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## Building Research Capacity across and within Low- and Middle-Income Countries: The Collaborative Hubs for International Research on Mental Health

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National Institutes of Health (NIH) has a long history of engaging in global health research and research training activities. In 2010, Francis Collins, Director of the NIH, identified global health as a priority for the agency, noting the importance of increasing research on neglected illnesses and non-communicable diseases that contribute to high levels of morbidity and mortality in low-income countries [1]. Collins urged building research capacity and increasing training opportunities for investigators in low- and middle-income countries (LMICs). That same year, the National Institute of Mental Health (NIMH) released a funding opportunity announcement, the Collaborative Hubs for International Research on Mental Health (CHIRMH), to stimulate investigator-initiated research focusing on mental health interventions in World Bank–designated LMICs through integration of findings from translational, clinical, epidemiological and policy research. A major focus of the initiative

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specifically addressed the development of opportunities and capacity for conducting mental health research.

The CHIRMH initiative invited applications that would establish regional research hubs to increase the evidence base for mental health interventions in LMICs. Specifically, the purpose of the CHIRMH program was to expand research activities to reduce the mental health treatment gap, the proportion of persons who need, but do not receive care [2–4]. Tackling the treatment gap demands effective collaborations among researchers, mental health service users and providers, and government agencies that implement services.

Hubs were expected to establish resources and infrastructure for research that would benefit the hub's geographical region; serve as local, regional, national, and international research resources for established and promising investigators; and provide opportunities for research training, career development, and mentoring of individuals from the hub's region who show potential for significant contributions and independent mental health research careers.

Five grants, representing three geographic regions, were awarded under this initiative: 1) the Regional Network for Mental Health Research in Latin America (RedeAmericas); 2) the Latin American Treatment and Innovation Network in Mental Health (LATIN-MH); 3) the South Asian Hub for Advocacy, Research and Education on Mental Health (SHARE); 4) the Africa Focus on Intervention Research for Mental Health (AFFIRM); 5) the Partnership for Mental Health Development in Sub-Saharan Africa (PaM-D). Due to the absence of a priori coordination among applicants Brazil and South Africa are included in more than one hub. This article will describe the capacity building efforts of the five hubs.

## The Hubs

### RedeAmericas

RedeAmericas is a network of mental health professionals in Latin America and at Columbia University that aims to promote mental health research through demonstration projects and the training of mental health researchers. RedeAmericas has two lead sites in Latin America—Santiago, Chile (University of Chile), and Rio de Janeiro, Brazil (Federal University of Rio de Janeiro)—and additional research sites in Argentina and Colombia. The capacity building component of RedeAmericas offers training opportunities to a broad range of professionals who have the potential to conduct mental health research in Latin America.

The main thrust of the capacity building component is the training of selected young professionals, known as awardees, in the conduct of research. To select these awardees, advanced students (e.g., doctoral candidates), trainees (e.g., residents in psychiatry), and early-career researchers were encouraged to apply for the RedeAmericas awards. Awardees were selected by a committee that included Latin American and Columbia investigators on the basis of demonstrated interest in research and relevant accomplishments (e.g., past participation on study research teams in their countries). Awardees were invited to participate in a 2-year training program. Career development plans for awardees were individualized and flexible, depending on individual development needs of each awardee.

All awardees are required to participate in the mentorship program (described below) and to take an epidemiology introductory online course made available to them through Columbia University (unless the awardee had a demonstrable knowledge of basic epidemiological concepts). The following three additional activities were offered to all awardees: 1) 1-week traditional short courses at Columbia University offered each June in New York at the Epidemiology and Population Health Summer Institute at Columbia University; <http://cuepisummer.org>; 2) Summer Institute at the University of Chile School of Public Health in Santiago, offered each year in January, which offers brief courses in quantitative and qualitative research methods; and 3) participation in professional meetings relevant to the interests of the awardee and other activities designed specifically to meet the training needs of an awardee (e.g., an awardee with an interest in data management for large studies came to Columbia University to be trained by a senior data management specialist). For a summary of the main activities of the hub please refer to Table 1.

The mentorship program is the cornerstone of the capacity building activities of RedeAmericas. Each awardee is assigned a local mentor and a Columbia University mentor. Awardees meet with their local mentor in-person and communicate with the US mentor via e-mail and occasional calls, usually conducted via internet. Although most awardees have taken advantage of the mentorship offered by their local mentors, the degree to which they have engaged with their US-based mentor has varied from minimal to intense mentorship and collaboration. One of the goals of mentorship is to have an awardee apply for a first-time grant, usually a small grant.

