independent process, training of human resources for health research must be consistent with a national training plan that meets the specific needs identified by the academy, ministries and civil society. The mapping of players, installed capacity, resources, research projects and products is a requirement that should be gradually enhanced with the update of results.
- All countries should have a fund allocation process in place that defines how much is to be allocated, what they are allocated to, how they are allocated and what is to be expected from this funding. A National Research Registry is an effective strategy to correct fund duplication and dispersion, identifying and articulating all stakeholders to the Ministries of Health, Science and Technology.
- Knowledge translation to be used by decision makers, policy makers, health program managers and the public becomes a complex but essential task and should be part of a national plan for the dissemination of research findings.
- The use of information and communication technology is a critical component and should be part of the most widely used tools to disseminate the direct and indirect benefits of health research.

Executive Summary

The outlook of National Health Research Systems (NHRS) in the Latin American region, in terms of development, is very diverse and also encouraging. The renewed interest of governments in health as a driving force for social and economic development, the confluence of financial resources and the support of several international organizations with advocacy and convening power to strengthen NHRS in the region have accelerated the need to develop a national health research system in those countries where there is not one in place, or to strengthen system structures of those countries that already have one in place.

In this context and with the aim of following-up commitments made in the 1st Latin American Conference on Research and Innovation for Health held in Rio de Janeiro in 2008, a group of researchers, academics, senior officials from the Ministries of Health and representatives of technological sectors, and international organizations held a meeting in Havana, Cuba, in November 2009 to report on the advances achieved in the strengthening of National Health Research Systems (NHRS) in the region.

The meeting was focused on the discussion of four key topics for the development of NHRS: Strengthening of NHRS in the region, human resources for health research, financing for health research, and knowledge transfer and translation.

- *Human Resources for Health Research:* In the absence of a unified model of implementation, experiences were shared and strategies proposed to strengthen NHRS initiatives, respecting the culture (political, institutional, etc.) of each country and concentrating efforts on the training of human resources for health research from the undergraduate level, proposing training and education schemes both in general and specific skills, relating master and PhD theses to research projects and national priorities. Programs for the monitoring and evaluation of human resources in health, should include research training.
- *Financing for Health Research:* A key element is that financial support should be closely related to national priorities and far from private interests of research groups who, in general, distort research needs. There must be defined priorities in the research agenda as a critical step to project alignment and sources of funding. It is also very important that health research does not depend on the annual budget. The relevance that different governments give to health research is easily translatable in the allocated public budget, if there is a policy and legal framework to support it. Given the inflow and diversity of sources of funding, it is necessary to establish transparent financial planning and disclosures. To this end, it is essential to create a national research registry where publicly and privately funded research projects, resources and outcomes are identified.
- *Knowledge Transfer and Translation:* There is a great need to disseminate research findings out of scientific circles and to empower potential users of these outcomes. The use of outcomes rely on several factors, the correct translation of evidence, the relevance concerning research priorities and the timely basis on which knowledge is provided. The meeting in Havana that countries have greater interest in the subject. Countries are going through a globalization process of scientific information on health and they cannot ignore its generation or use. The sharing of information is crucial to be aware of the impact
- *Strengthening of NHRS in the Region:* The current context, in favor of developing and strengthening NHRS, will not prosper without the direct and decisive participation of National Governments and the involvement of Ministries of Health with a well defined and clear role in the governance and management of NHRS. Even though it is clear that there should be a strengthening of all science and technology related organizations and authorities, undoubtedly the role of the Ministry of Health is a key factor. The access to a national policy on research for health could provide Ministries of Health the foundations to develop regulatory frameworks for the support of NHRS governance and stewardship.

of the laws, agreements and mandates on each country. To do this, the availability of human, material and financial resources is required. Joint cooperation mechanisms should be established and technological platforms shared to allow for the dissemination of research advances and e-learning. The launching of the *Health Research Web (HRWeb)*

illustrates the best use of cutting-edge technology as a tool to strengthen the NHRS network in the region.

After the meeting in Havana all attendees were confident that little by little a well consolidated, supportive and reinforced NHRS network will become integrated with the contribution of all members.

Introduction

In the last decades, the great social and economic differences in income, access to services and opportunities have been a characteristic of the Latin American development. This has given rise to different meanings of citizenship between the richest and poorest, undermined the power of institutions, and generated political instability. Despite this, the situation of healthcare and the national health systems in Latin America are improving, and one of the driving forces for this change has been the impact of research and the development of national health research systems (NHRSs) in these countries.

In the last decades, health research in Latin America and the Caribbean has been limited due to the lack of funding and its exclusion as a core element guiding health system reform processes in the region. As far as funding is concerned, very few countries are able to invest 1% of the GNP in health research; the regional average being 0.54%, while barely reaching 0.10% in Peru and Ecuador. Health research is concentrated in a few Latin American countries (Argentina, Brazil, Chile and Mexico) accounting for 90% of the regional scientific research output (2% of the world output). It is worth pointing out that these countries have the soundest economies of the region. However, during the last decade, extensive efforts have been devoted to improving health research status through the development of national health research systems. These efforts are oriented towards the quest of solutions to meet the Millennium Development Goals, and more precisely, to improve health services provided to the poorest, and reduce the health gap between the poorest and the richest. The consensus is that health research can also guide the social and economic development of countries.¹

Argentina, Brazil, Costa Rica, Chile and México have the most developed health research systems in the region. These systems operate around a political framework from the Ministry of Health that includes a policy for research, the availability of research funds and special resources, a well defined research priority agenda based on local needs, and the establishment of sound partnerships with the technological and scientific sectors of the country.¹

Although there is a worldwide increase of investment in science and technology, there is still not financial support. In 1999, the Global Forum for Health Research analyzed health research expenditures and adopted the term “the 10/90 gap” to draw attention to the inequity of resources allocated to health research between the poorest and the richest countries. From this analysis, the conclusion reached was that very few of the world’s resources for health research were directed to solving the problems of the poorest. One of the greatest challenges is the lack of influence on the research agenda, whereas international agencies are the ones that determine research issues to be discussed.²

Research must address the needs of each population. In the case of developing countries, an updated research agenda should look beyond fundamental problems of disease healing and prevention and focus its interest on other important arenas as determinants of health (social, economic, ethnic and gender equity, fundamental human rights, environmental factors). The agenda must address past and current health problems together with the threats expected in the future and leave room for the growth of basic science and the immediate investigation of emerging problems.

If research is to prosper in any context, it is necessary to invest in the necessary institutions and human resources to sustain it in the long run. However, in most of developing countries sources of funding are lacking or are not enough. In recent decades, some countries in Latin America have been developing more stable funding strategies to support research. For instance, the *National Science Foundation* study disclosed that the number of scientific articles by Latin American authors, published in the journals of highest scientific impact, almost tripled between 1988 and 2001. Growth was concentrated in some countries (Argentina, Brazil, Chile and Mexico) and was higher than that in emerging countries in other regions. The report also revealed that almost half of the papers focused on life sciences, mainly healthcare, while research on engineering and related sciences was more common in other developing regions.²

How has this increase in research been possible? In spite of fund shortages and the pressure of meeting other needs, most of the financial support in Latin America comes from the national budget; this is an example of the growing importance of health research within the political agenda in many countries. Besides, some funding agencies have outlined strategies to foster health research, including the consolidation of universities and research centers and the training of human resources for research. To increase funds available for health research, taxing industries that contribute to an increase in the incidence of disease and death (tobacco, alcohol and automobiles) have been proposed.

Finally, a regional policy on research proposed by the Pan American Health Organization (PAHO) has been approved. PAHO serves as the regional office for the World Health Organization (WHO) in the Americas. After several years of having a secondary role with respect to research, this organization won approval from the Ministries of Health in the region to play a key role in supporting and coordinating health research in Latin America. The objectives of this policy are as follows: Promote research, strengthen governance, improve competence of human resources dedicated to research, enhance the impact on research, promote practices and standards, and encourage the dissemination and use of research results.³

The experience in Latin America has shown that political will and local investments are vital to sustained growth in research for health. However, the effort to develop national health research systems is the biggest step towards the translation of health problems and needs into research questions. The challenge is to prove that investment in research in developing countries is essential to improve the population's health through cost-effective and sustainable interventions.

The 1st Latin American Conference on Research and Innovation for Health⁴ (Conference in Rio) looked for practical answers to common challenges in the region: How to make research serve health priorities in countries and contribute to the equitable development in Latin America. Thus, there was an emphasis in the creation, development strengthening of national health research systems (NHRS) and in regional cooperation as a means to take advantage of existing resources and correct asymmetries. The meeting took place in Rio de Janeiro, Brazil, from April 15th to 18th, 2008, and 120 strategic players attended. Officials and staff from the areas of health, science and technology of the countries of the region; representatives of agencies for the development and technical cooperation;

national, regional and global research networks and organizations; PAHO/WHO technical officers. The Ministry of Health of Brazil was the host of the meeting and the first one to sponsor it. The National Institutes of Health and High Specialty Regional Hospitals Coordinating Commission in Mexico, the Council on Health Research for Development (COHRED), the NicaSalud Federation Network, the Global Forum for Health Research (Global Forum), the Ministry of Health of Brazil and the Pan American Health Organization (PAHO) partnered for the organization.

