

Strengthening Institutional Research Administration in Uganda: A Case Study on Developing Collaborations among Academic and Research Institutions

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This paper derives from the processes, experiences and on-going activities of the International Extramural Associates Research Development Award (IEARDA) by the National Institutes of Health (NIH). Funds for this award were provided by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Extramural Associate Research Development Award (EARDA), to the Joint Clinical Research Centre (JCRC) Kampala, Uganda. The information reported in this article was based on preliminary presentations delivered to research administrators at the 2011 Society of Research Administrators (SRA) International Annual Meeting Symposium in Montreal, Quebec, Canada. The information represents the views of the authors and not the JCRC or National Institutes of Health. The project was supported by Award Number G11HD065299. The content is solely the responsibility of the authors and does not represent the official views of the Eunice Kennedy Shriver National Institute of Child Health & Human Development or the National Institutes of Health.

Abstract

Despite the presence of several funded research projects at academic and research institutions in sub-Saharan Africa, the quality of the pre/post grant award process in these institutions is inadequate. There is a need to strengthen research administration through infrastructural, organizational, and human resource development to match the dynamic research environment and funding requirements. In Uganda, many grant recipient institutions, investigators, and research administrators have limited experience in grantsmanship. The aim of this International Extramural Associates Research Development Award is to develop cadres of research administrators to address current and future National Institutes of Health (NIH) and other funding agencies' policies and procedures, and to strengthen research administrative infrastructure at the Joint Clinical Research Centre, Mbarara University of Science and Technology, Uganda Christian University, Mukono and Ndejje University. This is accomplished through establishing partnerships, strengthening the institutional central research coordination office, and short-term training. The training includes grant writing, submission and award management; public engagement in research; mentorship; research ethics; responsible conduct of research, and applying routine facility data toward quality improvement. This article presents a case study of lessons learned from establishing collaborations for strengthening research administration, such as experiences, challenges, sustainability plans, and recommendations for strengthening research administration.

Keywords: Grantsmanship, research administration, research infrastructural development, capacity development, developing countries, Uganda

Introduction

Over the last 15 years, there has been an increase in funding for research and training in Africa. Despite a research environment characterized by the presence of several funded projects at academic and research institutions in sub-Saharan Africa, the pre/post grant award process is deficient in most of these institutions. For instance, a 2010 survey by Makerere University College of Health Sciences, Uganda, on the available information on current and past grants, identified that funding details were available for only one-third of the 58 active grants, with weak systems, policies and infrastructure to manage grants (Nankinga et al., 2011). While all funding agencies have stringent pre/post award guidelines and reporting regulations that require researchers to have up-to-date information at all times, conformity among awarded institutions is ever-growing, and possible irregularities must be handled in a timely manner (Gardner et al., 2006; Adams & Pimple, 2005; Deyhle et al., 1992). However, grants recipient institutions, investigators, and research administrators in Uganda have limited experience in pre-and post-award management, fiscal accountability and scientific reporting requirements for NIH and other international funding agencies. Indeed, an evaluation survey of collaborative strategies to strengthen research administration at Makerere University (collaboration with Swedish International Development Assistance [SIDA] -Sarec) found that key budget information was lacking in most projects, and that the majority of Principal Investigators (PIs) were weak with respect to foreign and grant management processes due to a lack of a central grants management system (Freeman et al, 2009). Hence, financial and material resources from grants to academic institutions are critical for supporting faculty members' research efforts. (Mullen et al., 2008, Garvin et al., 2008, Gumpert & Spom, 1999)

The global complexity and competitiveness in the research field, the prevalence of interdisciplinary research, the local and international interest in research combined with diverse stakeholders of various research interests, as well as the dynamic research funding environment create a challenging research environment for scientists in Africa. In many sub-Saharan African countries there is a weak infrastructure for research; the research administration and legislative framework has not kept pace with international trends such as ethical conduct of research, regulatory compliance, dissemination of research findings and material, and intellectual property rights. This has contributed to institutional failure to write, submit, win, and manage competitive research or project grants. Research administration is key in instituting scholarship and strengthening research behavior at academic and research institutions (Atkinson et al., 2007; Cole, 2007; Langley, 2007). Likewise, faculty education in what is required to write, win and manage competitive grants is critical to developing and maintaining research programs and attracting external grants and contracts. (Rice, 2000)

