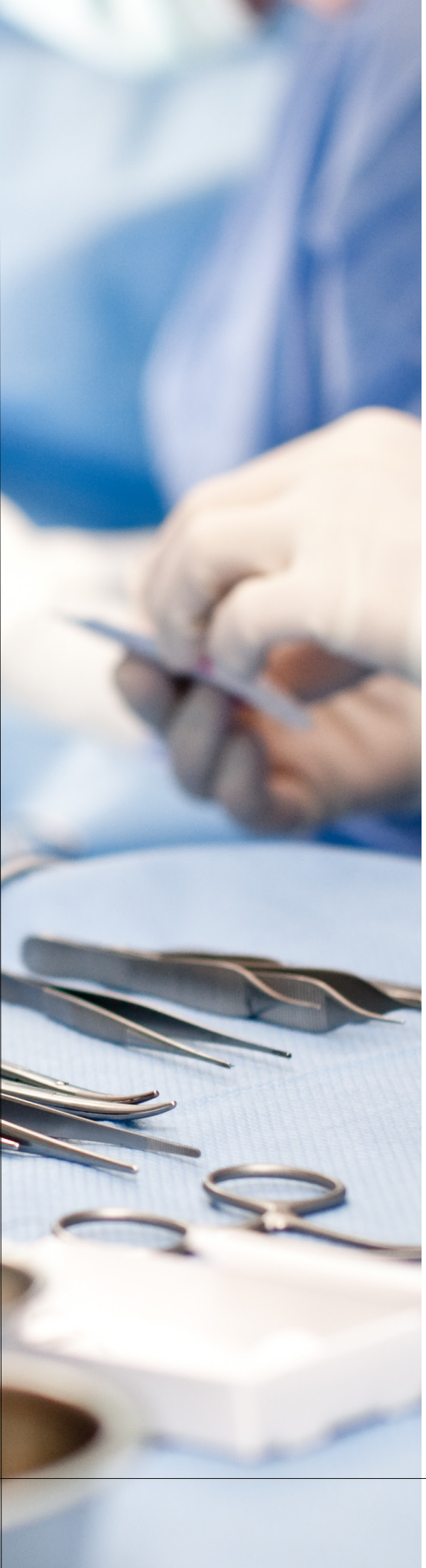
Surgery
UNIVERSITY OF TORONTO

ACADEMIC CASE FOR INVESTMENT AND GROWTH

in the Global Surgery Program

The Department of Surgery, Office of International Surgery
The University of Toronto



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01 > Executive Summary

Global health outreach in low and middle-income countries (LMICs) has seen remarkable progress over the past several decades, but it has not been uniform across all disciplines. With 5 billion people lacking affordable access to basic services, surgical care remains disproportionately under-represented. This is simply unacceptable, as surgical conditions represent 30% of the global burden of disease and span across all disease sub-categories ranging from infections to injuries to cancer. To illustrate the urgency of addressing this disparity, consider that in 2010 an estimated 16.9 million lives were lost from surgical-related conditions compared to the 4 million lost to HIV/AIDS, tuberculosis, and malaria combined.

Statistics we can have an impact on.

The Lancet Commission's Report: Global Surgery 2030

- **5 billion people** do not have access to safe, affordable surgical and anaesthesia care when needed.
- **9 out of 10** people in low and lower-middle-income countries cannot access basic surgical care.
- **Only 6%** of the 313 million procedures performed worldwide each year occur in the poorest countries, where **over a third** of the world's population lives.
- **143 million** additional surgical procedures are needed in LMICs each year to save lives and prevent disability.
- **A quarter** of people who have a surgical procedure will incur financial catastrophe as a result of seeking care.
- **At least 15%** of pregnancies result in complications that need emergency obstetric care, including surgical management.
- Surgery is responsible for roughly **65%** of all cancer cure and control.
- Surgery is a treatment modality and is needed across the **entire range** of human disease. Surgical conditions account for **28–32%** of the overall global burden of disease.

Surgical care delivery is a powerful indicator of a society's overall productivity. It is estimated that the surgical burden of disease reduces a country's annual GDP by up to 2% (valued at $12.3 trillion USD). The Lancet Commission's landmark report, Global Surgery 2030, states that the costs for investing in safe and affordable global surgery in LMICs are minor relative to the economic and health returns it will yield. For instance, affordable services would not compromise household financial stability, and high-quality care would restore individual quality of life. People could return to the workforce after illness or injury and contribute to local economic growth.

The disparity could be levelled with a basic surgical system and an educational program that prepares a sufficient volume of well-trained medical professionals. The most efficient way to ensure a sustainable systems-level change is through capacity-building; a process by which individuals and/or groups are empowered, educated and provided with the resources necessary to competently perform a job(s) until external intervention is no longer required. Through strategic investment, we will build upon the Department of Surgery's efforts and develop a program that facilitates sustainable surgical capacity-building in LMIC's, and make a career in global surgery a viable and supported academic pursuit.

To fulfill our vision, we must invest in the University of Toronto and Department of Surgery's niche strengths of people (human talent) and ideas (knowledge exchange) through the following mechanisms:

- *Attract the highest calibre of academic leaders*
- *Develop and support faculty members pursuing a career path in global surgery*
- *Utilize the Department of Surgery's teaching expertise to educate LMIC healthcare providers to ensure practical, long-term applications of safe surgery*
- *Foster sustainable partnerships with other academic institutions, government and non-government allies, and relevant industries in LMICs*

Throughout this document, we will demonstrate that a dedicated investment in simple surgical interventions can ultimately affect the political, economic, and social viability of the world's most vulnerable communities.

