



NIHR Global Health Research Unit on Global Surgery

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Global Surgery — A Critical Unmet Need

In 2017 The Lancet Commission and World Health Organisation identified that 5 billion people lack access to safe, affordable surgical and anaesthesia care.

In low and middle income countries (LMICs) 9 out of 10 people lack access to even the most basic surgical services; six million will die each year within 30 days of an operation.

It is estimated that failure to improve surgical care will cost the world economy \$12.3 trillion in lost GDP by 2030.

A critical need therefore exists to improve patient survival following operations and to reduce the devastating impact of inequalities in surgical care throughout the world.



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Sustainable
Research Capacity

Our Solution — Building Sustainable Research & Training Capacity

High quality research and training are crucial to improving patient care in LMICs.



Training &
Education

The NIHR Global Health Research Unit on Global Surgery (GSU) was established in response to the Lancet Commission report, *Global Surgery 2030* and The World Health Organisation's *Emergency and Essential Surgical Care Programme*. The GSU is aiming to improve surgical outcomes in LMICs through collaborative research and training.



Information
Gathering

The core values of GSU are founded on the United Nation's Sustainable Development Goals of:

Good Health & Well Being
Quality Education
Industry, Innovation & Infrastructure
Reducing Inequalities
Partnership for Goals



Evidence
Generation

Through bespoke training and research prioritisation, our partners in LMICs will be empowered to set the research agenda relevant to their own patients. Evidence generated by this research will change surgical practice and improve patient care around the world.



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The Global Surgery Unit Background & Partners

The NIHR Global Health Research Unit on Global Surgery (GSU) emerged from an existing network of surgical researchers: The GlobalSurg Collaborative.

GlobalSurg harnesses the power of social media to recruit researchers from medical students to professors to undertake international research studies.

GlobalSurg studies have collected evidence from >40,000 patients revealing global variation in outcomes of emergency abdominal surgery, surgical site infections and surgical outcomes for cancer.

The studies and networks of the GlobalSurg Collaborative form the basis for future high quality clinical trials in LMICs.

The GSU was formed in 2017 as a consortium between the Universities of Birmingham, Edinburgh and Warwick, together with our GlobalSurg international partners.



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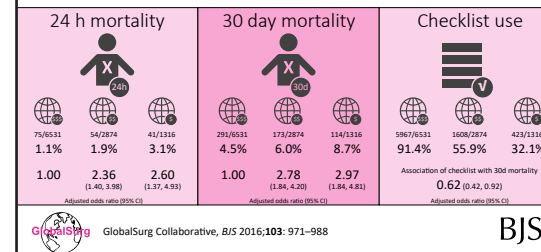
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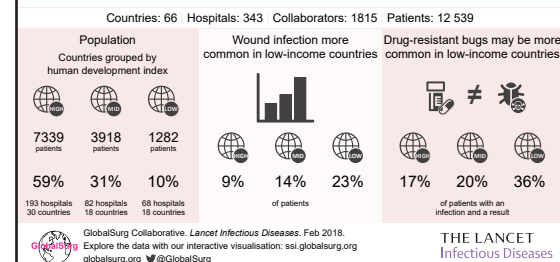
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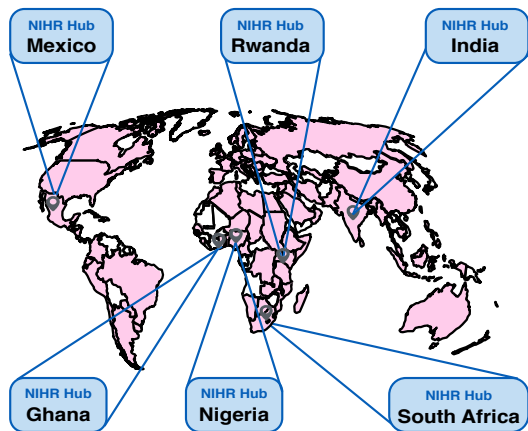
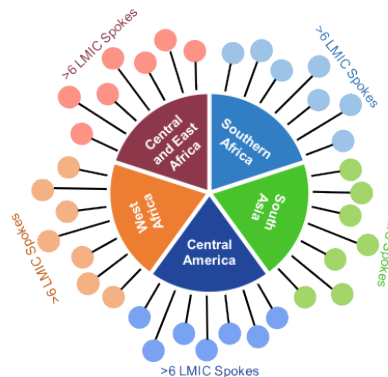
GlobalSurg 1: Outcome of emergency abdominal surgery in high, middle and low income countries



Wound infection after gastrointestinal surgery worldwide



The Hub & Spoke Model



Structures & Processes

The GSU is based on a 'hub & spokes model'.