The International Extramural Associates Research Development Award (IEARDA) Program was created to develop institutional capacity to support external research grant proposals, provide administrative structure to manage grant awards, and increase biomedical and behavioral research at academic and research institutions outside the United States of America. The NIH established the Extramural Associates Program to produce a cadre of

academic research administrators who could promote the participation of institutions in rigorous biomedical and behavioral research programs. The program is administered within the Division of Special Populations of the National Institute of Child Health and Human Development (NICHD). As part of the award requirements, the participating institution nominates an International Extramural Associate (IEA) who is trained in grant processes used by the NIH and other federal agencies to support biomedical and behavioral research and training. The program instructs the Extramural Associates (EAs) in the role of academic research administrators in research development. IEARDA is designed to stimulate the building of research infrastructure and development, and to facilitate a sustainable capacity in research administration at institutions with limited resources for implementing fundable biomedical and behavioral research. This article presents a case study of how the IEARDA grant has utilized research collaborations to strengthen research administrative infrastructure at partner institutions, namely Joint Clinical Research Centre, Mbarara University of Science and Technology, Uganda Christian University, Mukono and Ndejje University, as well as to bridge the gap between research administrators and faculty at the partner institutions. Table 1 shows the short-term training that the IEA has to accomplish during the course of the award. Once the NIH residency is complete, EAs possess a working knowledge of federal support for biomedical and behavioral research and training, and skills in preparing research applications and post-award management, and are prepared to expand research infrastructure and development at their collaborative institutions.

Table 1: Components of the International Extramural Associates Training

1. The organization and function of the NIH and other federal funding agencies
2. Common federal grant compliance and regulatory issues
3. Extramural funding mechanisms and opportunities
4. Best practices in program administration, evaluation, financial management of grants, subcontract awards, and research project administration in resource-limited settings
5. Technologies for information and data retrieval, dissemination, and grant applications
6. Office of Sponsored Research planning and management strategies
7. Common federal extramural funding program policies and procedures; federal extramural scientific review policies and procedures
8. Other federal and private or non-profit funding programs and opportunities
9. Grantsmanship – grant writing and budget development skills
10. Understanding NIH guidelines and protocols on issues in human subject research
11. Institutional review boards, use of laboratory animals
12. Responsible conduct of research

In Uganda, the United States NIH is one of the largest funding agencies for research and project grants. Other research funding agencies include World Health Organization Special Programme for Research and Training in Tropical Diseases (WHO/TDR); Canadian International Development Agency (CIDA); Council for the Development of Social Science Research in Africa (CODESRIA); Danish International Development Agency (DANIDA); European and Developing Countries Clinical Trials Partnership (EDCTP); The Global Fund to Fight AIDS, Tuberculosis and Malaria; Norwegian Forum for Global Health Research (NORAD); Roll Back Malaria Partnership (RBM); Fogarty International Centre (FIC); Swedish International Development Cooperation Agency (SIDA); U.K. Department for International Development (DFID); United Kingdom (UK) Medical Research Council (MRC); U.S. Centers for Disease Control and Prevention (CDC); U.S. Agency for International Development (USAID), Wellcome Trust, and the World Bank. Many research institutions in Uganda are struggling to establish a strong research and grants administration infrastructure. Such efforts are evident in all research and academic institutions in Uganda, notably the newly established academic institutions such as Ndejje, Mbarara and Mukono Universities, although all these are at different levels of growth and research emphasis. A needs assessment that we conducted at the four collaborating institutions involved in the IEARDA grant (Ndejje, Mukono, Mbarara and JCRC) identified limited skills in grantsmanship (grants writing, peer review, pre/post awards management, mentorship, communicating research findings, utilizing facility data to improve services delivery, responsible conduct of research), and an imprecise regulatory framework. Whereas Mukono and Ndejje universities identified greater need for research infrastructural improvement, JCRC and Mbarara identified mainly the need for human resource development in the area of grant writing, administration and management.

Methods and Procedures

The principle functions of research administration, depending on complexity of the research grant and the institution's management structures, include handling capacity building and marketing, financial management, project management; proposal development and submission; intellectual property rights and technology transfer; research administration support; and award negotiation and acceptance. The IEARDA grant advocates for fulfillment of these functions by the Office of Research and Development (ORD) or a designated department based on respective institutions management structures. This situation created the need to establish a one-stop centre (ORD) to coordinate all research-related issues at respective institutions. This was born out of the fact that a strong central oversight was needed to make sure that grants and other research activities comply to international funding agencies regulations and national guidelines.

The IEARDA is a five-year grant funded by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), with the goal to develop cadres of research administrators to address current and future NIH and other funding agencies' grants policies and procedures, and to strengthen the research and grant administrative infrastructure at these institutions. The specific objectives of the IEARDA

grant are to strengthen the research training capacity and administrative infrastructure of the Office of Research and Development (ORD) at JCRC and partner institutions, to assist affiliated academic and research institutions in standardizing and completing mandatory registration necessary for NIH and other agencies' electronic grant applications, to foster collaboration among different disciplines so that trainees can develop capacity to manage multi-disciplinary and interdisciplinary research, and to strengthen the capacity of the ORD personnel to spearhead the translation of research findings into practice and policy advocacy. In addition, IEARDA enables the PI to acquire knowledge and skills for NIH grantsmanship so as to effectively administer NIH and other agencies awards. Below is a brief on each of the four IEARDA partner institutions.