## LATIN-MH

LATIN-MH was awarded later than the other hubs, and its capacity building efforts are in the early stages. It has its core center at the University of São Paulo, Brazil, and has a sub-center in Lima, Peru, at the Universidad Peruana Cayetano Heredia. The hub also has as partners the London School of Hygiene and Tropical Medicine and Northwestern University in the US and three satellite centers in Guatemala, Ecuador, and Colombia.

The hub was established with three main goals: 1) to build capacity with a focus on strengthening within-region efforts so that sustainability and autonomy can be rapidly achieved; 2) to go beyond the traditional boundaries of mental health and develop strategic partnerships with other disciplines and health-research groups; and 3) to fully integrate effective mental health treatment into existing primary care and community health systems.

The overall goal of the capacity building component of LATIN-MH is to prioritize training in research methodologies that can generate sound evidence on the best strategies to reduce barriers to the treatment of mental disorders. The three main capacity building efforts of LATIN-MH are fellowships, training courses, and the dissemination of information. Given that the hub was recently established, only two capacity building activities are listed in Table 1. We refer below to activities that are planned or recently initiated. The hub selected five post-doctoral fellows, who have full-time posts of 12 months each, to work with LATIN-MH hub investigators to produce scientific output and to help developing further research proposals.

LATIN-MH is planning a randomized control trial (RCT) that will take place in Brazil and Peru. This RCT will provide fellows with “hands-on” experience in the conduct of research.

The LATIN-MH website (<http://www.latinmh.com.br>) is a repository for research tools and a center for communication among the hub’s researchers and interested local researchers. On the website, researchers can access research papers and tools, the presentations and videos from the first LATIN-MH Capacity Building Symposium, and recent issues of the LATIN-MH newsletter.

## SHARE

SHARE is a collaborative network of academic, research, and policy institutions spread in six South Asian countries (India, Pakistan, Nepal, Sri Lanka, Afghanistan, and Bangladesh). Its aim is to establish a hub of engaged and enabled partners in South Asia and to carry out research that answers policy relevant questions related to reducing the treatment gap for mental disorders in the South Asian region, through a concerted program of research on task-shifting [5, 6] and research capacity building [4].

SHARE has developed and implemented six capacity building strategies. First, as shown in Table 1, studentships are offered for short courses. The studentships build capacity in early-career and mid-level researchers from the South Asian region through participation in annual short courses. SHARE also offers fellowships that allow individuals to participate in mentored research. SHARE has developed and offered a 2-year part-time course on mental health services research in humanitarian contexts. The objective of this course is to increase the capacity of researchers working in areas affected by conflicts and disasters. An online discussion program was launched recently with the goal of forming a peer network for the development of research skills. The forum offers participating mental health researchers support, guidance, and the opportunity for networking with peers and mentors. SHARE also offers distance learning short courses. The first distance learning course, Implementation science for public health interventions, was successfully completed.

SHARE and RedeAmericas have jointly developed an online repository of “supercourse” lectures focusing on global mental health that are available in open-access format and can be incorporated into any capacity building program around the world. SHARE has recognized that certain countries within South Asia, such as Afghanistan and Bangladesh, are more disadvantaged than others in their capacity to conduct mental health research. SHARE is making systematic efforts to increase the number of awards to those countries and the participation of individuals in the capacity building programs.

The core capacity building team systematically tracks the outcome of the training activities offered to awardees. The team is working on the development of monitoring and evaluation of capacity building activities. SHARE capacity building activities are summarized in Table 1.

## AFFIRM

The AFFIRM hub is a network of six Sub-Saharan African countries (Ghana, Ethiopia, Malawi, South Africa, Uganda, and Zimbabwe). The hub activities include research in the

form of two RCTs, one each in South Africa and Ethiopia, as well as policy engagement within the region and capacity building. The capacity building component has two objectives: to increase skills in public mental health research in the hub countries through funding of postgraduate research resulting in an MPhil or PhD in Public Mental Health and ad hoc research training in public mental health through short courses. Table 1 summarizes each of the capacity building activities.

The Alan J Flisher Center for Public Mental Health, a partnership between University of Cape Town (UCT) and Stellenbosch University (SU), offers a master of philosophy degree (MPhil) in public mental health. The AFFIRM hub funds one fellowship for each of the hub countries, excluding South Africa, for each of the 5 years of the Hub's duration. Importantly, the applicant must demonstrate leadership potential and likelihood of working within a context that promotes public mental health in his or her country. The country partners are integrally involved in the selection and support the primary supervisor at UCT or SU. Where relevant, in-country support staff are appointed as co-supervisors for the fellows. The MPhil starts with a 3-week course of introductory lectures that culminates in the presentation of a draft proposal by each fellow. The fellows then return to their country and complete their proposal, obtain ethical clearance and implement data collection, analysis, and write up. The challenges experienced by fellows so far include difficulties in academic writing in English, limited face-to-face time with their primary supervisors, struggles to obtain both university and in-country ethical approvals, costs of data collection, and unreliable Internet access.

