

Fostering global primary care research: a capacity-building approach

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ABSTRACT

The Alma Ata and Astana Declarations reaffirm the importance of high-quality primary healthcare (PHC), yet the capacity to undertake PHC research—a core element of high-quality PHC—in low-income and middle-income countries (LMIC) is limited. Our aim is to explore the current risks or barriers to primary care research capacity building, identify the ongoing tensions that need to be resolved and offer some solutions, focusing on emerging contexts. This paper arose from a workshop held at the 2019 North American Primary Care Research Group Annual Meeting addressing research capacity building in LMICs. Five case studies (three from Africa, one from South-East Asia and one from South America) illustrate tensions and solutions to strengthening PHC research around the world. Research must be conducted in local contexts and be responsive to the needs of patients, populations and practitioners in the community. The case studies exemplify that research capacity can be strengthened at the *micro* (practice), *meso* (institutional) and *macro* (national policy and international collaboration) levels. Clinicians may lack coverage to enable research time; however, practice-based research is precisely the most relevant for PHC. Increasing research capacity requires local skills, training, investment in infrastructure, and support of local academics and PHC service providers to select, host and manage locally needed research, as well as to disseminate findings to impact local practice and policy. Reliance on funding from high-income countries may limit projects of higher priority in LMIC, and ‘brain drain’ may reduce available research support; however, we provide recommendations on how to deal with these tensions.

Summary box

- ▶ Primary care research capacity building is the process by which individuals and organisations obtain, improve and retain the skills, knowledge and tools needed to create high-quality research to inform the delivery of primary care and lead to improved health outcomes for the population.
- ▶ Research capacity building outside of an immediate context is currently led by a very select group of institutions, even in developed settings, but should become a more common paradigm around the world.
- ▶ Barriers to developing research capacity in emerging settings include clinical load, lack of mentorship and academic programmes mandating trainees to work independently of other trainees.
- ▶ Capacity building occurs through train-the-trainer approaches, multiple layers of supervision and mentorship, and building communities of research including practice-based research networks.
- ▶ Resisting the artificial divide between clinicians and researchers and promoting interdisciplinary collaboration will ensure relevance and anchor research in real-world needs.

(LMIC). Research in PC is thus essential for high-quality PC delivery, and sits at the core of strong health systems.

A Gates Foundation-funded project in 2017, coordinated by Ariadne Labs, identified key areas of PHC where critical evidence gaps exist and new research is needed.^{4,5} These gaps were in the areas of PHC organisation and models of care,^{6–8} financing,⁵ governance,⁹ and quality, safety and performance management.¹⁰ This led to the formation of an international PHC Research Consortium, which aims to conduct and support research to address these priority knowledge gaps from LMIC.

PC has to operate in the socioeconomic and cultural context of the communities it serves; hence, research must be conducted in the local context to reflect the needs of patients, populations and practitioners. Too



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often, PC research is conducted by health scientists from high-income countries (HICs), rather than PC researchers based in LMICs where the research takes place.¹¹ Consequently, there is a global demand for PC research expertise within LMICs and local communities. Many LMICs are still developing their PC infrastructure and workforce, but programmes that teach PC research skills are being instigated in many countries.

PC research capacity building is the process by which individuals and organisations obtain, improve and retain the skills, knowledge and tools needed to create high-quality research to inform the delivery of PC and lead to improved health outcomes for the population. Even in well-resourced contexts, few institutions consciously seek to build capacity at a regional let alone global level—one US study estimated that only 3.3% of institutions sought such a ‘replicative’ role.¹²

This paper arose from a workshop held at the 2019 North American Primary Care Research Group (NAPCRG) Annual Meeting addressing research capacity building with examples from LMICs. Our aim is to explore the current risks or barriers to PC research capacity building, identify the ongoing tensions that need to be resolved and offer some solutions. All the authors participated in the NAPCRG workshop in person or virtually and agreed on illustrative cases around which to base our analysis. Five illustrative cases are presented, from which other countries might learn about what does or does not work.

ENVIRONMENTAL SCAN

The current state

Barriers to facilitating research capacity building include the PHC service infrastructure, which needs to collect data in a way that allows input to research, as well as having strong local academic partners to play pivotal roles in hosting and conducting studies. Involvement with overseas contacts and training risks the emigration of skilled individuals from the LMIC workforce. This ‘brain drain’ is often considered in the context of LMIC to HIC emigration, but also exists from rural to urban, generalist PC provider to a more specialised one, and between countries on the same continent; each is hazardous, as skilled individuals are vital in LMICs to build capacity at the local level. Funding bias towards bioscience and laboratory-based research may threaten what and/or how PC research is conducted. Adding to this systematic funding bias is the limited number of research grants that explicitly allow capacity building.

