The Leverhulme Trust

OUTLINE APPLICATION FORM - International Network Grant

Applicant: Mr Jim Todd	ID/Ref:
Project Title: Developing the Capacity for Data Management and Statistical Analysis in East Africa.	

Principal Applicant Details

Submission Date:	N/A
Total Requested:	125,000

General Details

Title	Mr	Gender	Male
First Name(s)	Jim	Date of Birth	15/07/1956
Surname	Todd		

Contact Details

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How is your post currently funded?	through grants		
Date appointed to current post?	01/01/2009		

Proposal

Long Title	Developing the Capacity for Data Management and Statistical Analysis in East Africa.
Short Title	Network of data professionals
Main/sub field of study	Public & Industrial Health

Start Date	01/04/2013
Duration	36

Abstract

Within health services in East Africa, there is an urgent need to improve the availability and quality of data for routine monitoring and evaluation, and for formal clinical and epidemiological research studies. Such data are vital for sound policy formulation and for improving population health. However, there is shortage of skills in data management and statistics which are essential to collect, interpret, and disseminate high-quality health data. One excellent way to enhance and expand these data skills is to create a self-sustaining network of data professionals that can foster and encourage collaboration and build links between individuals, institutions and networks.

Why the Leverhulme Trust

The Levenhulme Trust has supported research and researchers in East Africa. It encourages long-term collaboration between African and UK institutions and individuals, with a goal of strengthening African research capacity. The proposed network aims to build a vibrant research community of data professionals in the health sector in East Africa. The network will include those working in academic institutions, government services and the private sector, providing the basis for sustainability.

The network will bring together 3 academic and 3 research institutions from East Africa and build on existing local capacity for statistics and data management. Over the past 7 years, short courses in statistical methods in health

research have been developed in UVRI, KEMRI Kilifi, NIMR Mwanza, and Makerere. In KCMU College, these short courses have been built into a 2 year Masters course in Epidemiology and Applied Biostatistics. This provides a unique opportunity to share best practice, train the next generation of statisticians and data managers, and build sustainable research capacity in the partner institutions and beyond.

Leverhulme also values working with other networks and donors. The WellcomeTrust has created consortia of African institutions, such as MUII (www.muii.or.ug), THRiVE (www.thrive.or.ug) and CARTA (www.cartafrica.org), and funded other strategic grants to build health research capacity in East Africa. These provide a larger framework for collaborative links between African institutions. This application to Leverhulme adds detail to this larger picture by concentrating on data professionals, a group whose skills are urgently needed in health research and often overlooked in East Africa.

Network Partners

Network Partner 1	
Institution:	Kenya Medical Research Institute (KEMRI)-Wellcome Trust Research Programme
Address:	PO Box 230
	Kilifi,
	Kenya 80108
Country :	Kenya
Description of the institution :	KWTRP provides facilities within Kenya for all types of medical research. As such biostatisticians within KWTRP are responsible for data quality, and data analysis. KWTRP is a constituent part of the KEMRI setup hosting the Centre for Geographicla Medicine Research-Coast and collaborates with other institutes for research and for higher learning. With regard to the latter we have written Memoranda of Understanding with both the oldest and most well established University of Nairobi as well as the much more recently constituted and rapidly developing Pwani University College that shares Kilifi as the host town with KWTRP.
Role of institution in the Network :	KEMRI will provide the sustainability of the network in Kenya. It has a critical mass of statisticians and data managers, and they will be the means by which the network will reach the biostatisticians in the country. KEMRI have links with more general statisticians in Universities, and with International Biometrics society in Kenya
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CV	
Details of partners Role	

Network Partner 2	
Institution:	National Institute for Medical Research
Address:	PO Box 1462
	Isamilo
	Mwanza
Country :	Tanzania
Description of the institution :	NIMR overseas all health research in Tanzania, and data managers working in NIMR are responsible for the quality of data from many different projects. There are 2 statisticians with

	PhDs in NIMR Mwanza, andfour more with Masters training. In the last 3 years NIMR scientists have developed and implemented a three week course on research methods which includes training in statistics and epidemiology. Projects within NIMR are developing innovative data management techniques for linking data, and this will require pooling expertise across the region. NIMR will provide the sustainability for the network in Tanzania.
Role of institution in the Network :	NIMR statisticians contribute to the analysis of national data. Their data managers and statisticians teach in different courses, both within NIMR and in Tanzanian universities. NIMR is a partner in the THRiVE consortium, and shares other skills with partners in East Africa. This network will build on those partnerships, and enabling links to be built with other statisticians, data managers and researchers, with sharing of good practice and expertise. This will strengthen the research experience, especially for new researchers coming to NIMR.
Title	Dr
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CV	
Details of partners Role	