The Conference was financed by COHRED, the Global Forum, the Ministry of Health of Brazil, PAHO, Special Program for Research and Training in Tropical Diseases of the WHO, and the Wellcome Trust (British Trust Fund).

The Conference produced 14 reports on NHRS from different countries, they contributed to the first reference of its kind in the region, multiple work contacts among countries, networks, international agencies and funding bodies; information on new programs, research fellowships and sources of funding; a preliminary agreement for the sub-regional cooperation in Central America; and the compromise to organize a second conference to evaluate the progress made.

The Conference focus was on four key issues, and a concern that affected them all was, the regional collaboration and researcher collaboration, and sources of funding from developed countries. The four topics were:

- National Health Research Systems, including strategies to reinforce them; processes to set research priorities; development of policies on research; system management, frameworks of bioethical reference and articulation with other systems of science and technology.
- Financing of health research, with an emphasis on the identification of innovative strategies for the funding of national systems and priorities that include and articulate the public and private sectors.
- Health innovation, product development and access. Interactions between health research and the productive sector were reviewed. It was analyzed how to reorient innovation systems towards national priorities and how to improve the use of research outputs with an emphasis on equality.
- Human resources for health research: There was a discussion on how to promote individual, institutional and systemic abilities and how to evaluate the result of these actions.

Participants' discussions in these four task forces resulted in a series of definitions and recommendations on the

key issues of the conference, which serve as the foundation to design national policies on research for health and to define NHRS stewardship and strengthening strategies.

In November 2009, the Follow-up Meeting to the 1st Latin American Conference on Research and Innovation for Health (Meeting in Cuba) was held in the city of Havana, Cuba. The meeting was warmly welcomed by the Cuban government, host of the meeting, and sponsored by COHRED, the Global Forum and PAHO.

The Meeting in Cuba was a reflective exercise on the key messages of the Conference in Rio as follows:

- NHRS strengthening and management together with regional cooperation are critical to address health challenges in a context of inequality, delay in the achievement of the Millennium Development Goals, epidemiological challenges, food crises and significant demographic changes that affect the poorest countries.
- The management and stewardship of NHRS are the State's responsibility and are essential in order for the Ministries of Health, other state actors and civil society to conduct health research efficiently.
- A coordinated strategy of training and development of human resources is required for NHRS to be sustainable.
- Regarding funding, there should be consistency between the countries priorities and resource allocation. Furthermore, innovative strategies to generate funds, like taxes on industrial products that contribute to the burden of disease and death should be sought.
- It is also important to acknowledge and evaluate how to allocate and use these resources; a public registry of funds for the whole research activity is required.
- Cooperation within Latin America is crucial to supporting NHRS, correcting asymmetries and reconciling the interests of intellectual property with those of public health. In this respect, existing capacities, resources, agreements and networks should be evaluated to effectively and efficiently take advantage of them and devise strategies and plans based on common and complementary interests.

This was conceived as a satellite event of the Global Forum for Health Research 2009, which made it possible to gather a group of outstanding national officials responsible for national research systems, researchers, teachers and senior officials of the Ministries of Health who contributed their experiences to the development of better scenarios to support research development in the countries of the region.

Goals of the Meeting

Global Goal

Strengthen National Health Research Systems in Latin America.

Specific Goals

- To review goals, structure, main conclusions and key messages of the Conference in Rio.
- To provide updated information on health research systems developments in Latin America since the Conference in Rio was held and to share and review the information about NHRS in the countries of the region.
- To examine the main challenges and facilitate the discussion of these challenges to explore how to approach them.
- To provide opportunities to create networks.

Expected Results

- *Exchange of Information:* A wider group of key players in Latin America is aware of the process in Rio and can contribute to the discussion about the main challenges and opportunities to strengthen NHRS of the region.
- *Accountability:* Follow-up of the activities that came up in the Conference in Rio.
- *Report:* Report of the meeting in Cuba, including a review of the progress made since the Conference in Rio.
- *Networks:* Use of the meeting to discuss current problems related to the strengthening of NHRS among colleagues of the region, development of partnerships and informal networks.

Meeting Topics and Format

Meeting Topics

The topics of the Conference are the same that were addressed in the Conference in Rio and include:

- National Health Research Systems.
- Financing of health research.
- Human resources for health research.
- Health innovation, product development and access to information.

Format and Participants

The meeting format was based on the interactive dynamics of task forces, round tables and other modalities that promoted participation apart from complementary plenary sessions. The meeting was held in Spanish with simultaneous interpretation into English. It hosted 65 to 70 professionals with a special interest in health research and the development of NHRS in Latin America. Participants were senior officials from the Ministries of Health, Science and Technology and other Ministries related to health research; senior staff from research institutes, civil society organizations – including professional associations and research councils, funding agencies, development agencies, research bodies and research networks.

Presentations and Discussions

1. Opening Speeches

1.1. Welcome Speech

Dr. Niviola Cabrera Cruz, Ministry of Public Health, Havana, Cuba

Dr. Reinaldo Guimarães, Ministry of Health, Brazilia, Brazil

Professor Carel IJsselmuiden, COHRED, Geneva, Switzerland.

Professor Stephen Matlin, Global Forum for Health Research, Geneva, Switzerland

Dr. Luis Gabriel Cuervo, PAHO/WHO, Washington D.C.

Dr. Niviola Cabrera Cruz was responsible for the opening session. She welcomed participants in the name of the Ministry of Public Health in Cuba, and thanked the organizers for the invitation to participate in this meeting. She seized this as an opportunity to update knowledge, develop networks and learn from the experience of other countries in the region and to continue the work started at the Conference in Rio. In Cuba, research is understood as the driving force to improve health, but to this end it is necessary that all sectors and disciplines are involved. Health research is undoubtedly important to achieve people's well-being. Dr. Cabrera Cruz assured that this meeting will enable constructive exchanges to take place and promote the development of networks as a valuable and important hub to ensure people's health.

Dr. Reinaldo Guimarães, representative of Brazil, thanked the host country and especially Dr. Niviola Cabrear Cruz for the warm welcome. He stated that the Conference in Rio set the basis to advance the NHRS consolidation and underscored the importance that this initial thrust is not lost. He pointed out that significant progress has been made especially in the south-south collaboration. He emphasized that a field of development

is health research and the idea is not to make great discoveries since the first objective is to use research to provide a better access to health; he gave the example of access to medicines, where Brazil has a strong commitment.

Professor Carel IJsselmuiden highlighted the role of Cuba in global health by providing medical assistance and inspiring people all over the world. He welcomed all members: PAHO, Wellcome Trust, Instituto Carlos Slim de Salud, the Global Forum and, very specially, the Government of Cuba and the Ministry of Public Health in Cuba. He remarked that the goal of the meeting is to become updated on the advances made since the Conference in Rio and should not be taken as an evaluation because every country moves forward at its own pace. COHRED serves as support and management and is more and more committed to the region; the goal of this follow-up meeting is to seek practical results that could benefit countries and their NRHSs.

Dr. Luis Gabriel Cuervo, on behalf of PAHO, started by thanking all those who made this meeting possible. Research is extremely important to people's health and, despite the financial global crisis, he stressed, creative approaches must be found to go on supporting research. This meeting must streamline those efforts supported by PAHO and the participating organizations.

Professor Stephen Matlin, former Executive Director of the Global Forum, was pleased for having the opportunity to have a follow up meeting. He remarked that, despite the global crisis, funds allocated to health in low- and middle-income countries have not decreased in the last years; he also underscored that PAHO is the leader in global policies, Latin America being the first region in the world to have a regional policy on research. He insisted that discussions among participants and representatives of the countries are the most important part of the meeting. The reflection about the added value that we can provide to processes currently in place should be the conductive thread.

1.2 Meeting Goals and Processes

Sylvia de Haan
COHRED, Geneva, Switzerland

Professor Sylvia de Haan reported to participants about the expected goals and outcomes of the meeting. Regarding the process to follow, she explained that the meeting would consist of 5 sessions, each devoted to a key topic:

- *Session 1:* The Conference in Rio and the current status of NHRs in Latin America
- *Session 2:* NHR Development since the Conference in Rio was held. Survey and country case studies
- *Session 3:* Exchange of information and establishment of networks.
- *Session 4:* Identification of challenges, strategies and actions for the development of the NHRs in the region
- *Session 5:* Summary of the meeting, points of action and conclusions

Session 4 followed a specific format, based on the *World Café* method. This method allowed the structured discussion of topics selected from an electronic survey conducted prior to the meeting. Topics selected were the following: NHRs strengthening in the region, human resources for health research, financing for health research, knowledge transfer and translation.