Joint Clinical Research Centre (JCRC)

JCRC is an HIV/AIDS care and research institution located in East Africa, Uganda, established in 1990 to respond to and provide a scientific approach for the national HIV/AIDS challenge. The JCRC is a not-for-profit Non-Governmental Organization (NGO), which was initiated by a collaborative effort of the Ministry of Health, Ministry of Defense, and Makerere University Medical School. The Ministry of Health was responsible for the policy formulation and provided the infrastructure. The researchers were associated with the Makerere University Medical School. Broadly, the JCRC has three core activities: (a) Medical Research, (b) Clinical Care and Treatment, and (c) Training and Capacity Building. It is through these core activities that JCRC works towards realizing its vision of being: "A vibrant self-sustaining Centre of Excellence in Medical Research, Training and Healthcare Services;" and accomplishing its mission: "To conduct quality medical research and training, provide equitable and sustainable HIV/AIDS care and other health care services in Uganda and other parts of Africa." Nationally, JCRC has established seven Regional Centres of Excellence (RCEs) across Uganda. The RCEs provide quality health care and laboratory services, technical support in key program areas, training, support supervision, monitoring and evaluation, research and supporting the respective districts to achieve their HIV strategic goals and objectives. The RCEs are a mirror image of the organizational set up at JCRC headquarters although on a smaller scale. JCRC works in partnership with several collaborators, both local and international, to provide research expertise, and has several active collaborative research projects addressing a broad range of research questions in the fields of biomedical and social sciences. One of the major challenges facing JCRC in regard to grants management and strict research compliance follow-up was lack of a strong one-stop autonomous grants information and resource centre to provide technical support to upcoming investigators who can independently carry out grants proposal writing and submission, and award management tasks. Like other partner institutions with IEARDA grants, the ORD at JCRC required strengthening in terms of capacity building.

Uganda Christianly University (UCU) Mukono

This is a private university, chartered and fully accredited by the President of the Republic of Uganda, through the Ministry of Higher Education and Sports, and the National Council for Higher Education. UCU is owned by the Province of the Church of Uganda,

and has campuses in Eastern, Western and Northern Uganda. The university mission is identified as: “dedicated, through teaching, scholarship, service, spiritual formation, student development and social involvement, to preparing students for thoughtful, productive lives of Christian faith and service in their respective professions and places.” The university also aims to promote an appreciation and understanding of all languages, particularly English and the languages of Uganda, as well as French and other regional languages. The University was born out of Bishop Tucker Theological College, hence its Christian foundation. The university has over 4,500 students and 312 staff. The university has both undergraduate and post-graduate training programs and its staff and students are involved in biomedical and social research. The programs offered by the university include: Bachelors of Nursing Science, Community Partnership, Community Health, Promotion and Administration and all these are offered at the Masters Level. The University also offers Diplomas in Health Administration and Leadership for medical professionals. Uganda Christian University also oversees the student-led HIV/AIDS initiative that builds life skills, carries out peer education, and promotes voluntary counseling and HIV testing. The IEARDA program has helped the UCU establish an ORD and complete registration for grants.gov.

Mbarara University of Science and Technology (MUST)

An Act of Parliament established this twenty-two year old public university in 1989. It started with the School of Medicine, and since has added the Schools of Science Education, Development Studies, and Computer Science. The University mission is identified as: “to provide quality and relevant education at national and international level with particular emphasis on science and technology and its application to community development.” The medical school is the second one in the country and trains doctors, nurses and laboratory scientists. The training is provided both at undergraduate and postgraduate level with an annual student population of 8,500. MUST teaching hospital is also a regional referral hospital for the southwestern region of Uganda and on its campus is one of the JCRC Regional Centres of Excellence with an internationally accredited laboratory. Makerere University College of Health Sciences and MUST have a strong partnership dating back to the foundation of the MUST and both are collaborating institutions on ICOHRTA training program. Makerere University and MUST collaborate closely in exchange of university lecturers, in training, joint admissions, staff exchange through external lecturers and setting academic standards. Students use a community-based medical curriculum. This type of training orients the students to community conditions under which many will work following completion of their training. The department also conducts training in research methodology at both undergraduate and postgraduate levels. MUST is involved in a number of collaborations with institutions in the US such as Harvard University, Duke University, and University of Wisconsin-Madison and the collaborations involve research and training. In addition, MUST staff had submitted, at the time of the IEARDA award, and won an NIH grant with collaborative institutions in and outside Uganda. Some of the staff at MUST had been trained during ICOHRTA NIH focused grants writing and award management course in 2006. Although MUST is registered into grants.gov, its ORD is at its infancy and receives support from IEARDA – JCRC program.

