



Royal College of  
Surgeons in Ireland



College of Medicine  
Malawi



Surgical Society  
of Zambia



University of Nijmegen  
Netherlands



European Union  
FP 7

## Clinical Officer Surgical Training in Africa COST-Africa Malawi

### What is COST-Africa?

Clinical Officer Surgical Training in Africa (COST-Africa) is a research project, funded by the European Commission under its 7<sup>th</sup> Framework Programme for Research and Technological Development (FP7). COST-Africa is providing surgical training to Clinical Officers (COs) and evaluating the impact and cost-effectiveness of surgery delivered at district hospitals in Malawi and Zambia. The College of Medicine (COM) is the project lead in Malawi.

COST-Africa is a collaboration between the Royal College of Surgeons in Ireland (RCSI), College of Medicine in Malawi, Surgical Society of Zambia, and the Radboud UMC Nijmegen in the Netherlands. Representatives of the nine countries of the College of Surgeons of East, Central, and Southern Africa (COSECSA) endorsed this study in 2009.

### Rationale/ Justification

By developing the capacity at district hospital level to deliver emergency and essential surgical interventions, COST-Africa will help address (i) a critical dimension of the human resource crisis in Malawi's health sector; and (ii) perhaps the largest unmet burden of disease in Africa for which an effective intervention (surgery) exists.

COST-Africa is predicated on three dimensions of Malawi's health sector and human resource crisis:

- The district hospital is the cornerstone of Malawi's and Africa's health system.
- The need for a sustainable response to address the shortage of clinical staff capable of delivering essential emergency and elective surgical care. COs perform the bulk of emergency obstetric operations at district hospitals in Malawi.
- A high proportion of Disability Adjusted Life Years (DALYs) are lost, especially in rural areas, but could be saved through surgical interventions at the district level.

**COST-Africa objectives** are to:

1. (a) Work with relevant Ministries, Health Professions Councils, and national training colleges to ensure that COST-Africa supports national policy priorities for surgical training of Clinical Officers/Medical Licentiates (COs/MLs) in Malawi and Zambia.  
(b) Conduct a situational analysis to map district level surgical services; measure surgical capacity and identify gaps to be addressed prior to delivering surgery safely and effectively in district hospitals; and establish surgical information systems for measuring surgical outcomes in Zambia and Malawi.
2. Design and implement ethically reviewed surgical training interventions for COs/MLs, which include in-service training, supervision and quality control.
3. Measure the effectiveness and impact of the interventions at the levels of health worker, patient, health facility and district population in a randomised controlled trial (RCT).
4. Establish the cost-effectiveness of the intervention.
5. Support national and regional policy makers in developing career paths and retention strategies aimed at surgically trained Clinical COs/MLs and specialist surgeon-trainers.

Prof Eric Borgstein  
[eborg@me.com](mailto:eborg@me.com)

Prof Nyengo Mkandawire  
[nmkandawire@medcol.mw](mailto:nmkandawire@medcol.mw)

Prof Ruairi Brugha  
[rbrugha@rcsi.ie](mailto:rbrugha@rcsi.ie)

Dr John Kachimba  
[jskachimba@gmail.com](mailto:jskachimba@gmail.com)

Dr Rob Baltussen  
[R.Baltussen@elg.umcn.nl](mailto:R.Baltussen@elg.umcn.nl)



Royal College of  
Surgeons in Ireland



College of Medicine  
Malawi



Surgical Society  
of Zambia



University of Nijmegen  
Netherlands



European Union  
FP 7

### **Clinical Officer training in Malawi**

Much of the first two years of COST-Africa in Malawi – June 2011 to December 2012 – was spent negotiating and getting approval and accreditation for a series of national BSc degree programmes for Clinical Officers in Malawi, with separate BSc's in Surgery, Obstetrics & Neonatal Care, Paediatrics, and Medicine. This required a long process of negotiation with Government, the College of Medicine, and an accreditation process through the University of Malawi. COST-Africa led and drove the process of accreditation across the different medical specialties, which was a condition for getting approval for the BSc in Surgery.

Advertisements were published in December 2012 and – following a national competitive process – 16 COs were selected for COST-Africa sponsorship and enrolled in the BSc in surgery degree programme at the College of Medicine (CoM) in April 2013. The BSc curriculum and training programme provides COs with a theoretical base and builds on their existing experience in, and exposure to: common surgical and obstetric emergencies, trauma management, orthopaedic problems, and common elective general surgery.