1.3 Process and Results of the “1st Latin American Conference in Research and Innovation for Health”

Francisco Becerra-Posada
COHRED Latin America, Mexico Federal District, Mexico

Background

A view increasingly shared by countries in Latin America and the world is that health is one of the essential engines for economic development and the fight against poverty. In this sense, health research is like the driving force of this development. However, not every country has understood nor included health research as part of the basic functions of the health system, keeping it isolated and unrelated to the performance of the overall health system (Figure 1).

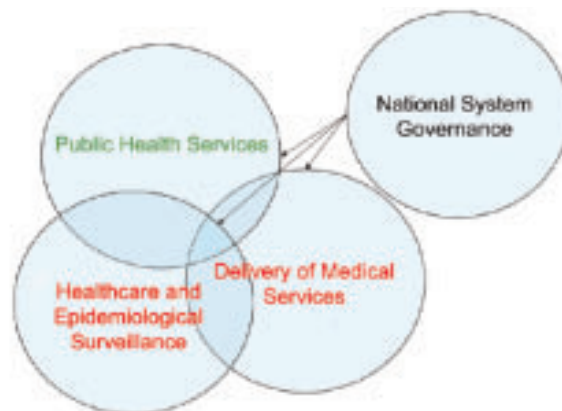
Among and within countries there are social, economic, demographic and health contrasts and in spite of marked differences there is a vision of unified work that currently favors joint interventions to address common problems.

“Nevertheless, we dance together to the same tune, share legends and are scared of the same ghosts, our hearts beat to the same rhythm, all this and much more keep us Latin Americans together”

– Francisco Becerra Posada

The process to integrate health research systems to the region became apparent in a meeting held in Guatemala in 2006 where key players were able to approach the subject for the first time. This meeting resulted in the proposal to organize a conference focused on the development of NHRs. COHRED was the first to propose the idea, became one of the funding agencies and took the first steps to coordinate the organization of the event. Brazil was proposed as the venue for the first conference and the long process of organization began. Since it was a Latin American conference, PAHO supported this initiative and offered additional funding given the relevance of this subject matter in the strengthening of health systems in the region. The Global Forum and the Wellcome Trust supported the proposal and collaborated in the conference logistics and funding. The participation of Brazil, Mexico and an NGO from Nicaragua assisting in organizing the conference was also highlighted.

Figure 1: At present, health systems articulate their basic functions without taking into account health research.



Results

The “1st Latin American Conference in Research and Innovation for Health” was the first meeting of its kind and brought together a broad range of people and organizations from all Latin American countries. As described hereinafter, 14 reports were submitted. They described the outlook of the NHRs situation in each of the participating countries, and were used as the input for discussion and debate. As a result, a sub regional

group was set up, a general report of the conference⁴ was drafted, two papers related to the meeting content were submitted, a presentation was made in UNESCO and a paper reviewing all 14 documents was published in the PAHO journal. Among the most important accomplishments is the relationship and strengthening of PAHO – COHRED regional collaboration, which essentially embodies the interest to support the development of NHRS in countries of the region. The work of COHRED is to provide support through technical cooperation for the development/strengthening of NHRS, and PAHO is focused on its influence to develop regional policies, manage resources and provide technical support to countries.

The review and conclusions of the first meeting show that:

- National Health Research Systems have evolved in a different way in the region.
 - Within countries it can be observed that key elements of the system are scattered and non-unified, communication and coordination among interested parties are limited and, consequently, integration and organization are not effective.
 - The most evident problem is that the system, if any exit, does not work according to health priorities and almost always responds to the interests or priorities imposed by the strongest or most influential research groups.
 - Besides, there are neither effective nor sufficient funding mechanisms.
 - Another piece of evidence that weakens NHRS in the region is that health research is unrelated to science and technology in the countries.

Therefore, task forces recommended the following specific actions:

- It is necessary to have capable leadership and stewardship in research, preferably through the Ministries of Health.
- It is mandatory to involve all the necessary actors from the government, industry, universities and research centers, NGOs and the society at large.
- Transparent mechanisms should be in place to generate and distribute funds for research, to relate funding to health and research priorities and to supervise external and internal resources derived from research.
- It is necessary to prioritize health research taking into account the needs of the country and to develop basic research.

- The coordinated training of human resources for health research is required as well as taking them into account as an integral part of health.
- Laws that protect research ethics should be created and implemented while mechanisms that monitor and guarantee the information security should be established.

What do we understand by National Health Research System?

People and institutions that govern, manage, coordinate, require, generate, communicate or use research-produced evidence to promote, restore, enhance or maintain the population health status and development.

What are its core functions?

- Governance: Be responsible for the national research stewardship and management.
- Funding: Guarantee exclusive resources to promote and generate the research that each country needs.
- Knowledge generation, use and management: Improve the population health status based on health research findings.
- Develop local skills to attain quality research.

What do we want?

Creation, development or strengthening of national health research systems. The regional group for health research seeks to support those countries interested in developing and/or strengthening their NHRS to:

- Detect needs and define health and research priorities.
- Support planning and development.
- Support the relationship with other countries and organizations.
- Seek funds jointly to develop NHRS.
- Promote growth and development of institutions and the national research system.
- Enhance the quality of health research.
- Develop/strengthen internal capacities and human resources for health research.
- Improve the decision making process in health using research findings to improve population health standards.

If these strategies and actions are consolidated, the national health research system would act as a core element in the national health system of each country (Figure 2).

Figure 2: National Health Research System as a core element in the National Health System



1.4 Analysis of the development of NHRS in the region: A 14-country review

Jackeline Alger

Instituto de Enfermedades Infecciosas y Parasitología Antonio Vidal, Tegucigalpa, Honduras

Background

In April 2008, the 1st Latin American Conference on Research and Innovation for Health was held in Rio de Janeiro, Brazil⁴, fulfilling a long-sought goal of merging interests and needs of the region in terms of health research and development of actions that would strengthen this activity in the region. Officials from 17 countries attended this meeting; they had commitment to develop a background paper for the conference. Each country paper was based on a common format adapted from COHRED NHRS Development Framework (COHRED 2007, 2008).⁵ In the recommendations submitted by the organizers for the integration of the document, it was proposed to include the Ministries of Health, Science and Technology organizations, academic institutions and NGOs to provide a multisectoral approach to all possible stakeholders. The review touched upon three aspects:

- **Governance and Stewardship:** Governance body, management structure and coordination mechanisms among national institutions responsible or research promotion and implementation in each country.
- **Legal Framework:** Including politics or set of laws, regulations, standards and strategies aimed at supporting and regulating research development.
- **Prioritization:** Formal list of priorities which demonstrates that some type of process is underway for the selection, prioritization, evaluation and adoption of themes.

The proposed document should include contextual information of each country so as to identify the degree of social and economic development through different indicators like the human development index and others, (UNDP 2008). It is also suggested including scientific publications indexed in different international catalogues as Latin American Literature on Health Sciences (LILACS) and Institute for Scientific Information (ISI). The reports submitted by 14 countries are available for consultation in the referenced website⁶ and include the outcomes from Argentina, Bolivia, Brazil, Chile, Costa Rica, Cuba, Ecuador, El Salvador, Honduras, Panama, Paraguay, Peru, Uruguay and Venezuela.

National teams were able to review the information collected and send their feedback to eventually have this enriching experience released in the Pan American Journal of Public Health, published by PAHO.⁷

Within the relevant results submitted by each country, differences and contrasts are highlighted in terms of social and economic development, research systems development, and the degree of support each country provided to this remarkable activity. This is easily observed in the differences of investment in education, health or research where there is a contrast between investments made by countries with higher incomes than those by small countries like Costa Rica and Cuba with controversial results. For instance, Argentina invests less in science and technology than Brazil but has twice as many researchers dedicated to this field. On the other hand, it is worth noting that there are countries with no information available to comprehensively analyze selected indicators, which speaks in favor of the strengthening of national research systems in all countries.

Another key aspect of the regional analysis is the extent of scientific production of countries and the significance that health has in all the fields of scientific research. No matter how much or how little research is done in a country, most of this research focuses on aspects related to health as a priority field of knowledge. Even though Brazil, Chile and Argentina are accountable for the largest regional production, all countries direct their resources to health research, which speaks of its relevance in the scientific development of each country.

The description of governance or regulating bodies was one of the most interesting items coming from national studies since there are different governmental instances that allow for or are directed to regulating and promoting research, like Councils on Science and Technology present in almost all countries. These councils are supported by the Ministry of Health and/or coordinated by secretariats or ministries of science and technology. These institutionalized efforts are a proof of the interest of countries to strengthen their NHRS and guarantee that research is funded and supported by the government as a prerequisite for development. Mechanisms available to support and coordinate research development converge first in holding research for a to promote the discussion of priorities and the creation of research priority agendas, even though methods and procedures vary from country to country. This can be seen when contrasting the list of priorities submitted by each country which describe common problems but also the research agendas and interests of the most influential local groups.