Research 'hubs' are established in larger, usually urban hospitals. These centres receive training and resources to support the delivery of local training and research at smaller, often rural, 'spoke' hospitals.

To date, hubs have been established in: Mexico, India, Nigeria, Ghana, Rwanda, and South Africa.

The hub and spokes model ensures **all** local patients have the opportunity to be included in research studies and to benefit from the resources provided by their hub.

Most importantly, we are engaging local surgeons; we believe long term sustainability can only be achieved if clinicians within LMICs are empowered to design and deliver the clinical research needed to improve surgical outcomes for their own patients.

By participating in a cycle of research prioritisation, information gathering, evidence generation, and implementation & policy making, our partners are driving changes in surgical practice in their own countries.

Training & Education

We recognise that training and supporting the next generation of surgeon-scientists is the foundation of building research capacity and achieving sustainable improvements in surgical care in LMIC.

Fully funded fellowships are available for surgical trainees from hub countries to undertake post-graduate degree qualifications via online, distance learning programmes at the University of Edinburgh.

The GSU has also established two interactive online resources; the data centre (data.globalsurg.org) and a virtual learning environment (training.globalsurg.org).

The data centre allows users to interact with datasets generated by GlobalSurg studies and provides educational materials related to healthcare data analysis. The virtual learning environment provides open access general research training modules and bespoke project-specific training for GSU research studies.

In addition to online training, our academics also deliver face-to-face research skills training at our annual research prioritisation workshops as well as facilitating training in basic surgical skills provided by the Royal College of Surgeons, England.

TRAINING

the next generation of surgeon scientists



Members of the Global Surgery Unit deliver a Research & Audit Skills training course in Kigali, Rwanda

DATA CENTRE

USING DATA TO IMPROVE PATIENT CARE GLOBALLY



COMMUNITY ENGAGEMENT & INVOLVEMENT

Community Engagement & Involvement

Improving outcomes for patients is central to the work of the GSU.

To ensure our research is relevant to communities in LMICs, we aim to involve patients with lived experience and the public in the prioritisation, design and implementation of all our clinical trials and studies. This ensures that local healthcare needs are being met and potential barriers and challenges identified and overcome early on, therefore guaranteeing the success of our studies and allowing us to have a greater impact on surgical healthcare in LMICs.

Our dedicated Community Engagement & Involvement Manager is also working to capture and report on all engagement and involvement activities across our research hubs. This will allow us to share our experiences with the wider global health network with the aim of supporting the development of an empowered public across the world.



Bernard Ofori Appiah, Hub Manager, and Dr Karolin Kroese, CEI Manager, lead community engagement activities at the NIHR Global Surgery Unit hub in Ghana.



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Policy & Implementation Committee

In order to improve outcomes for patients, it's crucial that innovations identified by research are implemented globally.

The Policy & Implementation Committee has been established to work with national governments, professional associations and international organisations (NGOs), to develop evidenced-based recommendations for policy change. Recommendations will be based on cost effectiveness as well as clinical outcomes and will result in changes to surgical practice.

The committee, chaired by the President of the Royal College of Surgeons (England), includes representation from the WHO, The Lancet Commission and the UK Government, as well as International Surgical Societies and NGOs.

Health Economics

Health economics considers the cost effectiveness of any treatment. We embed this at every stage of our research studies from initial design and planning through to execution and analysis.

This will guide development of health economic models that can be used in multiple settings where costs and resources may differ.