Network Partner 3	
Institution:	Uganda Virus Research Institute
Address:	PO Box
	Entebbe
Country :	Uganda
Description of the institution :	Uganda Virus Research Institute partners with Makerere in MUII, hosts several networks and coordinates diverse research. Staff at UVRI include four statisticians with PhD, and many more data professionals with Masters level training. Uganda Virus Research Institute is the leading health research institute in Uganda. With the collaboration of MRC, they provide the infrastructure for sustaining the network in the future. UVRI have many international collaborations, and this will ensure best practice gets disseminated to diverse research projects in Uganda
Role of institution in the Network :	Statisticians in UVRI analyse the data from research conducted by UVRI and collaborative partners. They are also responsible for training in university settings, and through professional development programs. They will provide the sustainability of the network in Uganda. UVRI can draw on international resources to contribute to the development of data professionals across East Africa.
Title	Dr

Forename	Jonathan
Surname	Levin
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CV	
Details of partners Role	

Network Partner 4	
Institution:	Kilimanjaro Christian Medical University College
Address:	PO Box 2240
	Moshi
Country :	Tanzania
Description of the institution :	With the help of the EACCR network and the THRiVE consortium, KCMU College (KCMUC) has recently started a Masters programme in Epidemiology and Applied Biostatistics. It also run short courses on data management and statistical computing, and has an extensive research programme involving data managers and statisticians. KCMUC is part of the Tanzanian Genomics Association. Four members of staff from the College have graduated with Masters in statistics, along with several PhD and MSc graduates in epidemiology, and all new graduates are looking for mentorship in their research. KCMUC is building a critical mass of data professionals.
Role of institution in the Network :	KCMUC is collaborating in different capacity building projects across in East Africa. It can share teaching materials, resources and expertise to set up Masters level courses similar to its new Masters in Epidemiology and Applied Biostatistics. KCMUC will train new statisticians and data managers and mentor those new graduates in the work after graduation. By working within existing African networks (eg THRiVE), and drawing on its international collaborators from the Netherlands (Nijmegan) and Denmark (BSU), KCMUC will be able to reach data professionals working in research projects throughout the region.
Title	Dr
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CV	
Details of partners Role	

Network Partner 5	
Institution:	Makerere University
Address:	POBox 7062
	Kampala
Country :	Uganda
Description of the institution :	Makerere is the oldest university if East Africa, and has a critical mass of young scientists and

	statisticians. It is the hub for the THRiVE consortium, , a partner in MUII, and a member of other networks (CARTA, MCDC). The institution provides training and development for data managers, statisticians and public health researchers, including a Masters in Clinical Epidemiology. There are many statisticians working on research projects, and several have completed their PhD training in applied statistics, epidemiology, and demography. The mix of teaching and research provides an ideal training ground for new statisticians and data managers.
Role of institution in the Network :	This network will enhance the MUII initiative, and the larger consortia (THRiVE, CARTA, MCDC) in East Africa. It will enable good practice and data to be shared across institutions and projects. The involvement of Makerere which coordinates many other collaborative initiatives is critical to the success of this network for statisticians and data managers. Makerere will train statisticians and data managers based in Uganda, and the network will use this expertise to encourage and build courses in other places in Uganda and East Africa. Senior staff in Makerere will take the lead in mentoring young statisticians and data managers.
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CV	
Details of partners Role	

Network Partner 6	
Institution:	University of Nairobi
Address:	College of Biological and Physical Sciences
	Box 30197-00100, Nairobi
Country :	Kenya
Description of the institution :	University of Nairobi is the premier teaching institution for statisticians and data managers in East Africa. Staff in the institution collaborate in many different research projects, which enables data personnel get experience in different methods and analyses. The international collaboration provides an opportunity to match new Kenyan personnel with international mentors, and to train many other staff in basic techniques. Nairobi University has close links with the Kenyan health Ministries, and with Kenyatta teaching hospital, thereby ensuring access to users of data and statistical results in Kenya.
Role of institution in the Network :	The institution will be the centre of the network, and will provide training courses and mentorship to young statisticians. It close links with KEMRI-WT and the Kenyan health Ministries enable it to develop collaborative training schemes. The SIRCLE initiative gave health professionals a training in research methods by linking to UoN and