As far as results it is worth mentioning that out of the 14 countries that submitted their national report, only 6 reported having formal entities for health research governance and management (Argentina, Brazil, Costa Rica, Ecuador, Venezuela and Cuba). Regarding a legal framework, only Brazil (2004) and Ecuador (2006) reported having a comprehensive national policy devoted specifically to health science, technology and innovation. Brazil was one of the few countries that proved to have a more formal regulatory body with very specific goals.

The other 10 countries (Argentina, Bolivia, Chile, Costa Rica, Cuba, Panama, Paraguay, Peru, Uruguay and Venezuela) described a set of rules and regulations that establish norms and standards regulating some health research components, including the registration and execution of clinical trials, the registration of pharmacologic products and the functions of ethics committees.

When consulted, only 9 countries reported having set priorities for health research: Argentina, Brazil, Costa Rica, Cuba, Ecuador, Panama, Paraguay, Peru and Venezuela. Panama, Paraguay and Peru set the prioritization without having a formal health research governance and management structure. Procedures used to establish priorities were different and so were the order of priorities.

Conclusions

In conclusion, despite the disparate level of NHRS development in the countries of the region, the review of the reports revealed that encouraging progress has been made to set up and develop a formal NHRS in the short- and mid- terms.

The comparative analysis of the situation of NHRS in different countries has made possible that countries like Honduras, Paraguay and Uruguay are able to identify needs at a national level to promote their development.

It appears that the level of human and technological the different countries has allowed countries like Honduras, Paraguay and Uruguay to identify national demands and promote NHRS development.

The communication and articulation of the different NHRS components and the political will are key to attain positive results.

Brazil is a good example of how it is possible to link action with a specific policy and to build the scaffold needed to achieve long term goals despite the health authorities' performance period.

Limitations

When analyzing these results there may be a slight institutional bias, since this research is based on papers in which participating institutions' views prevail. Only 4 countries included a participant from science and technology national agencies. Despite the degree of progress or the early process of development, not all countries that attended the Conference submitted the report on NHRS situation in their country.

Recommendations

After submitting the national results and the discussion on the good practices and challenges for those countries in the first stage of NHRS development, the following recommendations are to be highlighted:

- Carry out an additional analysis to review in detail NHRS essential components:
 - Legal Framework
 - Funding Mechanisms
 - Training of Human Resources
 - Use of Research Output in Decision Making
 - Formulation of Policies on Health

- The State should exert the stewardship and governance of NHRS through Ministries of Health with the support of other state and non-state players.
- In order to be relevant, NHRS should integrate national systems of science, technology and innovation and other academic and civil society institutions, and should link their priorities to the social and economic development of each country.

2. Progress of NHRS in the Region

2.1 Progress made in NHRS in Latin America since the 1st Latin American Conference on Research and Innovation for Health: Results from an electronic survey

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Objectives

Explore and document the current situation of NHRS in the Latin American region.

Determine the contributing factors, both pros and cons.

Determine the contribution of the 1st Latin American Conference on Research and Innovation for Health (held in Rio in April 2008) to such situation.

Methodology

The electronic platform SurveyMonkey.com was used to conduct the survey (analysis design, collection and process) which is a free online software to design electronic surveys. The survey was distributed to all the participants of the 1st Latin American Conference on Research and Innovation for Health (Conference in Rio) which amounted to 110 professionals from different areas of health. Approximately 50% of the participants completed the survey. Besides, an effort was made to interview the Inter-Institutional Committee for Health Research of Honduras made up of 10 professionals among researchers, academics and officials. The other countries that contributed with a greater number were Costa Rica (6 surveyed), Brazil (5 surveyed) and Argentina (4 surveyed). The survey was conducted during three months (July to September 2009).

Results

Gender distribution in this group of researchers, officials and academics is better balanced than in many other associations or groups, since 24 out of 51 participants

were women, more from the field of research (10 vs. 9) and NGOs (3 vs. 2) than from the government (9 vs. 14). As far as the professional job profile, there is a good representation of senior management levels where leading managerial positions are dominated by men in contrast to coordinators or group leaders who are mostly women.

Only Bolivia, Guatemala, Nicaragua and Panama, out of the 16 participating countries, reported having made no progress in the establishment or development of their NHRSs. In the remaining countries (Argentina, Brazil, Costa Rica, Cuba, Ecuador, El Salvador, Honduras, Mexico, Paraguay, Peru, Uruguay, Venezuela) there is a positive perception with respect to progress made in the strengthening of NHRS since the Conference in Rio was held.

Questions about the contribution of the Conference in Rio to strengthening the NHRS shed light for reflection and motivated actions directed to improving the situation in each country, regardless the level of their NHRS development. One of the relevant aspects underscored was the need to better understand the significance of health research in the overall development of the country and in the formulation of national policies on health in particular. This outlook is reinforced by the access to information on similar processes that take place in other countries where local progress and challenges could be compared. One of the greatest contributions of the Conference in Rio was to have a regional overview on the current status of health research and have more information on this subject. This regional conference provides a sound support and credibility to the need to foster health research in each of the countries; particularly the least developed, since it promotes the strengthening of policies and strategies at a regional level with the support of international groups and institutions. This synergy motivates countries to seek the political commitment essential to consolidate NHRS in each country.

Another positive recommendation at the Conference in Rio is that networking be encouraged to favor knowledge and information exchange among national regional officials and work of each country is supported even though it is online. Within the exchange of information arises the possibility of sharing guidelines about organization, leadership and coordination of regional networks as well as other publications of regional interest.

The review of the situation of national health research systems in the region allowed the identification of some key factors in the strengthening, formulation and implementation of policies aimed at consolidating research in the region. The main determining factors identified were the following: Political will, inter-sectoral cooperation, leadership, training of human resources for research, financing for health research and knowledge translation and transfer.

- **Political Will:** Undoubtedly, political support at the highest level is critical to strengthen the NHRS. For instance, the Ministry of Science and Technology was created in Argentina, and in Uruguay the Health Research Fund was created together with the National Research and Innovation Agency and the Ministry of Health as bodies in charge of leading the process to their provinces. On the other hand, Bolivia still does not have public policies in place to encourage health research development which results in a significant lag for the country.
- **Inter-sectoral Cooperation:** The interaction among the different players dedicated to and benefitted by research turned out to be another determining factor since it allows for the emergence of natural leaderships, promotes the training of national human resources, favors the confluence of different funds to promote research and encourages knowledge translation and transfer to support the decision making process in health. In Honduras intersectoral cooperation resulted in the creation of the Inter-institutional Committee for Health Research which aimed at gathering national research leaders. In Venezuela community participation helped formulate public policies to promote health research.
- **Financing for Health Research:** Ecuador was introduced as a country where the availability of financial resources was aimed at strengthening biomedicine and public health PhD degree programs, while it was pointed out that in Mexico there was a remarkable increase in governmental financing and in Brazil there were new calls for granting research fellowships.
- **Training of Human Resources for Research:** Cuba reported about the national efforts aimed at improving the training of professionals to use research outcomes in the medical practice and healthcare services, and they stressed the process of integrating the Health Research System to the National Health System.
- **Knowledge Translation and Application:** The example described was that of Costa Rica with its financial support for a specific project oriented to the translation of knowledge generated by research.

2.2 Costa Rica: Case Study

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The Costa Rican board of Science and Technology Development in Health was created in June 2008 by Decree N° 34510-S File N° 105, with the main objective of articulating and implementing governance and management processes in the field of national scientific and technological development in health to ensure that the generation of scientific and technological knowledge responds to national priorities, ethical and quality criteria and to be available and accessible to be used as input to make decisions.

Functions assigned to this Board are:

- technically support the formulation, continuous follow-up and evaluation of the scientific and technologic development in health of the National Policy on Health.
- lead and manage the formulation, follow-up and evaluation of research and technological development in health of the National Strategic Health Plan articulating it to the corresponding institutional bodies.
- promote the development of institutional capabilities necessary for the scientific generation, dissemination and communication, use and application of knowledge to the healthcare needs of the country.
- elaborate, update, disseminate and supervise the standards for the organization and management of the National Health Research System.
- technically support the creation, update, dissemination and supervision of the standard related to ethics, bioethics and scientific quality in the processes of research in health.
- technically support the creation, update, dissemination and supervision of the standards necessary for the evaluation processes of healthcare technology and management cycle in institutions of the National Health Research and Technological Development System.
- regularly evaluate the impact of governing actions over the functioning of the National Health Research System in relation to financing, institutional capabilities, production, knowledge use and application.
- To continuously follow-up research in health through a built-in information system.
- To continuously review the status of Health Research and Technology Development.
- To promote strategies that contribute to the sustainable financing of projects and actions in research that meet national priorities.

