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Enhancement of Health Research Capacity in Nigeria through North-South and In-Country Partnerships

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Abstract

Research productivity in Sub-Saharan Africa has the potential to affect teaching, student quality, faculty career development, and translational country-relevant research as it has in developed countries. Nigeria is the most populous country in Africa, with an academic infrastructure that includes 129 universities and 45 medical schools; however, despite the size, the country has unacceptably poor health status indicators. To further develop the research infrastructure in Nigeria, faculty and research career development topics were identified within the six Nigerian universities of the nine institutions of the Medical Education Partnership Initiative in Nigeria (MEPIN) consortium. The consortium identified a training model that incorporated multi-institutional “train the trainers” programs at the University of Ibadan, followed by replication at the other MEPIN universities. More than 140 in-country trainers subsequently presented nine courses to more than 1,600 faculty, graduate students, and resident doctors throughout the consortium during the program’s first three years (2011–2013). This model has fostered a new era of collaboration among the major Nigerian research universities, which now have increased capacity for collaborative research initiatives and improved research output. These changes, in turn, have the potential to improve the nation’s health outcomes.

Nigerian medical institutions have long been plagued by poor infrastructure, weak research capacity, corruption, low staff morale, and lack of administrative support and resources. These limitations have led to researchers' being unable to secure competitive research grants and have severely limited the research capability and opportunities for medical graduates and faculty.¹ In a recent survey, 64.7% of medical specialists in the country considered research to be a third priority, after hospital service (72.5%) and teaching (66.0%), in the scale of their roles. While 78.4% of the respondents considered advancement of knowledge to be their strongest motivation for research, 94% said funding and 80% said dedicated time for research were their major constraints.²

Globally, a major distinguishing mandate of universities is the creation and dissemination of new knowledge.³⁻⁵ It is well known that good research has a positive impact on teaching, learning, and the quality of graduates.⁶⁻⁸ Good research creates opportunities for training the next generation of researchers and retention of faculty through enhancement of job satisfaction, career progression, and implementation of country-relevant research.^{3,9} And while Nigeria is the most populous Sub-Saharan African country, with an estimated population of 167 million and 129 universities and 45 medical schools, its health indices remain unacceptably low by global standards.¹⁰⁻¹²

Although there are many responsible factors, there has been very little contribution of in-country research or translation of knowledge to disease prevention and control in recent decades. This was not always the case. During the 1970s, the medical research output from the University of Ibadan ranked fourth in medical education and research among all institutions in the British Commonwealth.⁶ At that time, the federal government of Nigeria funded very few universities, and those they did run were adequately funded, well-equipped, and with highly motivated academic staff. The situation changed for the worse during the ensuing decades of military rule (1960s to end of the 1990s). This period was associated with poor funding of the education and health sectors, which resulted in deterioration of the academic infrastructure and inadequate equipment and facilities needed for research and training of postgraduate students and faculty.^{6,13} This paper documents an innovative international approach involving a "train the trainers" program used by six Nigerian universities working in partnership with experienced educators from two U.S.-based institutions to build capacity for health research training in Nigeria.

The MEPIN Partnership

The Medical Education Partnership Initiative in Nigeria (MEPIN) is a consortium of nine institutions: six universities and one AIDS prevention initiative in Nigeria, and two U.S. medical institutions. MEPIN's goals are to increase the quantity, quality, and retention of health care workers and to equip them with the knowledge and skills needed for service delivery and research to improve the nation's health care and health outcomes. As academics directly involved in MEPIN, we had proposed to develop clinical and translational research competencies of medical students, physician trainees, and public health graduate students and to develop education and research programs at the six Nigerian universities involved in MEPIN. The research capacity development component of our program was implemented in a two-stage, multi-pronged approach: The first was a U.S.-Nigeria or "North-South"

approach, which was followed by a second stage of networked, in-country institutional knowledge-sharing strategies. The University of Ibadan is the lead institution in the MEPIN consortium, which also includes the University of Jos, University of Nigeria, University of Maiduguri, Ahmadu Bello University, University of Lagos, the AIDS Prevention Initiative Nigeria (APIN) Ltd., and the two U.S. partner institutions, Northwestern University and the Harvard School of Public Health. These MEPIN institutions represent some of the top medical schools in Nigeria, with their locations spread across the country (Figure 1). MEPIN team leaders from the various institutions meet quarterly to plan and to review progress of the project.