	KEMRI, and this can be replicated with data professionals in Kenya. Nairobi's good transport and communication links make it an obvious place for the first meetings of the East African data professionals network.
Title	Dr
Forename	Nelson
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Details of partners Role	

Network Partner 7	
Institution:	Oxford University
Address:	Centre for Clinical Vaccinology & Tropical Medicine
	Churchill Hospital, Old Road
	Oxford, OX3 7LJ
Country :	UK
Description of the institution :	Members of CCVTM have been part of a number of formal and informal groupings in East Africa. They have strong links with institutions and individuals working in tropical health research throughout the world. A notable resource is the Global Health Trials (www.globalHealthTrials.org), an online community to support clinical trials in resource-limited setting through the sharing of knowledge, methods and tools. The Global Health Trials website hosts a group for data professionals in East Africa. It enables communication and dissemination and is a trusted, well-used resource, available to the development of a network for data professionals in East Africa.
Role of institution in the Network :	We will leverage expertise from collaborators to identify best practices, and develop a strong group of data mangers and statisticians working in the East African region. We will develop linkages with other institutions such as Pwani University, as well as train and support data professionals working in clinical trials in East Africa. Using the Global Health Trials web facilities will be used to develop an online community of practice, where network members can work together and exchange knowledge. CCVTM data managers and statisticians are available for face-to-face mentoring, training and sharing of skills, with online provision to continuing learning
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CV	
Details of partners Role	

Summary

Health services around the world require accurate, high-quality data to plan appropriate responses, guide policy, and monitor and evaluate the quality of health interventions. Skilled data professionals are essential to generate, analyse, and make effective use of health data. However, there is a critical shortage of skills in statistics and data science worldwide, with East Africa alone needing more than 100 new data professionals every year to fill the current gap. This shortage will increase over time, as governments and health services rely increasingly on data to inform health policy and allocate resources effectively. This proposal aims to create a sustainable network to support the professional development of data managers and statisticians in health research in East Africa.

In order to make informed decisions about the effectiveness of health interventions and services, high-quality data need to be collected, managed, analysed and shared. Sharing data can produce important observations, and improve the quality of data collection. Many health researchers recognise the importance of sharing data for global health development. However, one of the major obstacles to sharing data effectively is the shortage of data professionals in developing countries.

East Africa has started to build the capacity to train and mentor data professionals. Courses have been set up in several research institutions (KEMRI, UVRI, NMRI) to provide training for data managers and statisticians. Masters level courses are in place in Makerere, KCMU College and Nairobi University to train statisticians and epidemiologists. Many data staff are undertaking distance learning at international universities, work experience, and exchange visits to build their skills. The use of open-access online learning, provided by groups such as edX and Coursera, are likely to increase. However, full professional accreditation does not come from the completion of a training course. This proposed network will create the framework for professional support across the region, and promote the growth and development of data skills in health research. In developed countries, professional societies such as Royal Statistical Society International Biometric Society and American Statistical Association provide this support; this network application aims to develop such a professional society in East Africa.

What are the benefits of such a network? To members, it provides opportunities to exchange ideas, skills and experiences. Building collaboration between institutions enables the sharing of courses, data, and staff. Through good communication, and raised visibility of the network, district and national policy makers can access a wider base of data professionals for decision making, and for expert advice from within the country.

There are many areas where the network will be useful, with three examples given here. Firstly, in the teaching of statistics and data management, there is a need for clear, effective courses which build student skills, and the network will encourage sharing of course materials, and network members giving guest lectures in different institutions. Secondly, clinical trials require specialist data skills, which are difficult to build and retain in one institution. This network can provide support and training for the data professionals working on the trial; help with the monitoring and oversight of the trial data; and discussion about how to archive and share data from the trial. Thirdly, new technology and data methods are rapidly becoming available worldwide, including new statistical software and opportunities for web-based data collection. This network can support local meetings, seminars and web-based discussion, so that data professionals can learn new methods and skills without having to leave their own workplace. An example of this is the use of open-source software, such as R, RedCap, OpenClinica, which has a steep learning curve, but leads to valuable new skills.