Mainstream academic priorities do not necessarily reflect the needs of communities. In resourced contexts, there may be an increasing divide between researchers and practitioners because of evolving funding landscapes—researchers must devote more and more time to pure research to compete, making them less available to practice settings. In low-resource contexts, too often the issue is a lack of proper needs assessment and community engagement. Furthermore, HIC priorities or frameworks

are not always relevant to LMIC. A current example is the COVID-19 pandemic, which HICs with poorly coordinated PC systems are having trouble navigating, for reasons very different from LMIC with lack of basic resources or access to care.

Examples: understanding the landscape

Guyana

Family medicine is a new specialty in Guyana, its inaugural class graduating in 2018. At present these family doctors, along with support of senior faculty from the University of Ottawa, are responsible for the daily operations of the Family Medicine Programme. Developing research has been challenging. Initially, a local mentorship structure was not in place for fostering research, and different visiting clinical faculty from HIC would review work done by residents and give conflicting feedback. Other challenges were young faculty not being very experienced in research writing; little time to dedicate to research because of the demands of clinical practice; poor access to statistical software and statisticians; and lack of funding.

To overcome these challenges, layers of supervision were established to facilitate the successful completion of research projects. Each resident was assigned research buddy and supervisors, and all projects reviewed by both the Family Medicine Programme in Ottawa and by a local committee.

Didactic sessions on how to develop a research question and methods were incorporated into the curriculum. The programme has formed a relationship with the Caribbean College of Family Physicians, which has a mandate to foster research. Collaborations with the Institute of Health Science Education, the Georgetown Public Hospital Corporation and the Academics Without Borders (AWB) aimed to start train-the-trainer research skills workshops for programme directors and faculty. AWB espouses a micro-research paradigm that permits residents to ‘work at their level’ and pursue projects that answer a meaningful research question that can be answered in the time they have available.

Through these partnerships, graduating family medicine residents have had the opportunity to present their research projects at national medical research conferences and publish their work.

Primagamed

In sub-Saharan Africa, the Primafamed network was established with funding from the Belgian government, incorporated 40 institutional members from 25 countries in the region, and stimulated regional inter-LMIC collaboration. It has supported the development of family medicine master’s programmes with a PC research component, while encouraging a community-oriented PC philosophy. Through the programme, HIC PC academics contribute their expertise, but LMIC PC academics determine the actual content. Primafamed’s annual meetings include workshops on research methodology and scientific

writing, as well as opportunities to present and collaborate on research projects. The *African Journal of Primary Health Care and Family Medicine*, established in 2008, provides a supplement on PC research methods and a venue for emerging researchers to publish. There are attempts to grow doctoral programmes to reach a critical mass of researchers and improve supervision. In South Africa, a new practice-based research network, supported by Stellenbosch University, identifies research questions and conducts research relevant to the communities they serve.¹² The University also supported Primafamed's participation in the establishment of a new global PHC Research Consortium, which has the potential to access funding, collaborate across countries, address higher level questions and build research capacity.

However, the situation remains challenging. Most universities in the region are conservative, favouring bioscientific research; they are slow to embrace new innovative and qualitative methodologies, and obtaining ethics approval for proposals can be protracted.¹³ There are few established academic PC research centres, insufficient qualified supervisors and limited funding. More international support, through external supervisors and mentors, and collaborative funded projects, would be helpful.

Afriwon research collaborative

Afriwon, the young African family doctors group in WONCA (the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians), has developed a research training and mentorship pilot programme for African family doctors, which seeks to build research capacity through an innovative online learning programme. The curriculum is supported by the book 'How to Do Primary Care Research'¹³ and involves an online course of 10 stepped modules (voice-over PowerPoints, podcasts) delivered over 4 months with regular web-based meetings and social media communications. Assessment is formative. Considerable mentorship is provided to each student from local researchers (not necessarily PC) and volunteer family physicians from sub-Saharan Africa, Europe and USA. After the formal programme concludes, regular research 'Work in Progress' meetings are held over the next year with ongoing e-mentorship and connection via social media platforms. The importance of maintaining connections with local collaborators is stressed.

Nigeria

Nigeria, now a middle-income country, began its national 4-year general practice/family medicine training programme in 1979.¹⁴ The programme includes a research dissertation period of 3–6 months to build the research capacity of future family physicians. However, most training centres are hospital-based rather than university-based, with poor incentives for PC research following postgraduate training. This limits pursuit of high-quality research and discourages efforts to build

translational research skills necessary to improve PC delivery and services.