MEPIN's Approach

MEPIN's research capacity component is intended to enhance institutional research culture as well as increase the knowledge and skills of resident doctors, graduate students, and faculty. A long-term goal is to transfer strategies and lessons from this model of research capacity development to other institutions in the country through the National Universities Commission (the coordination and regulatory institution for all universities in Nigeria) and engagement with other relevant stakeholders. MEPIN's training programs are intended to make in-country careers in academia attractive to medical specialists and junior faculties and to enhance their productivity, thereby promoting retention and regionally relevant, health-related research.

For each of the programs, the training is implemented in two steps. The first step is the so-called training of trainers by faculty from the U.S. partners: Northwestern University's Feinberg School of Medicine and the Harvard School of Public Health. This training is conducted in intensive short-term workshops, each ranging from 24 to 30 hours over a three- to five-day period. The workshop format includes the use of training manuals, presentations, case studies, small-group discussions, and assignments. The second step is implemented by the workshop participants, who go on to facilitate similar workshops at their own institutions. For the purpose of quality control, the same training manuals and other learning materials used for the training the trainer workshop were used for the second step.

During the first year (2010/2011) of the program, faculty from the U.S. partner institutions conducted pilot workshops at the University of Ibadan on research and grant writing, which were attended by representative faculty from other consortium partners. Questionnaires administered to participants identified research capacity training needs. Subsequently, the University of Ibadan, as the lead institution, also served as the central coordinator for the train the trainers programs. The University of Ibadan also developed and hosts the project's website, which makes available the training materials and eLearning modules for researchers at universities and other institutions both within and outside of Nigeria (www.mepi-nigeria.org). The website also provides information on requests for proposals and funding opportunities and facilitates networking among groups of participating researchers in order to build communities of practice in specific areas of the country. The other MEPIN consortium institutions are responsible for planning and conducting the research capacity-building workshops and supplying administrative support needed at their institutions.

Focusing on Staff

Initially, we targeted senior academic staff, including deans of faculties and heads of departments from the six MEPIN-supported Nigerian universities, to sensitize them and create awareness in the university community of the need for support to develop for sound research skills. For the train-the-trainer programs, each member university nominated a team of 3–6 faculty members to serve as resource persons (trainers) for the various courses at their own institutions. These trainers developed plans for replicating the courses at their universities and make the workshops part of regular career development programs. Training materials were also provided on compact discs (CDs) to facilitate effective replication. Each workshop was delivered at least twice per year at each institution, depending on their academic calendars. Participants were nominated by their department heads, given time off to attend, and received credits for continuing education. Eleven courses were offered, including responsible research conduct, grant writing, manuscript writing, bibliography and online research techniques, research methodology, mentoring, biostatistics and advanced manuscript writing, bioinformatics, biomedical engineering, public health research in infectious diseases, and research management (Table 1; also see Supplemental Digital Appendix 1 [LWW INSERT LINK] for complete course descriptions).

Participants at both the train-the-trainers and the replicated workshops at the partner institutions completed pre- and post-workshop evaluations. Information captured included knowledge acquired and relevance to goals. In addition, APIN, the consortium institution responsible for the overall monitoring and evaluation of the MEPIN project, conducts annual follow-up surveys of all participants. These evaluations involve collection of qualitative and quantitative data necessary for feedback and assessment of the impact of research capacity-building activities at the institutional and overall program levels. Some anticipated outcomes of these capacity-building activities include increased responses to requests for grants and awards, an increase in the number of publications in peer-reviewed journals, and an increase in the number of young faculty retained in-country for at least the first five years after employment.

Preliminary Outcomes

MEPIN activities have already had positive results for the consortium institutions, including increased responses to local and international research grant applications and an increase in the number of awarded grants. Some of the grant awards received during the program's first three years include a MEPI-linked award, a MEPI supplement for research administrative training, an NIH/Fogarty Center International Research Training grant, an NIH/Fogarty Center Frameworks grant, an Office of Global AIDS Coordinator supplement, a Bill and Melinda Gates Foundation Grand Challenges Exploration grant, an NIH/H3 Africa, Nigeria/World Bank STEP-B, CDC, EU Tunning Africa grant for development of medical curriculum in the African region, EU Mobility grant for postgraduate training in Africa, and a Wellcome Trust grant. The number of newly funded research projects since the initiation of the MEPIN program has been unprecedented for the consortium members.