How will the network operate? Open membership and face to face meetings will be a big part of the initial network. However the success of web based applications shows the benefit of bringing people together into virtual communities, especially when organised around common themes. The Global Health Trials (http://globalhealthtrials.tghn.org/), based in Oxford provides an example of this, and is hosting a communities of practice for the East Africa data professionals. This grant will enable us to build this into a proper professional network, through annual meetings, sharing of resources, and mentorship of newly qualified graduates. This in turn will build research capacity and initiate a register of data skills in the region, leading to self-sufficiency, and strong South-to-South links between academic and research institutions. The network will help to build a career structure for data professionals within the health sector, combating the loss of the best programmers and statisticians to the financial and other sectors.

The network would also encourage links with institutions outside of East Africa, and utlise opportunities for East African data professionals to exchange expertise and skills with visiting researchers, and using opportunities to bring members together to write new grant proposals, and gain an international profile. Institutions in East Africa will be able to offer data services to researchers and policy makers, enhancing the value of their data, and advancing their role beyond that of data collection. The network will bring together professionals throughout the region to form a critical mass of data managers and statisticians, and motivate members to contribute to the

network to build long term sustainability.

What deliverables can be achieved by setting up this network?

- Papers. We will monitor and report papers with contributions by network members.

- New grants. We will record grants applied for and obtained by network members, and projects that use the network to write new proposals, and gain funding.

- Training and qualification. We will identify training needs and opportunities for network members, and produce a registry of courses available in East Africa that fills those needs. We will document training opportunities and successes. We will extend the use of open-access on line courses by providing copies of materials to places with limited internet bandwidth by re-distributing materials via DVD

- Collaboration between East African institutions. We will document collaboration in the teaching of students, and collaborative courses, and in research. This will include innovative collaboration developed through this network.

Proposed visits, workshops and other activities

Annual meeting of network members.

A 2-3 day annual general meeting (AGM) will be held, bringing together network members in order to present their work and new ideas. This would be open to all members in East Africa, and would seek to build links with other groups in the area. The AGM would encourage posters and presentations by experienced data professionals, and by students. It would also enable seminars and training meetings to be run around the scientific conference to develop skills and expertise in statistical packages, data programming and other data-related skills.

Professional workshops

Alongside the AGM, we would organise focussed workshops devoted to particular themes. The workshops would be independent of the AGM and open to all interested in the topic. We would encourage and support visiting professionals from IBS and RSS to come and help with these workshops. The workshops could also be held independently in different centres (see the strengths of the network partners), and advertised and coordinated through the network secretariat.

While the network would organise these courses, to ensure sustainability, participants would be asked to contribute to the running costs of the courses. The themes could include:

- Presenting and learning new software

- Professional development

- Exploring new analyses

- Grant writing

- Writing of research papers

- Development of new data projects within the health systems in East Africa.

- GCP and data management in clinical trials (linked to Global health Trials network)

Short professional attachments.

Short fellowships (~1-2 months) would be offered to network members. These could be offered to link to a conference being held in another country (in UK or outside East Africa), collaborative research, or development of new data programmes. Fellowship of this type would be open to any data-rated activity within the medical field, ranging from teaching, to giving advice to policy makers. Fellows would be encouraged to build collaborative links which would build new innovative research in statistical methods in East Africa. The budget for the fellowships is under travel in the Finance section.

Building a virtual network forum

Due to the distance and difficulty in travelling across the countries in East Africa, a virtual forum would be created to enable network members to discuss issues and blog about their work. We anticipate using servers and expertise from the organisations that employ many of the network members. The local administration for the network would be responsible for the forum, but the expertise would come from professionals from around the world. The web forum would allow open discussion about data related problems similar to those seen in the Global Health Trials forum (seehttp://globalhealthtrials.tghn.org). We would encourage links with other such forums in order to capitalise

on their expertise.

We have set up the web forum for the community of practice for data professionals in East Africa (http://globalhealthtrials.tghn.org/community/groups/group/data-management-statistics/topics/290/). This has enabled the circulation of the proposal wider than the investigators and partners, and will bring buy-in from many who want iopen discussions about data, and data use.

Current references to the literature in the proposed research topic

Bchir A, Bhutta Z, Binka F, Black R, Bradshaw D, Garnett G, Hayashi K, Jha P, Peto R, Sawyer C, Schwartländer B, Walker N, Wolfson M, Yach D, Zaba B.Better health statistics are possible.Lancet. 2006 Jan 21;367(9506):190-3

Chandramohan D, Shibuya K, Setel P, Cairncross S, Lopez AD, Murray CJ, Zaba B, Snow RW, Binka F.Should data from demographic surveillance systems be made more widely available to researchers?PLoS Med. 2008 Feb;5(2):e57. Review.