Over the years, establishment of academic family medicine departments in the universities has increased, with improvement in quality PC research. Since 1998, the Society of Family Physicians of Nigeria has been building the research capacity of family physicians through continuing medical education sessions at its annual scientific meetings, in addition to establishing the *Nigerian Journal of Family Practice* to disseminate research findings. In 2014, the Society established a practice-based research network involving collaboration of 76 family physician training centres. The network continues to build research capacity of family physicians and their trainees; however, there is need for incountry PhD-level training to boost research capacity.

PC research is hampered by poor funding, poor incentives, weak infrastructure, low quality of studies, low levels of international collaboration and poor knowledge translation into PC practice and policy. Addressing these challenges through innovative collaboration, enhanced funding and robust mentorship is necessary for improved PC delivery.

Malaysia

Malaysia, an upper-middle-income country, has developed considerable research capacity over the past two decades. The main stakeholder is the Ministry of Health, which has invested in PC research. Priority areas for PC were identified. Malaysia has introduced a family medicine master's programme with research theses and is growing its doctoral programme. Initially PhDs were undertaken in developed countries, but now there is sufficient supervision to do these in Malaysian universities. PC research is housed in one of the six health and research institutes formed by the government. They have established a clinical research unit, with clinical trials now being conducted in PC as well as hospital settings. An Academy of Family Medicine and a Malaysian Primary Care Research Group have been set up, with research funding provided by the government.

It is seen as important to maintain close connections with other countries, especially HIC, for ongoing support in training, mentorship and knowledge transfer. The focus remains on research priorities with relevant and useful implementation studies.

ANALYSIS

Despite numerous challenges, there are many opportunities for building capacity in PC research globally. This goal is a timely and necessary one, as the world grapples with a deadly pandemic and struggles to understand how to make front-line systems more nimble and resilient. Before making recommendations, we review the most common tensions facing research capacity building.

Tensions in HIC and LMIC

Tensions preventing research in HIC are many, and largely unchanged over the past 30 years.^{15–22} Although

**Table 1** Tensions and recommendations for building primary care research capacity in LMIC

| Tension | Solution |
|---|---|
| <i>Micro</i> | |
| Lack of mentorship. | Multiple levels of supervision. Clear accountability and processes. |
| Clinical load. | Advocacy at institutional level for dedicated research time. Implementation research (focused on practical improvements at the clinic level). |
| Lack of knowledge and tools. | Formal training. Remote support e-learning. |
| <i>Meso</i> | |
| Mono-disciplinary approaches. | Interprofessional education and collaboration. Cross-appointments across disciplines. |
| Tendency for universities to want trainees to work independently on research. | Encourage residents to work on interlocking projects, continuation of former research. Micro-research approaches (student-generated content for collaborative learning). |
| Tendency for practitioners to be divided from researchers. | Integrate clinicians and researchers in departments. Encourage clinicians to do research including medical education research or smaller scholarly projects. Build communities of practice and research. Practice-based research networks. |
| <i>Macro</i> | |
| 'Brain drain' at different levels. | Support rural/remote practitioners, including in research. Train LMIC researchers in LMIC. If LMIC researchers train in HICs, incorporate commitment to return or in some way 'give back' as part of training. South-South collaboration. |
| Increased ethical challenges. | Ensure LMIC IRB review and encourage LMIC researcher involvement in partner HIC IRBs. |
| Lack of funding for primary care research, in both LMIC and HIC settings. | LMIC: incorporate capacity building for sustainability into foreign funding paradigm. All: advocate at all levels, creation of consortia of research. |

HIC, high-income country; IRB, institutional review board; LMIC, low-income and middle-income country.

less explicitly described in the literature, these challenges can be reasonably expected in LMIC settings, and were noted by the LMIC representatives at the NAPCRG working group. Some of these are inherent to the research process itself, such as finding the balance between a focused enough research question to be answerable in the allotted time, and one that will have an impact on the health of communities. In addition, LMIC researchers face several unique tensions or may experience the same tensions differently in their settings^{23–25} (see table 1).

These tensions can be subdivided into those at the *micro* (practice), *meso* (communities of practice) and *macro* (system and international partnership) levels. While issues at various levels are often similar in HIC and LMIC, they may be experienced differently. For example, workload and lack of connectivity may be several orders of magnitude worse between contexts. We can also observe that *macro*-level issues vary between HIC and LMIC in that the agency to affect change at this level often resides in more resourced contexts. It follows that an important aspect of research development is a process in which

a dialogue with other scientific domains and (health) policy makers takes place, in the step-by-step development of PC-based research. The implication of this is the importance of study priorities, and designs already extensively tested in HIC have to be revisited in developing LMIC PC contexts. PC research quality assessment criteria have to be calibrated towards its state of development in LMIC.