A number of PhD students are linked to the two RCTs at UCT and Addis Ababa University, which has significant benefits in providing a context for PhD students to choose topics embedded in an ongoing RCT and an opportunity to perform in-depth analysis of trial data.

Monitoring includes measuring throughput of AFFIRM-funded fellows completing the MPhil and PhDs, successful publications of MPhil and PhD dissertations, and successful application of public mental health research skills in the context of work including being promoted to positions of leadership within the health care system in the fellows' respective countries.

## **PaM-D**

The PaM-D hub spans five countries in Sub-Saharan Africa (Nigeria, Ghana, Kenya, Liberia, and South Africa). As with the other hubs, research in the form of an RCT, and capacity building form the cornerstone of scientific activity. Capacity building in PaM-D is primarily aimed at strengthening research capacity, enhancing cross-disciplinary mental health research, and facilitating sustainable mentoring relationships. PaM-D is building a repository of Web-based training and informational resources for research trainees. The main capacity building activities are succinctly described in Table 1.

To develop capacity across a broad range of mental health stakeholders, PaM-D ran a 2-week Mental Health Leadership and Advocacy Workshop during its first year of grant funding. The workshop was hosted by the Mental Health Leadership and Advocacy Program and is aimed at building critical skills in applying research evidence to formulate policy, consultative decision-making and operational management.

Emerging researchers have received financial support, in the form of seed grants, and research mentoring. Eligible applicants from the five PaM-D countries are required to have postgraduate experience as mental health practitioners or researchers in public mental health and an interest in developing and evaluating mental health interventions.

As noted in Table 1, PaM-D has hosted introductory and intermediate biostatistics short courses in Cape Town. Biostatistics expertise is in critically short supply in Sub-Saharan Africa [7]. Training programs aimed at building both long-term and short-term capacity exist but are primarily, if not exclusively, north-to-south linkages and do not specifically focus on mental health training [7]. Courses such as those offered by the PaM-D can provide a jumpstart in biostatistics; however, sustainable sources of funding will be required. Other challenges to training in Sub-Saharan Africa include the high cost of advanced statistical software packages, unreliable Internet connectivity, and the relative paucity of ongoing local mentors.

Finally, a key area of PaM-D capacity building is scientific writing through a collaborative effort with the participation of the Institute of Psychiatry, Kings College, London. To further strengthen scientific writing and presentation skills, PaM-D hosted a 4-day writing workshop. A pressing need and priority is to find ways to sustain capacity building activities beyond the 5-year lifespan of the PaM-D grant and securing funding to make this possible.

## Discussion

The Collaborative Hubs for International Research on Mental Health constitute a highly innovative NIMH initiative to promote mental health research and capacity building in LMICs. Because the funded activities are ongoing it is premature to evaluate the impact of the initiative.

Although each hub has had a unique experience, there are commonalities in these experiences. All hubs are challenged by the need to reach future investigators residing in countries far apart from each other. The cost of transportation and accommodations for participating in seminars and meetings can be prohibitive. Similarly, organizing demonstration projects that can be carried out across countries is a major logistical challenge. Thus, the use of Web-based teaching, mentoring, and research collaboration is important. The main limitation of traditional Web-based courses is the lack or limited opportunities to ask questions. Creative, inexpensive approaches (e.g., use of a listserv, social networking, and online forums) can overcome some of these limitations.

It can be difficult to have common indicators and approaches for monitoring the progress made by awardees. Monitoring of trainees across countries and regions requires the use of indicators that can be adapted to local circumstances. For example, in some middle-income countries (e.g., Chile and Brazil), one of the goals of mentors is to encourage awardees to apply for a local grant before applying for national or international sources of funding. This opportunity is not applicable in most low-income countries where locally funded grants are nonexistent.

Another barrier specific to some hub countries is language. Research is taught and published predominantly in English, the *lingua franca* of science. Awardees from countries where most university-level students are taught in English (e.g., India, South Africa, Nigeria) do not face the same language barriers as those trained in Spanish, Portuguese, or French (e.g., Latin America, Sub Saharan Africa).

A major thrust of the global mental health movement is research on task shifting. Although interventions delivered by community health workers may be welcomed in most low-income countries, communities may resist task-shifting approaches in some middle-income countries. Consumers may question the fairness of receiving these interventions, while many of their compatriots are treated by highly trained mental health professionals. They may not be aware that in some western nations like the US, mental health services are often delivered by nonmedical professionals, such as social workers and psychiatric nurses.