Ndejje University

Ndejje University is a private institution of higher learning, chartered by the Government of Uganda. The university was established in 1992 as a community-oriented and Christian-based center for higher learning. Ndejje takes pride in preparing learners for the challenges in this changing world and for those who provide service to God based in the belief that fear of God brings knowledge and wisdom. Ndejje University pioneered the private university education in Uganda and is currently among one of the leading privately run universities in Uganda. It offers undergraduate and postgraduate instruction on its two campuses. The main campus is located in a rural setting at Ndejje Hill, in Luweero District. The second campus is located in Rubaga, one of the districts that form the capital Kampala. Ndejje University's vision is to be a leading private Christian-based University in Uganda, offering quality academic and professional programs, and producing graduates of integrity. The mission of Ndejje University is to offer excellent, innovative and cost-effective university programs through sound scholarship, research, supportive study environment, and preparing God-fearing students for their future careers, while promoting Christian principles and values. In pursuit of its mission, the university designed postgraduate and undergraduate programs that are relevant to students' needs. Masters programs are two years in duration while all undergraduate degree programs are three academic years, except the four-year engineering program. Postgraduate diploma and certificate programs are one year in duration, while undergraduate diploma programs are two years.

One of the objectives of the University is to provide, with other Christian institutions, academic leadership to the Church and society in Uganda and Africa, in order to address through research, education and consultation, the economic, social and political problems that are unique to the Ugandan and African society. In addition, it also aims to provide resources and facilities for higher education, excellence in teaching, and promotion of research and advanced learning within the context of Christian faith, practice and spirituality. These are all consistent with the goal of the IERADA grant. The overall administration of the University is vested in the University Council. The Council is comprised of 33 members drawn from a cross-section of people, both women and men, with a commitment to promote higher education. The Council is the chief governing body of the University; it has the final authority in establishing University wide policy. It appoints the full time academic and administrative staff. The Council conducts its business through the Senate with a principal academic council board and committees. The University currently has an enrollment of 4,300 students with over 342 staff. Formed in 2006, the University has a young research and grants management capacity development department that is responsible for enhancing the standard of research, but lacks a specific ORD.

Program Activities and Interventions

Prior to writing and winning the IEARDA grant, visitations and consultations were made to the participating institutions in order to make an assessment of the human resource, infrastructure and institutional needs for research and grant management. The

visitations were also aimed at making requests for letters of support for the IEARDA grant application as well as seeking buy-in from the top management and key personnel. At respective institutions, consultations, roles of different key personnel, a five-year activity plan were agreed upon for implementation and sustainability after winning the grant. In order to acquire skills of coordinating the IEARDA grant after getting the award, the IEARDA PI and administrator completed the NIH distance learning modules about NIH, strengthening research administration and grants management. These modules included an Introduction to the NIH, NIH terminology and funding mechanisms, role of NIH officials, receipt and referral of grant applications, peer review process, program funding cycle, procedures for establishing institutional Office of Research and Development (ORD), interpreting the Notice of Award (NoA), grants management basics, and use of human subjects in research.

A three-week residency at the NIH campus followed the distance learning for all Extramural Associates Research Development Award (EARDA) 2010 recipient PIs in Africa and United States. The goal of this NIH resident training was to provide knowledge and resources for strengthening institutional research capacity, and facilitating participation in biomedical and behavioral research. During the residency training, grant recipients received individualised mentorship from NIH selected/paired mentors in USA. Each mentee was matched with a mentor based on the mentee's field of specialization, background and experience. The skills and networks obtained from the NIH residence training enhanced the PI's grantsmanship and capability to foresee the human resource, streamlining IEARDA activity plans, infrastructure and equipment needs of the partner institutions in order to effectively implement the IEARDA grant. Residency training involved lots of sharing on research administration experiences, challenges and possible solutions among trainees from Africa and the USA. Based on this training, the PI, working with personnel at partner institutions, was able to appropriately revise and finalize the IEARDA activity plan, budget and sustainability. This was a learning process and the ease at which it was achieved indicates the importance of seeking buy-in from institutional heads and/or responsible persons to develop joint sustainability plans and emphasize institutional ownership of awards other than the PIs.

The IEARDA Program Management

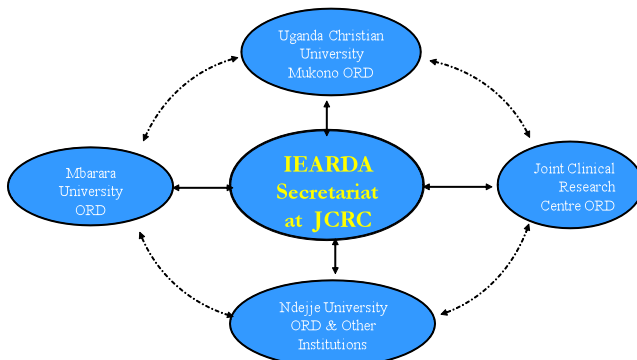


Figure 1. JCRC-IEARDA Operational Conceptual Framework

Figure 1 shows the operational conceptual framework approved for the IEARDA program, which exemplifies collaborations among partner institutions. The program is structured in such a way that institutional research administration is strengthened and is sustainable at the end of the grant. The IEARDA program is led by independent coordinator and administrator (technical advisor) who form the secretariat and reporting to the IEARDA PI. As the overall person responsible for directing all the activities of the program, the PI reports to the executive Director of JCRC within the overall JCRC management framework, and works in liaison with an advisory board representing partner institutions. The PI is the overall person in charge of annual reporting, scientific implementation and directing the activities of the program. The IEARDA Advisory Board is comprised of one representative from each of the partner institution, who is appointed by the JCRC Executive Director from the awarded institution head on recommendation of their respective institutions. The Board draws from top leadership, experienced in research and grant administration at their institutions. The role of the Board is to advise on suitability of the program, approve short courses/training, select trainees for short courses, design strategies for overall sustainability of the activities, monitor IEARDA implementation, conduct strategic planning, and provide annual review of IEARDA activities. This arrangement has ensured sharing ideas, buy-in from responsible personnel at partner institutions through their ORD offices as well as the advisory board members.