Indicators of Performance

The responsibilities granted to the Board of Scientific and Technological Development in Health should be reflected in follow-up indicators that describe and evaluate the scope of achievements and identify drawbacks or areas of improvement. Among the main indicators formulated to follow the Board of Science and Technology Development in Health are the following:

Governance

- Policies
- Plans
- Resources Available for Research
- Institutions that carry out research and promote technological development in health
- Availability of equipment and other technologies
- Availability of human resources
- Training of human resources to be hired or on duty.
- Incentives for research and technological development
- Availability of technical assistance
- Training of managers in the use of knowledge.
- Institutions specialized in the training of human resources
- Institutions specialized in the evaluation of technologies in health

Financing:

- Amounts and source of funds
- Allocation of national funds
- Availability of foreign funds
- Existence of competitive funds
- Other funds

Knowledge Production and Use

- Number of scientific ethics committees
- Research projects approved by scientific ethics committees
- Ongoing research projects and technology developments
- Research projects and technology development that are part of priorities in health
- Research projects and technology developments in health per year
- Research projects in health published in different means of communication
- Research projects in health published in indexed journals
- Exchange and dissemination activities
- Availability of documentation centers: Physical and virtual
- Health patents

In spite of its recent creation, the institutionalization of the Board of Science and Technology Development in Health (Dirección de Desarrollo Científico y Tecnológico

en Salud, DDCTS) is starting to support the National Health Research System by becoming its operative branch with links and mandates over research nationwide. As part of the process of reform of the national health system, this body opens new pathways to order research in health at a national level.

2.3 Paraguay: Case Study

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Board of Research and Strategic Studies, Ministry of Public Health and Social Welfare, Paraguay

The establishment of research governance and management bodies in the region of the Americas has been a gradual process that reveals not only the interest of countries to include research to their development but indirectly it also shows progress made. In 1998 Paraguay passed a law consolidating its National Research and Innovation System and created its National Science and Technology Council (CONACYT). This contrasts with the examples of the creation of similar bodies in USA (1901), Chile (1967), Colombia (1968), Mexico (1970), Argentina (1974) and Ecuador (1979). In this meeting, the case study of Paraguay was an example of new role of NHRS and the challenges this country faced to integrate it.

The New Vision for Scientific Development

Research and innovation in health are framed on a bidirectional complex concept in which the performance and role of the State interact as a governing body obliged to create, in a deductive process, favorable conditions - like promoting more creative and productive environments for its development, contributing with funds to sectors, developing schedules for the training of resources and research agendas, and lastly, fostering an adequate basis for research in the country. On the other side, there is an inductive process generated through the role of institutions, researchers, promoters, sponsoring agencies, corporations, productive sectors and the society as a whole as research generators.

Relevant Data from Research for Health in Paraguay

- There are 0.21 researchers per 1000 inhabitants, one of the lowest rates of the region.
- Investment in Research and Development (R&D): 0.98 US\$ per inhabitant, equivalent to 0.086% of the GNP. This means that Paraguay is one of the countries that invests the least in R&D.
- Contribution to the scientific heritage is 0.025%: This shows a large asymmetry in relation to peer countries in MERCOSUR.

- There are 659 researchers in the country, 76% are affiliated to Universities (public and private, 55% and 21%, respectively).
- The area of health accounts for 26.2% of researchers in the country who produce 44.4% of the national and international publications.

Advances

Progress made in the strengthening of NHRS in Paraguay is remarkable and shows the result of continuous work, and results achieved in a very short period of time. The outlook in 2007 was the following:

- Lack of a National Policy on Research for Health.
- It was unknown what human and technological resources, and health research infrastructure there was in the country.
- The articulation of health research institutions was informal and weak.
- The agenda for health research lacked priorities or financing.
- There was a duplication of efforts.
- There was no budgetary consideration.
- Lack of legal and normative frameworks for the funding of research for health.
- There was almost no relationship between companies or financing centers and institutions dedicated to the promotion of research in health.
- Difficulty in getting funds for research from national or international agencies.

In 2009, the situation is totally different:

- The National Policy on Research for Health is in a process of discussion and validation.
- CONACYT is organizing the National System of Researchers and updating R&D indicators.
- The Inter-institutional Committee for the Development of the National Health Research System was eventually created. One of its functions is the organization of the legal and normative frameworks of the NHRSs, considering the establishment of a sector fund for the financing of research for health.
- The mapping of players is under way.
- Research priorities have been defined in the agenda.
- There is a funding model in place.
- Corporations or finance centers work together with institutions dedicated to the promotion of research in health.
- The 2010 PNGGS has a budget line item.

National Agenda for Health Research

One of the greatest advances accomplished in the period was the Update of the National Agenda for Public Health Research Priorities 2008 – 2013. This agenda was the result of convening 80 key players related to the management and implementation of health related research and determining factors through institutions, organizations and individual researchers. The agenda was validated by a team of experts from the academic and management area of the Ministry of Public Health and Social Welfare and funded by PAHO.

Governance and Stewardship:

The Ministry of Public Health and Social Welfare, CONACYT and the Ministry of Education are responsible for the governance. CONACYT is the governing body of the National Policies of Science, Technology and Innovation of the country (1997), and is responsible for promoting the governance necessary to lead the process of research strengthening, technological development and innovation for health in Paraguay.

The Inter Institutional Committee for the Development of the National Health Research System was created on November 3rd, 2009. It has 20 members and acts as the formal structure that will provide sustainability to the processes of research and technological development and innovation for health. It should have a Chairperson who is the Minister of Public Health and Social Welfare; a Deputy Chairperson who is the Vice Minister of Public Health and Social Welfare; and the Directors of Research and Strategic Studies will be in charge of the Executive Secretariat.

What there is and isn't

It is critical to create a social and political setting that guarantees the political commitment towards research in health and a positive environment that respects human rights with the aim of institutionalizing and strengthening NHRSs in Paraguay. The environment must lead to research in which priorities to be researched must be clearly defined. These priorities should be supported by policies and mechanisms of management in research in health. For the implementation of research, system components are to be improved, human resources have to be well trained, and funding should be stable and predictable so that researchers are able to duly and properly dedicate their time to priority research, ethics and communication promotion and the translation of pieces of evidence. The degree of progress to be

expected is to accomplish the integration of the national system to the international arena through bilateral, regional and international associations, cooperating with other funding organizations and agencies.

Outstanding items include to make a diagnosis of the available capacity, promote exclusive dedication to research through adequate motivation and salaries that will enable to coordinate a formal researcher career, creating the National System of Researchers, increasing the number of Master's and PhD degrees in health and fostering spaces for research to be disseminated.

Steps to be taken

Among the activities aimed at consolidating NHRS in Paraguay, there is the plan for the validation, socialization and consensus of the National Policy on Research for Health, related to the National Policy of the Government and the PAHO National Policy for Research and the Regulation for the Operation of the Inter-institutional Committee for the Development of the National Health Research System. Besides, the Sector Fund for Research in Health which includes the mapping of players and the Registry of Researchers in the Health Sector, must be designed in coordination with CONACYT (Towards a National System of Researchers). As far as research priorities, the best methods should be identified to support organizations with initiatives, projects, learning platforms, and indicator systems for the monitoring and evaluation of NHRS.

2.4 Policy on Research for Health: Progress Report after the 1st Latin American Conference on Research and Innovation for Health

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The 1st Latin American Conference on Research and Innovation for Health held in Rio de Janeiro in 2008 was highly relevant; it also gave rise to different reactions and resulted in some improvement within the region. The overall reactions have been positive since all countries with or without a well consolidated NHRS are motivated to acquire one or improve their existing one.

PAHO has advocated the commitments that came up from the meeting and invested resources to disseminate the commitments and outcomes of the regional consensus. Advocates have focused on the drafting of some publications of the report in different formats and languages, and published it through relevant website links. Participation in scientific events, conferences and strategic fora within and outside the region has enabled the dissemination of advances and challenges to set up a network of NHRS in the region. Papers have been submitted to key players like PAHO/WHO Governing Bodies (48th Directing Council, 2008) in regional and national meetings and, in consultations to advisory bodies like Advisory Committees. Formal agreements have also been made based on this promotion and dissemination, like the one between PAHO and COHRED, which have become consolidated in activities of coordinated technical support to different countries and the discussion of these topics with other agencies of development and international cooperation.

One of the most important outcomes was the approval of a Regional Policy on Research for Health.³ It is a broad and inclusive process of consultation with key players in the region who reviewed regulatory frameworks and dealt with the remarks stated by PAHO's Executive Committee. This Regional Policy was initially promoted by the Director and the Advisory Committee on Health Research who were consulted on several occasions from 2007 to 2009. Furthermore, there was a comprehensive review of relevant papers and the opinions of multiple players were sought, inside and outside of PAHO.

The vision behind this paper is that health research is and should be an investment for the development of countries. By gaining knowledge, competitiveness will increase and the access to and the use of different products is enhanced, and the health sector is strengthened and the development of other sectors, like the economic and industrial ones is fostered.