The applicability of western methods of treatment to impoverished populations in LMICs has been questioned. Integrating services developed in high income countries with local cultures and traditions represents a formidable challenge. A critique of the transfer of services and treatments to LMICs suggests that the global mental health movement ignores the various indigenous modalities of healing practices commonly applied in other cultures [8, 9]. It is our hope that by training local researchers, we can ensure that the interventions they develop will incorporate local cultural and socioeconomic contexts. Regardless of the type of research that is promoted, research methodology has universal applicability, although cultural adaptations may be needed [10].

The capacity building activities of the hubs focus on facilitating development of research skills in the area of public mental health. The hubs do not award degrees but fund or facilitate activities that complement or enhance learning provided by academic institutions and provide mentoring to budding researchers. The importance of these capacity building activities is not only to enhancing skills locally but also to developing networks of emerging and senior researchers within and across hubs.

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### Implications for Academic Leaders

- Research capacity needs to be built with respect to cultural differences.
- Addressing the sensitivity to experiences and perceptions of patronization among trainees and colleagues in LMICs is essential.
- Barriers to capacity building include language, especially scientific communication in English, limited resources (e.g. limited access or lack of access to sophisticated statistical analysis packages), and suboptimal infrastructure (e.g. slow Internet access in some LMICs).
- Extending research capacity to a wide range of settings, including low-income countries where there is little or no locally generated research, is feasible and there are a variety of ways to implement these efforts, including distance learning and Web-based interactive approaches, as well as more traditional approaches (e.g., mentorship, lectures, student and staff exchanges, visiting professors).

**Table 1**Capacity Building Activities of Hubs to Generate Mental Health Research in Low and Middle Income Countries<sup>a</sup>

Hub	Type of Capacity Building Activity	Objective of the Activity	Course /Activity Structure	Monitoring of Outcomes
<b>Rede Americas</b>	Master of Science/Master of Public Health	Develop research skills	Typically 2-year, full-time coursework	Degree granted
	Doctorates	Build advanced epidemiological and research skills	Varies by institution	Degree granted
	Epidemiology and Population Health Summer Institute at Columbia University	Focused on specific skills, e.g., multilevel modeling.	5 half-day courses	Attendance rate
	University of Chile Summer Institute School of Public Health	Wide variety of courses	Varies	Certificate of completion
	Short courses/conferences	Global mental health issues and epidemiology	Conferences or structured short courses	Attendance
	Mentorship/grant preparation	To provide awardees with a local mentor and a Columbia University mentor	Periodic contact with mentor (in person or via e-mail/Internet)	Record of contact with mentor; number of grant applications submitted
<b>LATIN-MH</b>	LATIN-MH capacity building symposium	Integration of mental health into primary care (panel); and train beginning researchers (workshops)	A panel and two workshops; RCT <sup>b</sup> designs; mobile technological interventions in global mental health	Attendance rates
	Fellowships	To enhance the development of research capacity	Uses a hands-on approach to hub-related studies and development of research; local and external mentors	Number of publications and participation in hub activities
<b>SHARE</b>	Studentships	To build capacity in early- and mid-level researchers	Three courses were offered to students	Attendance, pre- and post-training survey, tracking of students
	Fellowships	To build research capacity in mid-level researchers	Fellows carry out mentored research in South Asia	Publications and tracking of fellows
	Mental health services in humanitarian context	Conducting research in conflict and disaster-affected areas	2-year course	Attendance
	Implementation science course	Short distant learning course with open access	Implementation science and program evaluation	Attendance and course completion
	Global mental health lectures/online forum	To post global mental health lectures (Supercourse) and enhance communication (forum)	Online course and forum targeting capacity building activities	Number of lectures posted and website visitors (Supercourse)
<b>AFFIRM</b>	Master of Philosophy in public mental health	Build skills in research in public mental health	2 years, including completion of a research study	Number of graduated students and student-generated publications
	PhD in public mental health	Build skills in research in public mental health	3–5 years of study based within a research team	Publications and graduation rate
	Short courses: RCTs and operations research	Conduct of RCTs and research methods	2–5 day courses	Attendance rates and post-course questionnaires

Hub	Type of Capacity Building Activity	Objective of the Activity	Course /Activity Structure	Monitoring of Outcomes
PaM-D	Mental Health Leadership and Advocacy Programme	Using critically reviewed evidence for policy formulation	2-week courses	Attendance rates and post-course questionnaires
	Biostatistics: introductory and intermediate courses	Introduce basic statistical concepts and interpreting statistical analyses	5-day courses	Attendance rates and post-course questionnaires
	Small grants	Seed grants for early career researchers	Not applicable	Project and budget progress reports
	Scientific Writing Workshop	Training in scientific writing, journal publication and oral presentation skills	Foci: Research designs, scientific writing	Post-workshop evaluation and outputs

<sup>a</sup>This table lists capacity building activities for illustration purposes. Most hubs have initiated or completed additional capacity building activities not listed in this table.

<sup>b</sup>RCTs = randomized clinical trials