Activities Accomplished under the IEARDA Grant

Strengthening the Research Training and Administrative Infrastructure of the ORD at IEARDA Partner Institutions

A full-time IEARDA program coordinator with the PI as the immediate supervisor within the overall framework of JCRC administration structure was recruited to form part of the secretariat. The role of the coordinator is to oversee all administrative aspects of IEARDA, provide administrative support including, organizing training workshops, conducting meetings and conference calls, developing quarterly and annual reports of the program; collaborating with the four IEARDA partner institutions; documenting all training activities; offering required assistance to facilitators for training programs; tracking the outcomes and success of the program and administering the logistical aspects of the training. The program coordinator receives technical support from the administrator and the PI working closely with heads of ORD at all the four IEARDA primary beneficially partner institutions. The full time program coordinator position has eased follow-up and implementation of the program activities.

In addition, the equipment for the ORD at MUST, UCU, Ndejje and the IEARDA secretariat office were procured and installed. This includes computer, backup-UPS, printer, office chair, office desk, a file cabinet, LCD, telephone conference device, and laptop for the IEARDA coordination office. Equipping the office for ORD helps in keeping records, dissemination of information and use of institutional internet connectivity. Furthermore, consultative meetings were resumed after receiving the award and these were conducted at each of the four partner institutions to review IEARDA program goals, enhance

partnership, assess institutional specific needs, determine training priorities, seek buy-in, discuss responsibilities of ORD, review institutional research policy and sustainability plans. Research administrators, heads of research offices, researchers, PIs, postgraduate students and the IEARDA board members from their respective institutions attended these meetings. At all the partner institutions, the initial meeting targeted relevant top management/leadership; and always started with power point presentations by the PIs to remind members of program objectives, responsibilities and expectations followed by extensive discussions.

Linking IEARDA Recipients to Other Initiatives for Strengthening Research in Africa

The PI, program coordinator and administrator attended the Association of Research Administrators in Africa (ARAA) 2010 annual meeting which took place November 03-05, 2010, at Speke Resort Hotel Munyonyo Kampala Uganda. The theme for the year 2010 was “Institutionalizing Research Administration in Africa” The ARAA is a professional forum for Research Administrators for discussion, training, and sharing of best practices, experience, challenges and possible solutions, networking as well as laying strategies for global health research development. The vision of ARAA is to enhance the quality of research administration. The vision is to establish a hub of excellence for research administrators in Africa by linking research institutions to facilitate the effective sharing of best practices. Some of the broad topics which were discussed during the ARAA 2010 annual meeting were: Research Administrators and Managers in Developing countries building on existing national and regional structure; Research Administration capacity building in an “old” institution; Developing an Office of Research Administration in a “New” Institution; Research Administration - A perspective from an Institutional Research; Basic Research Administration Principles, Electronic Submission of NIH Grants; Human Resources challenges in research management (within a context of resource – limited settings); Fogarty and National Institutes of Health (NIH) updates; Role of partner institutions in development of Research administrators in Africa, International AIDS Society (IAS) Opportunities for Collaborations and Networking; Institutional Review Board (IRB) approvals in Resource Limited Settings: Challenges and Solutions; Defining Research Administration/Welcome Trust opportunities; Role of research administration in the development of the next generation of researchers. There was much learning, consultation, and technical support to IEARDA teams from the two NIH/FIC officers who attended. All IEARDA 2010 recipients in Africa attended, strengthened the networking, reinforced solidarity and provided a forum for jointly developing and sharing research training materials. These materials are in the process of being pretested by respective IEARDA awardees. The PI also attended the Medical Education Partnership Initiative (MEPI) Meeting in South Africa. The MEPI meeting was preceded by the IEARDA PIs technical assistance workshop organized by National Institute of Child Health and Human Development (NICHD) on March 6, 2011, at University of Witwatersrand South Africa. There was a technical assistance workshop that focused on updates on NIH policy and procedures, framework for capacity building, sustainability strategies, and grants management. IEARDA recipients presented progress reports and shared experiences, challenges and potential solutions.