The 3 year BSc program is comprised of modular courses at CoM, central hospitals and on-the-job-training in district hospitals:

- An initial 6 month period, focusing on basic science and theory at the CoM, Blantyre.
- Followed by 18 months on the job training for COST-Africa COs, each allocated to one of 8 designated randomly selected district hospitals located in the Southern and Central Regions of Malawi. During this period, they will return to Blantyre for short periods of instruction and training at CoM and central hospitals.
- This first cohort of Clinical Officers, whose tuition fees and costs are covered by the COST-Africa project will spend a further 12→18? months at district hospital level participating in the COST-Africa evaluation.
- For the final year, after the COST-Africa evaluation, students will be based in one of the Central hospitals, where they will complete their studies towards a BSc degree.

### **Study design and evaluation**

The study design in Malawi is simpler than in Zambia and has retained the original cluster randomized controlled trial (RTC) design, approved by the EC. The COST-Africa full time researcher conducted field visits to all district hospitals in the Southern and Central regions, March to May 2013, where he systematically collected retrospective data (3 months of data from Operating Theatre registers) and conducted a rapid situation analysis. Based on an analysis of these data, 16 government district hospitals were identified and paired, and one of each was randomly allocated to the intervention arm, with the other to serve as a control arm. The 16 COs who have been awarded a COST-Africa Clinical Officer sponsorship have been purposively allocated – two each to the eight randomly selected intervention hospitals.

The evaluation will be multi-dimensional and multi-levelled, including:

- (i) a before and after evaluation,
- (ii) a controlled intervention trial, and
- (iii) an economic analysis.

COs participated in a data collection training workshop, circa September 2013, prior to being deployed to the 8 COST-Africa intervention hospitals. Data collection tools have been developed for monitoring the numbers of cases of surgery performed, and simple outcomes. Costing data are being collected.

Prof Eric Borgstein  
[eborg@me.com](mailto:eborg@me.com)

Prof Nyengo Mkandawire  
[nmkandawire@medcol.mw](mailto:nmkandawire@medcol.mw)

Prof Ruairí Brugha  
[rbrugha@rcsi.ie](mailto:rbrugha@rcsi.ie)

Dr John Kachimba  
[jskachimba@gmail.com](mailto:jskachimba@gmail.com)

Dr Rob Baltussen  
[R.Baltussen@elg.umcn.nl](mailto:R.Baltussen@elg.umcn.nl)



Royal College of  
Surgeons in Ireland



College of Medicine  
Malawi



Surgical Society  
of Zambia



University of Nijmegen  
Netherlands



European Union  
FP 7

**In-service training:** In-service training and supervision are being provided through regular district hospital visits by surgeon trainers from Blantyre and Lilongwe, who are overseeing the training of the COs in the different modules of the BSc curriculum.

**Ethics and Data safety:** ethics approval for the study has been approved in Malawi, Zambia and Dublin and a Data Safety Monitoring Board (DSMB) has been established in each country, to which the provincial surgeons and researchers will report at 6 monthly intervals. Regular reports will also be made to the respective national ethics committees. Hospital audit committees will be established to review all adverse events, which will be reported to the provincial surgeons and COST-Africa team (researchers & surgeons), who will be responsible for taking any necessary action

### How Africa will benefit

COST-Africa will firstly bring benefits to the district and rural populations of Malawi and Zambia who lack easy access to urban centres and whose only hope of life-saving emergency surgery is if it can be delivered at the nearest district hospital. The outcome will be a fully tested model that will:

- a) Make a major and sustainable impact on Africa's Burden of Disease.
- b) Provide African countries with surgically trained, sustainable and retainable clinicians.
- c) Demonstrate the potential of a 3-fold role for Africa's highly trained but scarce surgeons, helping to retain specialist surgeons in Africa:
  - as specialists
  - as trainers (of doctors and clinical officers)
  - as supervisors and quality assurers of surgical services.

Interim results will be presented to the Ministry of Health in late 2014; an update will be provided to COSECSA in December 2014, and wider dissemination will follow.

### Contacts

For further information on the Malawi country study and surgical curriculum, contact the lead investigators: [eborg@me.com](mailto:eborg@me.com) or [nmkandawire@medcol.mw](mailto:nmkandawire@medcol.mw). Enquiries about data collection tools and plans for global dissemination to the European coordinator: [rbrugha@rcsi.ie](mailto:rbrugha@rcsi.ie).

Given the importance of the success of this RCT to the future of surgical services in Africa, we request that anyone planning surgical interventions and/or research in Malawi first contact us.

Prof Eric Borgstein  
[eborg@me.com](mailto:eborg@me.com)

Prof Nyengo Mkandawire  
[nmkandawire@medcol.mw](mailto:nmkandawire@medcol.mw)

Prof Ruairí Brugha  
[rbrugha@rcsi.ie](mailto:rbrugha@rcsi.ie)

Dr John Kachimba  
[jskachimba@gmail.com](mailto:jskachimba@gmail.com)

Dr Rob Baltussen  
[R.Baltussen@elg.umcn.nl](mailto:R.Baltussen@elg.umcn.nl)