In short, Policy on Research promotes the appropriation of the subject and solutions by Member States, endorses the work of PAHO, builds on cooperation, existing resources and diversity and encourages the use of research outputs, links politics to practice and research production, and strengthens the research culture.

3. Challenges for the Development of National and Regional NHRS

3.1 Health Research Web

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Health Research Web (HRWeb) is a web-based interactive information and management platform (Figures 3 and 4), aimed at improving health, equity and development in low and middle income countries through research. It is a source of information on the structure, organization, financing and prioritization of research for health. Its unique contributions are that:

- It organizes global information on research for health from the point of view of low and middle income countries.
- It captures research system information - enabling countries and institutions to govern and manage health research as an essential aspect of improving health, equity and development.
- It makes this domain interactive, open to everyone - not just research institutions, donors or industry; and

- It creates a platform that can be used for internal institutional management or for sharing institutional, national or regional data with the world.

Taken together, these contributions aim to provide governments and institutions with key information to optimize the potential of research to improve health and development. It also increases visibility and accountability of all those engaged in research for health; additionally, it provides a source of information to find collaborators or to support capacity building.

This tool has the potential to become the most suitable and updated advisory instrument of the progress in the creation of NHRS in each country in the region by providing; a consultation center on governance and national policies on research; research priorities, networks and institutions dedicated to research support and management; and sources of funding for human and information resources for research. Its contents will be as rich as the amount of dedication each country devotes to it. The challenge lies on keeping it updated; national authorities will play a key role in disseminating the work done in this field.

Figure 3: Health Research Website



Figure 4: Home Page Information about Health Research Systems Example: Brazil, (HRWeb)



3.2 Brazil: Case Study

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Institutional Framework

The efforts to give shape to NHRS in Brazil are based on the 1998 Constitution which sets out the principles and directives through the Unified Health System. The essential objectives for the health sector are to enhance scientific and technological development. Therefore, the development of a National Policy for Science, Technology and Innovation in Health should be included as part of the national policy on health as a governing function of the Ministry of Health. Its aim should be the ethical and social commitment to improve the health status of the population considering regional differences and the search for equity.

As part of the national policy-making process the organizational principles of the Unified Health System were established based on universality, equity and integrality. Even though these principles are easily extrapolated to health services; in the case of research the process has yet to be decentralized. Based on these principles, different bodies were organized to deal with the scientific and technological promotion, the development of health research priorities (2000) and the Ministry of Health Secretariat for Science, Technology and Strategic Inputs (2003) whose objective is the formulation, implementation and evaluation of the National Policy. The process culminated in the 2nd. National Conference on Science, Technology and Innovation in Health (2004). There was a significant inter-sectoral participation from the areas of science, technology, education and health, together with a remarkable attendance of the civil society. The National Policy and the national agenda for health research priorities were approved in this Conference.

Strategies

The normative and regulatory framework provided by constitutional mandates and governing bodies like the Secretariat for Science, Technology and Strategic Inputs was directly stated in a specific policy aimed at the development of research and an inclusive agenda of priorities agreed upon by the most important players.

The strategies used to implement the policy and to develop the agenda required the technical cooperation and the articulation of the Ministry of Health, Science and Technology, mainly to define the management of financial resources from the Health and Biotechnology Sector Fund. This funding organization for research was strengthened by the articulation with other strategic sectors like the Ministry of Industry and Commerce, the Fora of Competitiveness of the Pharmaceutical and Biotechnology Industries, the National Council on Science and Technology, and the Ministry of Education.

These partnerships enabled the creation of a national agenda of health research priorities. The prioritization exercise required a collective effort to describe the current status of the scientific and technological knowledge, be aware of the installed capacity for research, identify the most relevant health problem groups, involve research in the whole chain of knowledge (basic, applied, operational, etc.), articulate all instances involved in science, the technological development; economic, social and industrial competitiveness nationwide. This strategy was very inclusive since it reflected the wide array of health problems identified as priorities which included vulnerable groups (Indigenous peoples, black population, children and adolescents, women, groups with special needs), groups with relevant diseases (mental health, violence, accidents and injuries), transmissible and non transmissible diseases, nutrition,

oral health, occupational and environmental health), research in health (epidemiological, clinical, demographical), aspects of health services (health economics and promotion, communication and information, systems and policies), technological aspects (evaluation of technology, biosafety and pharmaceutical assistance).

With the aim of covering this wide agenda of issues and problems, support strategies were developed to ensure its adequate dissemination, the establishment of a research program for a unified health system, the provision of additional resources for the science and technology system and the support to strategic proposals of technological development and health technology evaluation.

The main advances recently accomplished include the establishment of researchers networks focused on a priority research theme: la Red Nacional de Investigación Clínica Hospitalaria de Ensino (Hospital Clinical Research National Network of Ensino), la Red Nacional de Terapia Celular (Cell Therapy National Network), la Red Brasileña de Investigación sobre Cáncer (Cancer Research Brazilian Network), el Estudio Longitudinal de la Salud del Adulto (Longitudinal Study on Health of the Adult), los Institutos Nacionales de Ciencia y Tecnología (National Institutes of Science and Technology), y la Comisión de Determinantes Sociales en Salud (Committee on Social Determinants in Health), among others.

In spite of the progress made, there are still some challenges to have NHRS consolidated in Brazil; for instance, the creation of an Autonomous Agency of Science and Technology on Health Research and the south-south cooperation to strengthen NHRS.

4. World Café

The attendance of a broad group of researchers, officials and academics, the long list of the subjects to be discussed and the briefness of the meeting made the direct and individual participation through presentations and conferences difficult. However, an innovative interactive method (*World Café*) was used which allowed to capture the insights of all participants organized into 4 discussion groups who rotated between four conversation clusters or tables for a definite period. The four tables were organized by the subjects proposed in the electronic survey held during the preparation for the meeting and as a follow-up to key topics identified in the Conference in Rio. It was proposed that each subject be analyzed under specific cross-sectional topics (Figure 5).

Figure 5: Topics for Debate at the World Café



Two moderators led the debate, assigned time to each specific topic to be discussed and integrated the opinions of each discussion group for the final presentation to the group as a whole. The meeting was enriched by the contribution of each of the participants coming from a variety of countries with different levels of development of NHRS; this favored a better interaction during the discussion period.

4.1 Strengthening of NHRS in the Region

Given that the Conference in Rio was focused on the development or strengthening of NHRS of the countries in the region, it was critical to know the mechanisms, structures and processes in which participant countries are, and identify elements that are useful to support countries which are in the initial stages of development of their NHRS.

Governance and stewardship was described as one of the core elements of NHRS and the discussion was based on the following questions: Should the State be responsible and accountable for the governance and

stewardship? What should or could be done when the State does not assume its responsibility?

The four discussion groups agreed that the NHRS governance and management are responsibilities inherent to the role of the State. This is a valid, argument regarding the impact of health research on the comprehensive development of countries and it should be considered as a strategic activity. In case the State fails to comply with this responsibility, all mechanisms involved should be utilized in order to ensure compliance. Different strategies can be applied provided they meet the reality and development status of each country.

Strategies Proposed

- Promote the creation of an autonomous health research organization with well-defined functions to facilitate intersectoral articulation, and make sure that lines of authority and reporting are clearly established for this agency.
- Take advantage of regional Ministers of Health acceptance of PAHO Research for Health Policy to promote the review and appropriateness of the legal framework aiming at strengthening the current NHRS and improving the processes to set up new NHRS.
- Strengthen the institutions (National Institutes of Health) for them to fill in the gap left by the State and to encourage the Ministry of Health to take a clearer stand on its role in the NHRS stewardship.
- Promote the advocacy of institutions involved in research to create and/or strengthen NHRS.
- Set up partnerships and procedures of work among different players aiming at strengthening the Ministry of Health authority.
- Insist on the search of mechanisms to make the Ministry of Health create spaces and convene players, respectively, to work with all sectors in the design and strengthening of NHRS.

Although the stewardship was defined as a function of the State, NHRS development and strengthening should be supported by the participation of multiple players to provide soundness to the process and to the very NHRS.

All participants agreed that the Ministry of Health should lead and govern the development of NHRS provided national organizations related to the technological and scientific development are formally related

and articulated in a clear and effective manner. Furthermore, the relationship with the academy, NGOs, professional societies, the industry and the organized civil society is essential, participating in an equitable manner and pursuing common goals.

Given the diversity of the countries represented, and the different levels of development of their NHRS, it was very important to ask and discuss whether there are models for the development of NHRS and, if any, which are the models that work? What are the key elements of these models?

Far from being able to define a model to establish a NHRS, discussion groups focused on outlining some basic components to create and strengthen it. First, the need to have a well-defined health research policy as a result of a process in which all possible national players participate was stressed. This policy should reflect the commitment of the State to guarantee a minimum funding and the ability to manage resources to promote research. Additionally, it should also be backed by a legal framework that ensures resources, qualifies the spaces of participation and consolidates the effective articulation of all sectors (mapping of players). The NHRS must rely on an Ethics Committee with power and authority supported by a legal framework, whose autonomy will be able to conduct research based on the basic principles of scientific research.