The Medical Education Partnership Initiative (MEPI) 2011, provided support to African institutions to strengthen and build the clinical and research capacity of medical educational institutions in Sub-Saharan Africa and thereby help to strengthen the human capacity for health. MEPI has three main objectives: (1) Improve the quality of clinical education and clinical care; (2) Enable graduating medical students to remain in their home country to practice, serve as faculty, and/or conduct research related to the implementation of PEPFAR and other public health priorities; and (3) Enhance the recruitment and retention of qualified academic faculty through partnerships and research opportunities. Funds awarded are not expected solely to fund research projects, although funds may be used to support building research capacity, research training, and increasing opportunities to participate in research or apply for research funding. At the MEPI meeting, discussions centered on how the two NIH supported programs (MEPI and IEARDA) in the respective countries and regions can work together to strengthen research and administration. The issue of joint planning and implementation of activities as well as sharing of training materials was emphasized. At this meeting, all IEARDA recipients in Africa were further linked to other research administration strengthening initiatives, which include Training Health Researchers into Vocational Excellence (THRiVE); The Consortium for Advanced Research Training in Africa (CARTA), as well as to the Initiative to Strengthen Health Research Capacity in Africa (ISHReCA). Through the network, these initiatives can co-fund training workshops and develop and harmonize training materials. This avoids duplication of training that optimizes use of scarce resources.

Assisting Affiliated Academic and Research Institutions in Completing Mandatory Registration

Ndeje and Mukono University were facilitated in completing registration in Grants.gov and are now able to submit applications electronically through Grants.gov. After the grant writing and award management training workshop, teams from the newly created ORD were brought together and given hand-on training on how to complete the mandatory registration necessary for electronic grant applications. The Central Contractor Registration (CCR) is the primary supplier database for the US Federal government, and collects data from suppliers, validates and stores this data, and disseminates it to various government acquisition agencies. As the IEARDA program coordination office disseminates research funding opportunities, the collaborative institutions that have been registered for electronic submission can now initiate the grant application process.

Strengthening Collaboration among Different Disciplines

The IEARDA ORD at JCRC has established a list-serve of a multi-disciplinary team currently consisting of 117 active participants who are scientists (social science, medical, clinical, and public health disciplines), research administrators, post-graduate students and Principal Investigators from more than 20 research and academic institutions in Uganda. The objective is to enable trainees acquire skills of writing and managing multi-disciplinary

research projects. The personnel on list-service have formed a forum for discussing and exchanging experiences, seeking advice, free consultations and finding answers to challenges or questions posed by colleagues on the list. IEARDA personnel (on the list-serve) have been linked to other FIC/NIH-funded such as the International Clinical Operational and Health Services Research (ICOHRTA) HIV /TB Program (based at JCRC) for training opportunities, such as in mentorship workshops, intellectual property rights , proposal writing, monitoring and evaluation of programs, scientific writing and research ethics. The IEARDA program coordinator identifies, verifies eligibility and regularly disseminates by email opportunities on funding, training, conference, seminars, and other relevant information to persons on the list-serve. In this way, 84 relevant funding opportunities were disseminated in the first year of the grant. The IEARDA PI encourages teams to respond to funding opportunities and NIH RFA; write interdisciplinary research applications, hold discussions, appropriate consultations and disseminate research findings for ongoing projects.

Conducting Tailored Short-term Training Workshops

Three training workshops, conducted during the first year of IEARDA grants, were arranged as 2-5 day seminars to provide knowledge and skills to multi-disciplinary teams in writing and managing grants.

Table 2: Topics for Capacity-building Seminars

1. The Role of the Office for Research and Development at each institution
2. How to identify funding opportunities using grants.gov and other web resources
3. How to evaluate and read a funding opportunity announcement
4. Responsible conduct of research
5. Basic research methods
6. Grants writing workshop – I Beginners; II Intermediate
7. Preparing your faculty pilot research award application
8. Using CRISP/NIH RePORTER to identify funded projects and potential collaborators
9. Developing your proposal and budget
10. Partnerships and collaborations – How to form and sustain them
11. Grants for minority serving institutions in STEM and health disciplines
12. Statistics and research design and methods assistance forum
13. Public engagement and research communication

The respective collaborative institutions recommended the trainees. The final list of trainees was developed by the IEARDA secretariat. Care was taken to select interested male and female participants who were available for follow up after training. The activities

were co-funded by the respective institutions which provided training venues, staff to facilitate some sessions, photocopying services for training materials, transport refund for trainees and internet availability during training. There were a mix of training methodologies to include group work, interactive discussions, handouts, power point presentations, hands-on practice, didactic lectures, and presentations by trainees. The first workshop was Grants Writing, Grant Administration and Award Management for 45 trainees, at Uganda Christian University, Mukono. The goal of the training was to equip participants with knowledge and skills for preparing and managing grants. The areas covered included proposal writing, how to identify funding opportunities, introduction to NIH structures, electronic submission and award management. The second workshop, entitled “Engaging the Public in Research,” took place at the University of Mukono. It involved 18 trainees drawn from all the partner institutions. The goal of the training was to help participants understand why, when and how to engage the public in the entire research process from research design through implementation to communicating research findings. The third workshop was entitled “Research Ethics.” It involved 30 trainees and took place at JCRC. The objective of the training was to teach basic research ethics, ethical dilemmas in biomedical and social research, ethics in multi-sites clinical trials and reporting research misconduct. Five resource persons facilitated the training. The trainees represented multiple disciplines drawn from JCRC, UCU, MUST, Ndejje University and Mildmay Uganda among other institutions and relevant programs Uganda.