Discussion

Deficiencies in university research in Africa have long been recognized. A 2004 commissioned review of African universities and the challenge of research capacity development concluded that “critical for Africa’s future is strengthening indigenous educational systems and institutions for generating and applying knowledge by assuring long-term public support with emphasis on research capacity.”³ Although universities in Nigeria have been increasing their number of graduates, their quality still requires significant improvement, especially their ability to translate knowledge to improve the nation’s economy and development. In the area of health, gaps exist in the ability of health professionals to translate basic sciences to clinical practice or public health approaches to disease prevention, even after academic and professional postgraduate training.¹⁰ Similarly, development of relevant research questions and the ability to attract competitive research funding are some of the problems confronting graduate students and faculty members in Nigerian universities.^{14–16} Consequently, faculty have tended to engage in elementary research projects that can be funded “out of pocket” and thus are not well focused or don’t specifically address major health problems or contribute significantly to knowledge enhancement. An improved research environment, funding, and motivation of academic staff are among the critical factors needed to improve research output in Sub-Saharan Africa.

Various strategies have been proposed or used to develop research capacity in Sub-Saharan African countries.^{17,18} MEPIN’s train-the-trainer and replicated workshops approach, with a combination of research culture and skill-building strategies, holds great potential for achieving the development of a sustainable research enterprise in the region. Whereas previous efforts have largely been localized to individual universities, limited in scope, and involved relatively few staff, MEPIN’s consortium strategy is intended to train a critical mass within a short time by providing for a central lead institution to collectively access and adopt many current best practices with linkages to resources and implementation of research capacity-building programs by experienced U.S. faculty members.

Some of the challenges we noted include different levels of acceptability of the program by individual faculty and research infrastructure and lack of staff strength and support by institutional leaderships. Sustainability plans include institutional ownership, transfer of implementation to the various institutional research management offices, and continuous fund sourcing for research capacity development.

Feedback from workshop participants demonstrates both an appreciation for the knowledge they have gained as well as their optimism about strengthening their career and research productivity. As one participant said: “I count myself lucky to be part of this training program and am thankful to the organizers for the knowledge I have acquired; it will certainly help in my career. Some of the things that I had found difficult in data analysis were simplified.” Said another: “I now understand quite well some negative practices to avoid in academic work and publication, like duplication, double digging, overlapping, and salami slicing. I will surely ensure that I do not engage in such practices.” One of the facilitators, a senior faculty member, said: “This generation of post-graduate students and young staff should really count themselves lucky and fortunate. In our days as PhD students,

many were frustrated doing little or nothing, but now your generation has a lot of what we did not have in terms of formal capacity development process.” We must thank the funders of MEPI for supporting this project in our institutions in Nigeria. Although it is too early to draw conclusions, it is noteworthy that several resident doctors who participated in the training programs have easily obtained faculty positions when those opportunities became available.