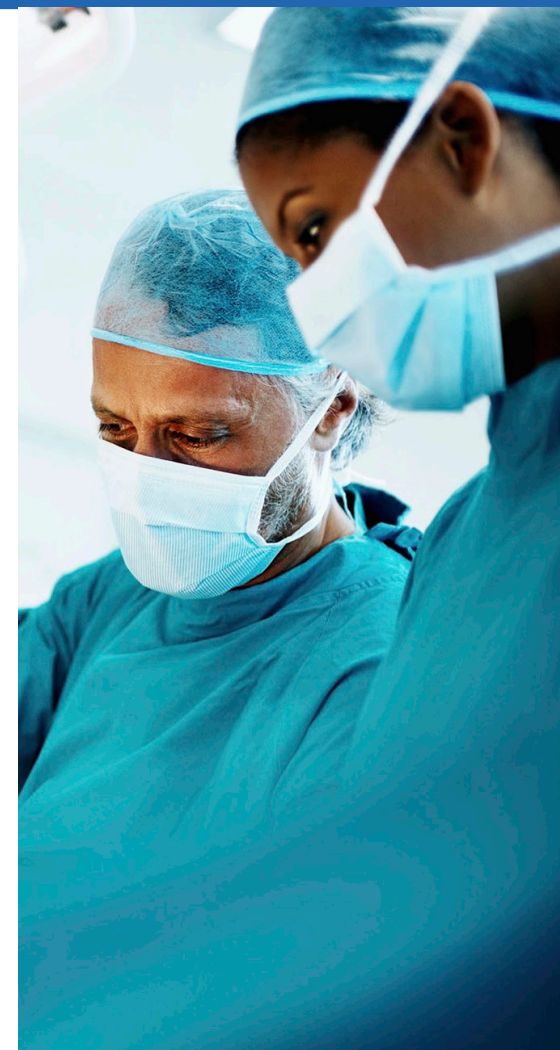
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Research Priority Setting

The GSU is harnessing its broad collaborative networks to initiate and advance practice-changing research that will have a real impact in LMICs.

To achieve this we run an annual prioritisation exercise. Areas of unmet clinical need that will benefit most from high quality research are identified through online engagement with our network.

Short-listed research themes are discussed at priority setting workshops attended by surgeons, healthcare researchers and policy makers from our partner countries.

Attendees develop research plans and preliminary protocols for future studies.

Based on our research prioritisation exercises and evidence generated by previous GlobalSurg studies, we have identified several main themes which form the basis of all our research studies.

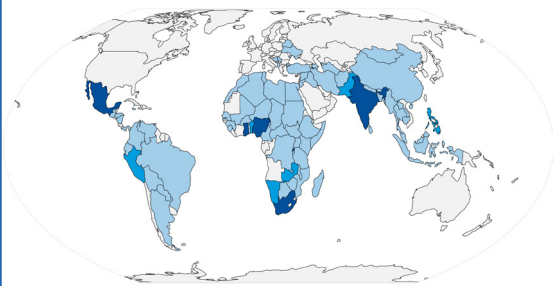
These are: **Surgical Site Infections, Cancer, Access to Surgery, and Perioperative Care**

These main themes will form the basis of multiple research studies within the GSU.

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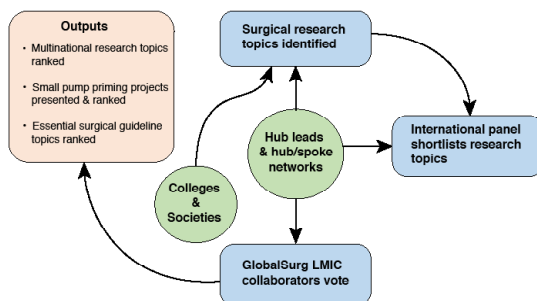
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- NIHR Global Surgery Unit Hub countries
- Countries participating in clinical trials
- Countries participating in research prioritisation (2018)

The Prioritisation Cycle



SSI

surgical site infection

Surgical site infections (SSI) are the most common complication after surgery and a frequently occurring hospital-associated infection in LMICs.

SSI cause pain and disability, and increased recovery time for patients. In LMICs this places a financial burden on healthcare systems and on individuals, who can be required to pay for their own treatment.

The GSU has developed two randomised controlled trials (RCTs) testing methods to reduce SSI in LMICs.

The FALCON and CHEETAH trials are testing different methods of preparing and closing surgical incisions.

FALCON is testing different types of skin disinfectants and stitches. This trial is already open in LMICs with a recruitment target of 5400 patients in 14 countries. A successful outcome from this study could reduce SSI in LMIC by 30%.