Program Evaluation and ORD Sustainability

The main channel for tracking IEARDA program impact is through joint meetings with institution ORD officials, the trainees, on-line discussions and feedback during and after training workshops and other grant activities. The impact on infrastructure is measured by new facilities, equipment, and technologies that come as a result of IEARDA support. In terms of IEARDA outcomes, grants written, submitted, awarded/not awarded, publications and presentations at national/international meetings are enumerated. Positions and promotions obtained by trainees who are directly linked to IEARDA activities are among the program outcomes. Efforts are made by IEARDA personnel to encourage institutions to put in place a mechanism for generating funds that benefit the ORD sustainability. These include joint funding of activities by beneficiary institutions. Institutions are also encouraged to consider setting aside funds for ORD and research development in general when constructing institutional annual budgets. IEARDA helped institutions develop research policies that spell out beneficiary institutions’ commitment for sustaining the ORD and ensure continuation of research development activities.

Lessons Learned from Implementing Grants

Research collaborations are critical to building the institutional research profile for the eventual transformation of academic institutions into strong research centers. Indeed, research collaborations are critical for the transformation into research centers, and further allow universities the opportunity to advance innovative research, generate resources, and raise the organizational and administrative profiles of the institutions (Sa et al., 2008).

Administrative practices and structures may help or hinder internal collaboration. Secondly, working in partnership with other programs, institutions and individuals maximize resources and infrastructure through jointly coordinated and implemented activities. This is crucial for success of research administration capacity-development, as well as transformation of universities into strong research centers of excellence. Collaborations with participatory activities are critical to active learning for essential skills and competencies for research administration (such as those regarding Responsible Conduct of Research) that is more effective than passive individualized learning. This is because individuals are more likely to internalize and understand new information when challenged to do something with it than when someone simply tells us what we 'should' know" (Kalichman, 2007). Thirdly, linkages of research activities of different programs and institutions require concerted efforts, commitment and teamwork. Certainly, close research collaborations are critical for institutions coordinate several units in a broad area of research that encompass many of the units. (Sa et al., 2008)

The initial steps at establishing collaboration are very critical to its success (Scheirer, 2005). The university deans were invited to participate, along with key faculty, business office staff and administrators. The goals of the EARDA program and the implementation plan were shared to gain feedback and foster the support of these key stakeholders and institutional leaders. Involving the deans, faculty and staff in the oversight and planning of the new office helped the EA to gain buy-in from key stakeholders. Among the most important individuals to cultivate as allies was the postgraduate university student leadership as well as other administrative staff.

A commitment by these leaders was needed to establish a strategic research vision for the collaboration, in line with the mission and vision of each of the respective academic institutions. Changing the culture at primarily teaching universities to focusing on strengthening research is not an easy task. Therefore, the role of research administrator in this effort is key. During residency training at the NIH campus, the IEA developed a network of contacts and mentors at the NIH and other federal agencies, many of whom stressed that building trust and reaching out to faculty were crucial to success. Faculty engaged primarily in teaching and advising may not have the skills or interests to pursue funded projects. Therefore, professional development and outreach activities are needed to motivate faculty to explore grants preparation.

It is difficult to engage in research those faculty members with heavy teaching responsibilities. In preliminary discussions, lack of time, poor knowledge and skills about grantsmanship and failure to realize which areas are potentially researchable or would attract funding were the most common reasons faculty and research administrators gave for low grant writing and research capacity at respective institutions. The perception that research activities will only add to an already high teaching load is a barrier to research involvement, and requires a creative, on-going effort to overcome. Another reason making faculty less inclined to write grant proposals is the perception that this effort would not be recognized for advancement and evaluation (Wimsatt, 2008). That grant writing may not be explicitly

recognized in evaluations makes it more difficult for teaching faculty to pursue funded research projects. Not all universities recognize grant writing in the same way they recognize publishing or the development of new courses. Grant writing is time-consuming and does not always result in a funded grant, especially on the first round. Early meetings with faculty therefore stressed that research involving students would complement the teaching mission.