Another topic that came up in the discussion was the need to have a well-defined research agenda that meets the most relevant health needs of each country. One of the most controversial issues was the definition of priorities since there are multiple approaches and methods that do not always reflect the real needs for research. The consensus was to look for methodologies that would be able to articulate the agenda based on the most relevant problems combining the interests of research groups and financing organizations. This prioritization exercise should also be accompanied by the design of standards and indicators to assess and compare the progress and achievements of each country.

The challenge that all NHRS face is how to ensure the application of research findings to practice, the translation of scientific evidence to support the decision making process in health, the reorientation of programs and the better use of interventions and resources.

Based on the description of the situation where NHRSs develop, the main challenges and opportunities that NHRS face were also analyzed as well as what needs to be done to overcome challenges and take advantage of opportunities. The key in the development of a NHRS

is to think that it will be a gradual process based on a relationship of trust, to ensure the effective participation of all sectors, disciplines and fields of knowledge in health. Speakers endorsed by the organized community should be identified and supported (policy and legal framework) for them to have an effective participation in all processes. To this end, the articulation and coordination of different sectors should be strengthened to foster a common agenda, facilitating the access to, and promoting the use of existing resources and capacities in each country and in the region. An enormous benefit identified by the groups was the possibility to strengthen researchers' networks, supported by organizations like COHRED and ensuring the participation of countries with fewer resources.

A key element to the debate was the need to create the conditions to provide stability to human resources trained for research, promoting and advocating the establishment of various incentives for researchers and strengthening human resources qualifications for managing research within the Ministry of Health to better fulfill its role. An opportunity that opens with global interaction is the availability of information, resources and the opportunity to share research findings through technological tools like Open Access.

4.2 Human Resources for Health Research

The sustainable development of a country can only be accomplished with the support of trained human resources; and to this end, long-term investments are required for the technical and professional training and education in all fields of knowledge. Since this is a slow process, it is necessary to understand that this strategy is well beyond the academic scope per se and it ventures in areas of the Ministry of Health, technological development, industry and the society at large.

From the academic setting, physical and human infrastructures are required to start and manage training from the undergraduate level through specialization up to a postgraduate level. The training of human resources should include the acquisition of research skills on behalf of all professionals and specific skills for postgraduate programs. For research to become a professional option different stimuli from work and salary standpoints are required. Motivation towards research should be promoted among students through national research awards, innovation fairs and scientific meetings. An essential strategy to recruit the best minds is to link undergraduate and postgraduate theses to the priorities of research in the country and have the Ministry of Health, funding agencies and institutions of

research support and fund them. The quality in academic programs should begin with the mapping of players and institutions with quality programs in the region. High quality should be guaranteed through the training of teachers for research, including topics like research management, bioethics, writing of scientific articles, fund management, search of resources for research, and design of projects for research, among others.

The Ministries of Health should govern research in an inclusive way, involving academic organizations, civil society organizations, the industry, scientific, professional and technical associations and other interested parties. Together they should start reviewing the health status to set up research needs and priorities, align programs for the training of resources and establish mechanisms to ensure monitoring and evaluation plans. There should be a national policy in place so that research is regulated by a legal framework. Researchers' training and education has to be included in this policy as well as the establishment of incentives to encourage good research and the retention of researchers in their respective countries. A key element from the Ministries of Health perspective is to include the training for decision makers on how to use scientific evidence to strengthen programs and policies and train other professionals to translate scientific knowledge and optimize its use.

The global community should also participate in this strategy by benefitting from the technological resources currently available in virtual communication networks, favoring the establishment of global cooperation networks (regional) for the training of human resources, participating in successful experiences in remote or virtual training and state of the art courses, organizing training programs with a regional approach like the ones recently proposed by Instituto Mesoamericano de Salud Pública or the School of Public Health of South America (Escuela de Salud Pública de América del Sur). The global community can have a remarkable presence in the mapping of players (researchers, research agendas, resources for research) to collaborate in raising funds for the exchange of students and researchers among countries and organizations (Tropmed in Europe, for instance) and intensify advocacy in international fora. Technological resources currently available should favor the use of virtual platforms for the strengthening of workforce; for instance, to write articles in mutual cooperation, give training and update courses, and train researchers through online tutorials about research.

4.3 Financing for Health Research

The vision that countries can have towards research varies. It is often perceived as a luxury to which poor countries cannot have access given the large amount of needs overwhelming their governments. It is also considered an activity that requires no driving force from the government since it is only tangentially related to national priorities. The truth is that the most developed countries are the ones that harmonize the role of research with sustainable development and progress, and manage resources valuable to research because they consider it as a driving force for development.

Regional experiences display a wide range of situations. Some countries have neither public financing nor research priorities, other countries are starting to prioritize research but have no public financing at all. On the other hand, some countries have access to funding but do not have an agenda of priorities and a few get public financing and have well established priorities in research. In the strengthening process of NHRSS it is essential to advocate for a national policy that regulates the aforementioned situations. There should be an agenda of priorities that includes the development of basic research and a well-structured public investment to support it.

Countries interest to invest in health has yielded a significant increase in international funding available for research worldwide. Although most of this funding is concentrated in the more developed countries and is dedicated to researching the problems in the less poor countries, many others receive international funding to carry out certain types of research or to look into subjects of interest to donor organizations. These various types of funding bring about different problems. There is a flow of financial resources towards poor countries but there is no national regulation on the issues to be researched, or national resources are spent in solving problems that are not part of the country's priorities. Another unique aspect is that priorities are directed towards the population health problems but not towards what ought to be done to keep it healthy. An additional problem is that there is no regulatory framework in place, hence, funding is granted through individual initiatives or educational organizations that do not report to any national entity. This increases the knowledge gap about issues being researched; how much money is allocated to solving health problems,

how many human resources are involved in research and what kind of research is being conducted. The same is observed with grants from private foundations, academic institutions and the pharmaceutical-chemical industry since, by and large, research topics, amounts allocated and parties involved are not known. There are very few countries that develop and keep a comprehensive research registry. The benefit of having a national registry is enormous since it is critical to define resource training needs, set priorities in research, identify available funding sources and improve procedures to access other sources of funding.

One of the advantages of a meeting like the one held in Cuba, where national research leaders met, is that regional strategies can be formulated. For instance, strategies that would prevent the duplication of efforts and the waste of resources. These strategies are likely to be more successful because of the combination of talents, optimization of resources, the geographical impact and the evidence of collaboration. An additional benefit is that investment opportunities can be identified between the public and private sector across countries.

At a national level, a better coordination between the Ministry of Health and the Ministries of Education, Science and Technology would result in the formalization of sectoral funds for research avoiding duplications and encouraging synergies of collaboration. Another opportunity is to conduct multicentric trials to maximize the use of resources and talents scattered in different research institutes and centres within countries.

The strategies proposed to strengthen NHRS funding underscore the need of a legal framework to regulate public and private funds. An interesting though still controversial proposal is to have duties or taxes levied on health damaging products - like alcohol, tobacco, automobiles - and on commodities like oil to allocate the money collected to an exclusive fund for the development of health research.

4.4 Knowledge Transfer and Translation

Knowledge in a globalized society is in a fast-moving process of excessive production, in which access to information, evaluation of quality and translation of evidence are essential aspects for decision makers and potential users. This broad universe of information

requires a regulatory and organizational framework that allows identifying needs, defining policies and priorities and allocating the scarce resources available. To this end, countries should be able to develop leadership to organize, manage and modulate the development of research at a national level. Leadership should set the pathway (aim of the research project), the destination (research agenda) and the means (type of research). This leadership should be based on building a framework of trust where all stakeholders are represented and participate respecting the views of others and that potential users of research are the ones who most benefit from research results and products.

The report on results and the dissemination of research products arises as a key problem to create a national culture that promotes, respects, influences, defines, participates and monitors the research agenda and uses, disseminates, understands, exploits and consumes its results. The available formats for achieving these goals should be diverse and adjusted to the receiving audience and its specific needs.

Among the recommendations that came out of the debate it was identified that all research projects should include a specific plan for the dissemination of results that transcends the scientific academic space (conferences, conventions and seminars) and the media (scientific magazines, chapters of books, convention proceedings, etc.). There is a need to promote the creation of knowledge management and dissemination units within research centers to organize research results, translate them into insights for different users; evaluate and monitor access, consultation and use of these results in the formulation of programs, interventions and definition of specific policies.

Information technology development has kept within reach various tools that allow organizing databases that should be exploited to create a specific information system at national and regional levels like the Health Research Web.

Translation of knowledge is still an area under development that requires personnel qualified in the use of standards and good practices, specialized in the use of cutting edge technology and in the communication of knowledge.