Lack of dedicated research time is the most commonly listed tension in HIC settings,^{16 20} but otherwise there is no recognised hierarchy. Time may be a more pressing challenge in LMIC, where a lack of healthcare workers prevents clinicians from finding time for research. This may exacerbate the divide between clinician and researcher, already a challenge to overcome in global health engagement.²⁶

Funding is likely to be a particular challenge in LMIC settings. The ethical need of LMIC to set their own research priorities²⁷ might conflict with HIC funding agency agendas.²⁸ While foreign funding may sometimes be the only initial source of funding, it fosters

dependence, which can limit LMIC's capacity building. Sustaining increased research knowledge is a vexing challenge in LMIC settings, as the knowledge gained engenders the risk of 'brain drain' in its various forms ([table 1](#)).²³ Degree training to overcome knowledge gaps (eg, master's degrees) often requires individuals to work alone instead of in teams. This may further engender and exacerbate the clinician–researcher divide.

Family medicine researchers face yet another dilemma in LMIC settings. In many LMICs, family medicine is a new or emerging field. While this offers an opportunity to build research into family medicine training and practice, potential collaborators may not consider the academic side of the discipline in a context where it is novel. There may be a tendency to compete between disciplines in early stages of development. This is contrary to modern research, which is best done as a multidisciplinary team.

Recommendations

A common experience globally is that advocacy from within PC itself is an essential first step in establishing PC research capacity: building the case about the importance of the role and function of PC in the health system, and countering prejudices that PC is merely a simple practice that just applies the knowledge and skills of other specialties. Information from research at the practice level of the health needs and health problems encountered in the community, and the impact of social determinants of health on the well-being of populations, provides invaluable evidence for the importance of PC. In itself, a small project to survey encounters in the practice or the health status of the practice population can serve this purpose, and have the potential to serve as the foundation for more lasting research structures, such as a practice-based research network.^{29 30} This underlines the importance of action at the *micro* level of the community and community-based PC practices.

Based on experience from countries where PC research is an established domain of science, a driving factor has been the clarification—and recognition—of its specific domain in patient care.²⁹ Variation in health problems, health culture and social determinants of health between countries underlines the importance of directing research within the local context and makes the case for research capacity in every country including LMICs.

A fully established PC research infrastructure may be realised when local practice-based research networks are connected to universities and research institutes. This *meso* level is where research skills training can be furthered, as well as the exchange of experiences to determine shared research priorities. Interaction between universities and research institutes and practices can be essential in securing joint ownership of research, and critical for sustainable research development in which health practitioners can innovate care based on research findings to improve population health. Involvement in research can empower the patient care skills and performance of professionals, uplift their careers, and enable them to

address the challenges of finding equitable responses to the health problems of the communities they serve.

As health status varies both between and within countries, PC research needs to take into account multiple practices in multiple communities. This parallels the need for capacity building for PC teaching and training, which can be addressed through the collaboration of university departments of PC (family medicine, nursing, public health and so on) with a mission in both education and research. The field of PC research also needs to be recognised as part of national science programmes and funding initiatives. Furthermore, it is important to establish principles that address potential funding biases towards bioscience.

Funding is a *macro*-level problem that requires thinking at the national and global levels. Where universities and research institutes are not yet established, international collaboration in PC provides an excellent opportunity to mentor local professionals.^{13 31} This has been a powerful approach to nurturing and supporting PC leaders to become role models and advocates for PC research in their country. Developing PC research capacity—with international support to foster the capacity of universities and research institutes—can make it possible to create practice-based evidence to support evidence-based PC. To limit the emigration of skilled individuals (while acknowledging their autonomy and freedom of choice), it is recommended that training opportunities take place in LMIC, and when this is not possible to encourage trainees to commit to return to their LMIC following HIC training.

To best address the main research priorities of LMIC, a map of their needs should be produced (this already exists for the PHC Consortium); this will facilitate meeting the central needs of LMIC through future research.

The actions listed in [table 1](#) summarise the activities at the *micro* level of practices and communities; the *meso* or institutional level; and the *macro* level of national policy and international collaboration. It is crucial that capacity building address these three levels in a connected and concerted way.

CONCLUSION

PC research can be challenging to conduct even in well-resourced settings. Conducting PC research in the local context and being responsive to the needs of the community (patients, population at large and practitioners) are at the core of PC research. LMIC researchers face the additional challenges of greater clinical demands, fewer financial resources, and lack of recognition and collaboration from more established disciplines.

Despite this, there are LMIC PC research bright spots around the globe. LMICs have developed academic journals, run conferences and workshops on research methodology and scientific writing, foster collaboration on research projects, and are developing practice-based research networks. Family medicine master's



programmes and a growing number of doctoral candidates are helping PC research reach critical mass.

The success of these PC research capacity-building initiatives stems from a deep commitment to community engagement, to understanding local needs, and to members of the research community working in concert with providers to find what will work best for each setting.

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