Training leaders as trainers first provides a training multiplier effect that results in a critical mass of qualified and skilled personnel in research administration who can assist others to adapt or adopt newly changing requirements in research administration. This is because the role of research administrators is ever-changing due to changing demands, globalization complex, increasing international interests in research by varied stakeholders, dynamic research regulations and requirements that come with desired changes and intensified mentorship (Atkinson et al., 2007; The National Academies 2002; Mugenyi & Sewankambo, 2010). While early service consisted of supporting faculty by searching for funding sources, requesting guidelines, preparing budgets, and mailing proposals so that researchers could focus on writing proposals and conducting funded activities, it now additionally involves interpreting, creating and implementing policy as well as assessing ethics and critical science components of the grant proposals writing and award management (Vargas & Hanlon, 2007). The function of a research administrator is to help expedite the process of research and assist research investigators in accomplishing their work (Roberts & House, 2006). Although the responsibilities of research administrators are moving in new directions due to global complexities and competition in research, the need to provide service to faculty remains a critical element. Whereas research administrators are encouraged to “help relieve our faculty of administrative burdens as best we can, and do as much as possible with the resources we have” so that academic researchers can devote “their time and minds to solving the critical challenges of our age” (Killoren, 2008, p. 4). Regardless of the solutions pursued, successful research management will forever rely upon effective partnering between faculty and administrators. Although the specific roles and responsibilities of research administrators may vary and change over time, the challenge remains how to customize ongoing development and skills training for the profession in a way that supports the individual needs of faculty researchers at their respective institutions.

Another area in the field of research administration where collaborations are critical is in certification and accreditation of institutions. Accreditation is the process by which an agency or public association grants public recognition for a school, college or institution that meets certain prequalified standards or criteria. Certification is the process by which an external agency or public association grants public recognition of the competence of an individual practitioner. Collaborations enable external individuals and agencies to identify and assist individuals, or the institutions in which the individuals are found, to meet certain criteria related to capabilities and competences of the individuals as well as to achieve quality assurance, thereby assisting the individuals and institutions to be certified or accredited respectively. By building manpower capacity, providing basic infrastructure and assisting in future planning, the IEARDA grant stimulated collaborations that will quicken/ have hastened the process of accreditation for the collaborative institutions and certification of

individuals as researchers or research administrators. Establishment of a forum where trainees can share challenges and experience is critical for the success of collaborative ventures in research administration.

Lastly, the success in building and sustaining research administration capacity at respective institutions involved in the IEARDA grant will ultimately depend on good will and credibility, resource mobilization and adequate financing --- all to which collaboration is a critical component. Collaboration is required for strengthening institutional research policy, justifying and establishing the role of research administration personnel, and fostering sustainability (Scheirer, 2005). Internal collaborative efforts are critical in streamlining sustainability plans with institutional top management and to harmonize activities timing.

One of the most interesting challenges in the first year of the EARDA was the area of unrealistic faculty expectations about grants and funding. Many faculty members who are potential researchers had no specific idea about developing a research project, but they had a long wish list of desired equipment, travel money and other resources. Many faculty wanted funds to serve academic needs such as classroom computers and new buildings or travel, with little consideration of how to justify the need for these resources to an external funding source. Faculty in the humanities and arts were disappointed when they learned from the workshops that much federal funding is geared toward projects concerning public health, security issues, or scientific disciplines. While the focus of the EARDA program was geared to enlist faculty from the sciences and health disciplines for mostly science-based or oriented research, interest in seeking funding arose across all disciplines, including the arts, humanities, faith-based initiatives, and community service projects.

Inter-university collaborations as well as collaborations between universities and medical research institutions are critical as they enable forging alliances that can also be used to facilitate collaborative research projects, whereby sharing research can create value for both partners (Jarillo, 1988). Therefore, the development of strategic collaborative alliances can be an attractive way for organizations to grow their commercial activities (Sampson, 2007). Several studies identify the benefits to the innovation process derived from the successful management of alliances and partnerships (Walter et al., 2007). A number of studies have highlighted the role that social capital can play in alliances and collaboration (Koka & Prescott, 2002). Information sharing, trust, and regular open communication have been shown to promote alliance development (Hitt et al., 2004). Furthermore, a lack of social connectedness may inhibit the development of collaborations. It is for this reason that regular communication and a variety of opportunities for collaboration have been earmarked by the IEARDA grant so that strategic alliances that enhance collaborative activities are encouraged. Thune (2007) has employed a network embeddedness approach to investigate the role of social capital in developing university-industry collaborations. Thune pointed out that social capital provides a vital underpinning to facilitate collaborations, so where social capital is limited, new collaborations can be seriously hampered. Knowledge itself is also vitally important to the development and management of collaborations, especially in regard to institutions' ability to assimilate knowledge arising from collaborative activities (Barbolla &

Corredera, 2009). There is therefore a need for raising awareness among researchers and all research users and establishing more formal mechanisms to enhance knowledge transfer, such as policies for intellectual property rights (IPR) as well as consideration of the relatedness of technology capabilities for the collaborating partners. (Santoro & Bierly, 2006)

Recommendations

Meeting the growing demands for qualified research administration professionals is a challenge worth considering during research program planning. As a key element of capacity building, institutions must address research issues related to the enabling environment, and in particular the leadership, infrastructure, information access and interfaces between research producers and users. Universities and other research institutions in Uganda should develop and sustain an Office of Research Administration to handle grants and contracts. It is only through developing a research administration capacity that research/academic institutions in Uganda will strive to be and remain competitive for future research and development awards in biomedical and social sciences.

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