Conclusions

The level of progress made by NHRS is as variable as the health and progress status of the countries of the region. However, as of the meeting in Havana, there is a more favorable context to strengthen NHRS at a regional level. The political will, the convergence of funding allocated to research and the steps taken by countries are a proof that research is gradually becoming a core element of the social and economic policy of the countries.

The development of NHRS should be understood as a gradual and complex process that involves the effective participation of all social sectors and stakeholders, and requires an environment of trust. The role of leadership of the state is a necessary activity that Ministries of Health and Councils on Science and Technology should assume, supported by a legal framework that defines functions, responsibilities and mechanisms of work among the different stakeholders to strengthen the governance and stewardship of the Ministry of Health. The formulation of a health research policy must be a participative process agreed upon by all stakeholders: The civil society, the academy, industry, education and technological innovation sectors. This legal and political framework should look for the institutionalization of a NHRS that enables the formulation of a priority based research agenda, supported by public and private funding and aimed at meeting the most urgent needs of the population. The last aim is to have an autonomous health research agenda independent from political instability or discretionary budgetary allocations, even though countries should move forward in many directions to achieve it.

Challenges identified are included in the definition of a transparent research agenda, in the area of human resources training, in the access to stable and growing financial resources and in the effective exchange and communication of research results and products. A remarkable challenge is to understand that health research goes beyond local or national boundaries and that answers can be found at regional and global levels.

Definition of a Research Agenda

The research agenda is perhaps one of the most significant problems that NHRS is faced with. There are political, social and health pressures that do not allow making a transparent selection of priorities. A concept developed during the meeting is that health problems in health services do not necessarily correspond to priorities that are to be researched. Priorities should be defined depending on who takes part in the process, how inclusive it is, what the interests that support them are and who allocates funds to meet the research agenda needs. The role funding agencies play in the excessive research of certain health subjects negatively affects the setting of priorities as it occurs with power groups and their influence on research centers, the academy and the scientific bureaucracy.

Considered as an inclusive process, the creation of a research agenda should identify all legitimate stakeholders of the scientific, technological, industrial and organized civil community; strengthen the articulation and coordination among the different sectors to foster the creation of a common agenda; guarantee the transparency in the processes of selection of priorities and fund allocation. To this end, indicators common to the region should be designed to attain accountability, monitoring and evaluation of the whole process in each country.

Training of Human Resources

Far from considering it as an independent process, the training of human resources for research should be coordinated with a training plan at a national level that meets the specific needs identified by the academy, the ministries and the civil society. The mapping of actors, the installed capacity, resources, research projects and products are a requirement that should become gradually enriched with the update of outcomes. The academy and the ministries have much to propose to strengthen local skills, but it is also essential that the global community is involved in this task in favor of human resources. The organization of regional collaboration networks to train human resources is mandatory in the global era of communication. There are many successful experiences in training through virtual

mechanisms and programs that can be used without the need to fund long stays and travels of students and teachers. The use of virtual platforms for the strengthening of the task force through tutorials and e-learning courses is more feasible than ever, and are very valuable and innovative tools in an era of scarce resources.

It is evident that the culture in favor of research should be taught in the undergraduate level and become consolidated in postgraduate programs. Academic curricula should respond to the standards of education quality and count on qualified teachers motivated to work in an environment in search of excellence in research and work ethics. Students should be comprehensively trained in the general and specific research fields of their choice. Researchers' curricula should include courses of methodology and research management, bioethics, communication techniques to translate results, scientific writing, and look for sources of funding, resources for research and study designs. Their job should be related to priority health problems in each country, a country that guarantees their stability and permanence in the task force through a decent salary compensated with productivity and academic performance incentives. It is critical to advocate for increasing incentives towards research.

Access to Stable and Growing Financial Resources

A NHRS without financial support is doomed to remain underdeveloped. It is not easy to guarantee public funds for research, and it is even more difficult for the investment in research to meet international standards. Lessons learnt from different countries that have consolidated their NHRS show that it is essential to institutionalize NHRS to get funding. In addition, there must be a research policy, a legal framework and an agenda of priorities to support them.

Opportunities to have access to new funds for research are growing due to the relevance that investment in health currently has. All countries should have a fund regulation in place that defines how much is to be allocated, what they are allocated to, how they are allocated and what is to be expected from this funding. A National Research Registry is an effective

strategy to correct funds duplication and dispersion, articulating all the stakeholders with the Ministries of Health, Science and Technology. The methodology approach of multicentric trials also optimizes the limited use of financial and human resources and promotes research of regional problems. Another tactical resource of governments would be to levy duties or taxes on industries that manufacture health damaging products (tobacco, automobiles, alcohol, etc.) to allocate the money collected to health research. Its implementation is still controversial since it is very difficult to settle the interests of both parties (health vs. risk; public vs. private good). The truth is that local experiences show new interaction and funding alternatives between the public and private sectors, north-south, south-south and international cooperation.

Effective Exchange and Communication of Research Results and Products

The world of health is one of the most dynamic and productive sectors in terms of the bulk of scientific knowledge and the speed of its production. Knowledge translation to be used by decision makers, policy makers, health program managers and the general public, is a complex but critical task and should be part of a national plan of dissemination of research results. Communication of results should use multiple ways and formats, depending on the users with the aim of facilitating access to information. The windows of opportunities that come up in this field in particular, can provide much more relevance to knowledge and hence, guarantee that research persists as an essential function within health programs. The use of communication technology is an essential component and must be part of the most widely used tools to make direct and indirect benefits of health research known.

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APPENDIX 1

Program

DAY 1: Sunday, November 15th, 2009, 13.00 – 18.30

VENUE: Hotel Meliá Habana

| | | |
|---------------|---|---|
| 13:00 – 14:00 | Registration | |
| Time | Session 1: Opening Plenary Moderators: Niviola Cabrera Cruz, Reinaldo Guimarães | Speakers |
| 14:00 – 14:30 | Welcome Speech | Carel IJsselmuiden, COHRED Luis Gabriel Cuervo, PAHO Stephen Matlin, GFHR Niviola Cabrera Cruz, MINSAP, Cuba |
| 14:30 – 14:45 | Objectives and Processes of the Meeting | Sylvia de Haan, COHRED |
| 14:45 – 15:00 | The Conference in Rio: Process and Outcomes | Francisco Becerra, COHRED |
| 15:00 – 15:20 | Review of the Development of National Health Research Systems (NHRS) in Latin America (based on information about 14 countries) | Jackeline Alger, Instituto Antonio Vidal, Hospital Universitario, Tegucigalpa, Honduras |
| 15:20 – 15:30 | Discussion | Everybody attending the meeting |
| 15:30 – 16:00 | Break | |

| | | |
|---------------|--|---|
| Time | Session 2: Progress of NHRS in Latin America Coordinador: Charles Gardner | Speakers |
| 16:00 – 16:15 | Session 1: Opening Plenary Chairs: Niviola Cabrera Cruz, Reinaldo Guimaraes | Gabriela Montorzi, COHRED |
| 16:15 – 16:30 | Case Study: Costa Rica | Luis Tacsan, Ministry of Health, Costa Rica |
| 16:30 – 16:45 | Case Study: Paraguay | Maria Stella Cabral de Bejarano, Ministry of Health, Paraguay |
| 16:45 – 17:00 | Progress Made since the Conference in Rio: Development of Regional and Global Policies | Luis Gabriel Cuervo, PAHO |
| 17:00 – 17:30 | Discussion | Everybody attending the meeting |

| Time | Session 3: Open Session | |
|---------------|--|----------|
| 17:30 – 18:30 | Booth to share and disseminate information | Cocktail |
| 20:00 – 23:00 | Dinner | |

DAY 2: Monday, November 16th, 2009, 8:30 – 15:00

VENUE: Hotel Meliá Habana

| Time | Session 4: Challenges for the Advance in the Development of National and Regional NHRS - Group Discussions Moderator: Mario Paredes | Speakers |
|---------------|---|--|
| 8:30 – 8:45 | Key Messages Day 1, introduction to Day 2 | Luis Gabriel Cuervo, PAHO |
| 8:45 – 9:00 | Health Research Web | David Abreu, COHRED |
| 9:00 – 9:15 | Case Study: Brazil | Moisés Goldbaum, University of Sao Paulo, Brazil |
| 9:15 – 9:45 | Introduction to "World Café" Explanation on How it Works Introduction to Tables and Topics to be Discussed Appointment of Groups | Gabriela Montorzi, COHRED |
| 9:45 – 10:00 | Break | |
| 10:00 – 12:00 | World Café | Everybody attending the meeting |
| 12:00 – 13:00 | Lunch | |
| 13:00 – 14:00 | Report about Discussions at the World Café | All moderators |

| Time | Session 5: Conclusions of the Meeting Moderator: Luis Gabriel Cuervo | |
|---------------|---|--|
| 14:00 – 14:40 | Summary of Key Issues and Follow-up Proposal | |
| 14:40 – 15:00 | Closing Remarks | |

APPENDIX 2

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