It is also noteworthy that the MEPI grant in Nigeria facilitated for the first time networking and collaboration among six major Nigerian universities on the common problem of gaps in human resources for health training. The strategy reported in this paper shows promise for enhancing institutional research culture and individual researcher skills in Sub-Saharan Africa through North-South and in-country partnerships. The young faculty members who have been trained in this program are better prepared for careers in academia than were the previous generation of teachers, with a reorientation focusing on country-relevant health research.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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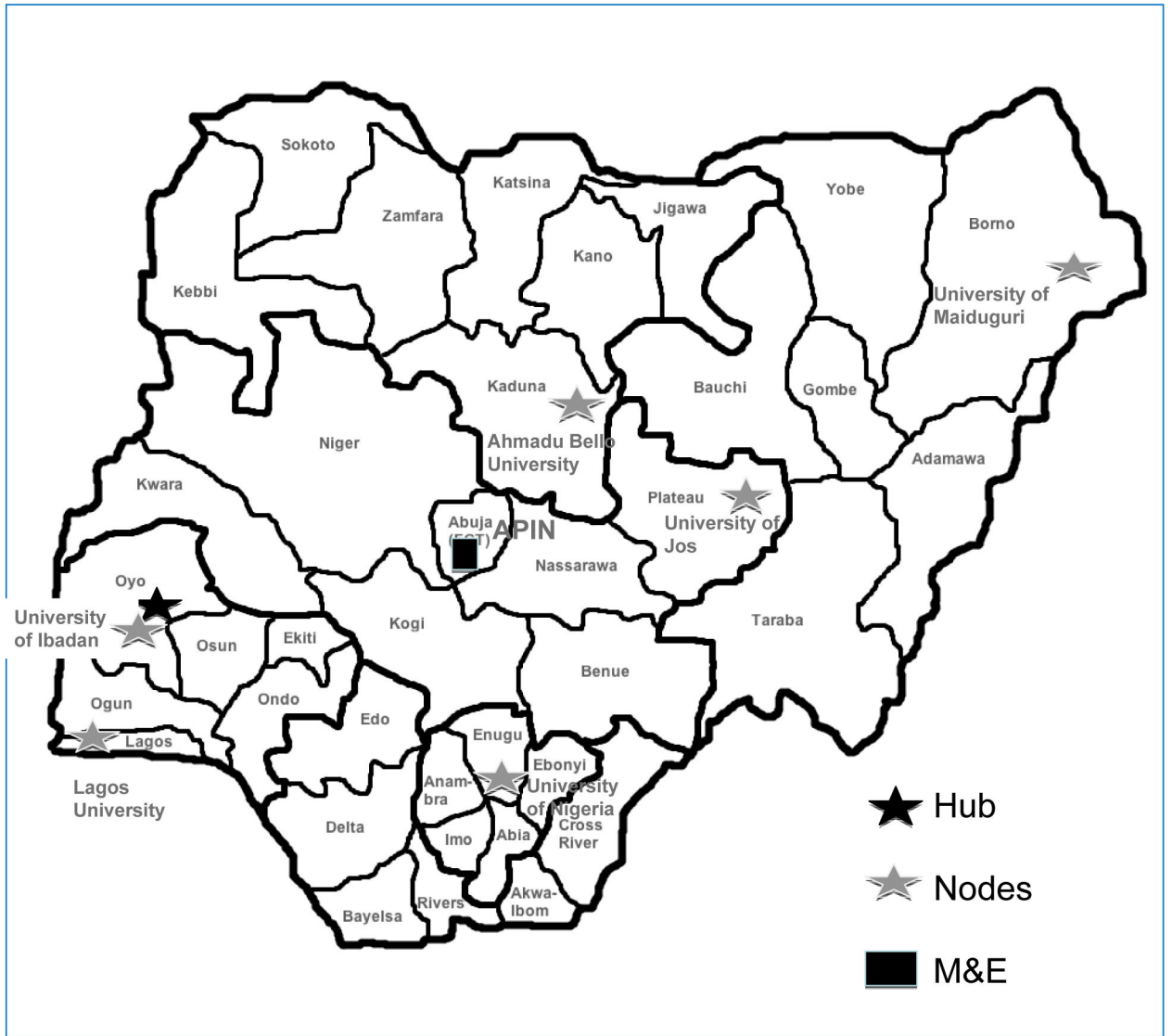


Figure 1. Map of Nigeria showing locations for U.S.-Nigeria (hub) and in-country (nodes) training workshops and central monitoring and evaluation.

Table 1

Research Capacity-Building Courses and Number of Participants during the Program's First Three Years (2010–2013)

Courses	Number of in-country trainers ^a	Number of faculty and graduate student/resident doctors trained ^a
Responsible conduct of research	28	660
Grant writing	20	227
Manuscript writing	22	158
Bibliography	3	100
Research methodology	24	145
Mentoring	26	181
Biostatistics and advanced manuscript writing	12	60
Bioinformatics ^b		52
Biomedical engineering ^b		28
Public health research in infectious diseases	8	17
Research management	13	56
Total	156	1684

^aApproximately 40% of both groups are female.

^bThese were offered as pilot courses, with a plan for expansion at a later time.