Davidian M and Louis T. Why Statistics? Editorial in The ScienceMag 10.1126.Science.1218685 found at www.sciencemag.org

Fegan G, Moulsdale M, Todd J. The potential of internet-based technologies for sharing data of public health importance. *Bull World Health Organ*. 2011;89:82.

G. W. Fegan, and T. A. Lang, 'Could an Open-Source Clinical Trial Data -Management System Be What We Have All Been Looking For', PLoS Med, 5 (2008), e6.

Lang TA, White NJ, Tran HT, Farrar JJ, Day NP, Fitzpatrick R, et al. Clinical research in resource-limited settings: enhancing research capacity and working together to make trials less complicated. PLoS Negl Trop Dis. 2010; 4(6): e619.

Lang T. Advancing global health research through digital technology and sharing data. Science. 2011; 331(6018): 714-7.

Maher D, Biraro S, Hosegood V, Isingo R, Lutalo T, Mushati P, Ngwira B, Nyirenda M, Todd J, Zaba B; Collaborators in ALPHA Network.Translating global health research aims into action: the example of the ALPHA network.Trop Med Int Health. 2010 Mar;15(3):321-8.

Mwaluko G, Wringe A, Todd J, Glynn JR, Crampin AC, Jaffar S, Kalluvya S, Zaba B. Use of data from HIV counselling and testing services for HIV surveillance in Africa. Lancet 2007;369:612-3.

Pisani E, AbouZahr C. Sharing health data: good intentions are not enough. *Bull World Health Organ* 2010;88:462-6.

Pisani E, Whitworth J, Zaba B, Abou-Zahr C.Time for fair trade in research data.Lancet. 2010 Feb 27;375(9716):703-5

Referees	

Referee 1	Dr Lucy Carpenter
Department : Institution	School of Public Health : Oxford University
Position:	Reader in Statistical Epidemiology
Email:	lucy.carpenter@nuffield.ox.ac.uk

Referee 2	Dr Ric Coe
Department : Institution	Statistical Services Centre : Uinversity of Reading
Position:	Principal Statistician
Email:	R.COE@CGIAR.ORG

Previous and Current Applications

Finance

Salary Budget

Staff Type:Network Facilitator
Full Name:Ms Gabi Meineke
Gender://
DOB://
Percentage Of Time Spent On The Project:10

	Year 1	Year 2	Year 3
Scale Point	12	12	12
Basic Salary	£8,000	£8,500	£8,500
Local Allowance	£0	£0	£0
National Insurance	£0	£0	£0
Superannuation	£0	£0	£0
Overall Total	**£8,000**	**£8,500**	**£8,500**

Associated Costs

	Year 1	Year 2	Year 3	Total
Administration expenses This is needed to coordinate the network and to build links between individuals. This will include the part time employment of a local collaborator to facilitate activities in East Africa	£6,000	£6,000	£6,000	£18,000
Laptop/ PC For the use of the local Administrator in East Africa.	£2,000	£0	£0	£2,000
Meetings Annual general meetings and training workshops. These will be held in different places across East Africa, and will provide the forum for researchers to come together and discuss the network progress and their own research.	£10,000	£10,000	£10,000	£30,000
Travel These will be small fellowships for network members to travel and work with others. The purpose of these is to develop new collaborative links for research, analysis and data development	£7,000	£7,000	£7,000	£21,000
Website An important way to bring members together over a virtual framework, and for sharing good practice, exchange of views and collaboration.	£2,500	£2,500	£2,500	£7,500
Teaching This would be to develop and enhance the teaching of statistical concepts	£6,500	£7,500	£7,500	£21,500

across East Africa. This would buy some time for network members to develop particular courses, and materials.				
Total	**£34,000**	**£33,000**	**£33,000**	**£100,000**

Working Copy

Budget Summary

	Year 1	Year 2	Year 3
Total Salaries	£8,000	£8,500	£8,500
Total Associated-Costs	£34,000	£33,000	£33,000
Overall Total	**£42,000**	**£41,500**	**£41,500**

Salaries Total	**£25,000.00**
Associated Costs Total	**£100,000.00**
Grand Total	**£125,000.00**

Institutional Approver

I confirm on behalf of the Principal Applicant's institution that:

- we agree with the budget as laid out in this application;
- we have fully read and approve of this application and
- we understand that agreement to the Trust's terms and conditions will be requested following the offer of a grant.

Name	
Position	
Email	