Cheetah aims to recruit >11,000 patients in 58 hospitals and is testing if a change of sterile gloves and instruments at the time of surgical wound closure can reduce SSI.

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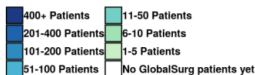
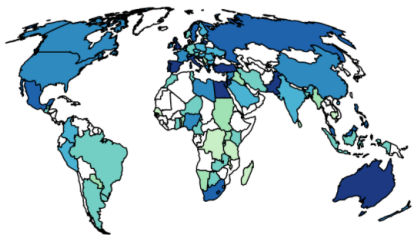
FALCON

RCT



CHEETAH

CLUSTER RCT



GLOBALSURG3

PROSPECTIVE INTERNATIONAL COHORT STUDY

CRANE

CLUSTER RCT

MRC

Medical
Research
Council

CANCER

Over 80% of the 15.2 million people diagnosed with cancer in 2015 required surgery. Surgery often offers the best chance of cure, particularly in early-stage disease.

It is estimated that 45 million surgical procedures are needed each year worldwide, yet fewer than 25% of patients with cancer have access to safe, affordable, and timely surgery.

Death rates from cancer are falling in high income countries, but continue to rise in LMICs. Up to 1.5% of GDP is lost due to cancer in some LMIC regions.

In 2018, GlobalSurg Collaborative conducted the biggest ever international study into surgical outcomes for cancer patients. 3000 collaborators in 84 countries collected evidence from <15,000 patients.

The CRANE study will investigate if a nutritional supplement given prior to cancer surgery can improve the outcome. This is a feasibility study in four LMICs to inform planning for a much larger RCT. We will be testing methods of identifying malnourished patients and determining the best nutritional supplement.



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ACCESS

TO SURGICAL CARE

The majority of the world's population are unable to access timely hospital treatment. 98% of patients in low income countries lack access to safe surgery.

Those patients that do reach hospital often experience delays in their care, contributing to the observed increased death rates in LMICs.

By surveying patients, policy-makers and service providers, our Access to Surgery study is aiming to determine the barriers, and identify to solutions, to improve access to surgical care in LMIC.

PERIOPERATIVE

SURGICAL CARE

Perioperative care is an umbrella term that includes every stage of a patient's journey from the time they are identified for an operation, to the time they are discharged from hospital.

PENGUIN is a feasibility study that will evaluate the effect of oxygen therapy on mortality and SSI in patients undergoing high risk abdominal surgery.



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PUMP-PRIMING SURGICAL RESEARCH AWARDS



Dr Edwin Yenli and Dr Etuh Ighohwo from the NIHR GSU hub in Ghana visit The Chris Hani Baragwanath Hospital & partners from the South Africa hub.

Pump-Priming Surgical Research Awards

We are committed to building and strengthening research capacity in areas specifically relevant to patients in our LMIC partner hub countries.

Each year as part of our annual research prioritisation workshop, researchers from our partner countries are invited to submit research proposals for consideration for seed funding from the GSU.

The best conceived bids receive pump-priming funding together with mentoring from our academics in order to develop and conduct their research projects. It is anticipated that this initial funding will generate early pilot data leading to future large scale funding to develop and expand these projects to larger studies and trials across the GSU network.

Applications considered for funding to date include task shifting hernia repair from surgeons to technicians in Ghana, stoma care in The Philippines, use of the WHO surgical safety checklist in Rwanda, and open verses keyhole removal of the appendix in Nigeria.

Through this funding stream the GSU has also supported educational visits between researchers in our hub countries.



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NIHR Global Health Research Unit on Global Surgery

“Rwanda is a small country in East Africa where access to surgery is still challenging. The Global Surgery Unit has helped me to interact with other surgeons from around the world. Now, all my patients are benefiting from the same standard of care they would receive elsewhere.”

Dr JC Allen Ingabire, Kigali Teaching Hospital, Rwanda Hub



“Our local research capacity in Ghana has improved tremendously since my hospital joined GlobalSurg studies; as a doctor, I have learned a lot since becoming a collaborator. GlobalSurg has the potential to make a really positive impact on my patients.”

Dr Theophilus Teddy Kojo Anyomih, Tamale Teaching Hospital, Ghana Hub



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