02 > The Plan

The Vision

We envision our academic global surgery program having impact across two spheres:

1. *Reducing the global surgical burden of disease*
2. *Providing academic leadership for capacity-building and reciprocal learning opportunities*

Ultimately, the Department of Surgery will establish itself as one of the world's leading institutions in the field of academic global surgery.

The Mission

We will capitalize on the University of Toronto's reputation of academic excellence and the Department of Surgery's talented educators to implement an academic global surgery program rooted in bilateral knowledge exchange.

LMIC trainees will acquire the skills necessary to alleviate the burden of surgical disease in their own communities as well as the curricular tools to prepare the next cohort of local surgeons. Our trainees and faculty will form meaningful partnerships with their international colleagues, as this is a unique learning opportunity for the Toronto surgical community too.

The Need for Change

While international aid has improved population health in LMICs, surgical care delivery remains poorly addressed. When people cannot access care in a timely manner, treatable conditions become fatal diseases. Economic welfare becomes compromised by unmanageable health expenditures and disabled individuals who are unable to participate in society.

Surgical delivery in LMICs is further challenged by insufficient human resources in terms of volume and skill capacity. Clinical care suffers for lack of surgeons and physicians, yet education and research suffer far more. Without a formal educational program, skill capacity cannot improve and research capacity cannot grow. Local providers cannot train the next generation of learners, nor are they able to meet the population's surgical needs and volume. The effect is cyclical and will worsen over time without intervention.

The implementation of a surgical system is often fraught with preconceived notions of complexity and costliness. This is simply not true. There are several cost-effective strategies in trauma, orthopaedic, and reconstructive care that provide life-saving treatment and are relatively simple to integrate into a larger health system. For instance, millions of mothers and newborns perish annually during childbirth in LMICs. Early surgical intervention would prevent these senseless deaths in the majority of, if not all, cases.

While global health outreach is typically considered within the context of underdeveloped countries, we respect that there is still much work to be done in our own country. Canada's Indigenous population faces severe surgical disease disparities relative to the general population. The University of Toronto has initiated several projects to combat some of these inequalities, which offers our surgeons a well-connected interdisciplinary network. We currently have three

surgeons providing access to advanced care in remote communities and hope to grow our involvement as the academic program receives further support.

The University of Toronto Experience

The University of Toronto has a long-standing history of surgical outreach that dates back to the early 20th century with global surgery pioneer Dr. Norman Bethune. Even without formal mechanisms, the Department of Surgery of today has generated seed capacity in several global initiatives and networks. The success of such grassroots projects exemplify the University's niche position to leverage its efforts, provided it has sustainable investment in its expansion.

a. Why Here?

With over half of its population born outside of Canada, Toronto is one of the most multicultural cities in the world. As such, the University of Toronto provides its learners with a top-tier educational experience within a globally heterogenous environment. The University of Toronto Faculty of Medicine is an established partner in Canada's single-payer system with nine fully-affiliated hospitals, twenty-five community-affiliated hospitals and sites, and fourteen graduate units that span from clinical sciences to public health systems. Academic alignment with the University of Toronto offers our partners with the opportunity to access interdisciplinary interests in one localized place.

This pluralism is not just restricted to Toronto; Canada currently has one of the highest per capita immigration rates in the world and receives residents from over two hundred countries each year. Cultural diversity provides unmatched access for leveraging resources and global networking, which are key components for successfully maximizing our impact. The Canadian approach to international development has been well-received over time. International colleagues are always treated as equals and our collaborative spirit fosters learning on both sides.

b. Why Now?

Investing in an academic global surgery track is the next logical step in providing relevant and meaningful educational experiences for tomorrow's medical leaders. Today's Canadian medical students have a keen sense of social responsibility and interconnectedness. It is therefore essential that the University fulfills their learning needs. The Department of Surgery has already established itself as a leader in surgical residency education through Competency-Based Curriculum (CBC), simulation laboratories, and the Surgeon Scientist Training Program (SSTP). These unique training experiences can be adapted and shared with our LMIC partners.

As demonstrated by the Success Story on page 11, it is evident that the Department of Surgery has potential to create a sustainable impact in impoverished regions. Unfortunately, efforts are limited by a lack of stable funding. Expansion strategies such as trainee support, protected work time, travel, and curricular development require a level of financial backing to which we have simply not yet been privy.

If we could achieve these accomplishments without financial aid, a significant investment would surely help us broaden our global impact.

Faculty Initiatives

Leadership at the Department of Surgery has identified global outreach as a top priority for dedicated investment and change.

Through minimal funding, faculty members have successfully implemented the following grassroots initiatives:

Infrastructural Initiatives

- A formal office was established by Drs. Massey Beveridge and Andrew Howard in 2004, known as the Office of International Surgery.
- An online publication circulated quarterly in which trainees and faculty share their work abroad.
- Dr. Andrew Howard has overseen a longstanding academic partnership with the College of Surgeons of East, South, Central and Southern Africa (COSECSA).

Trainee Opportunities

- The A.K Prakash Fellowship supports one LMIC trainee each year to complete his or her surgical fellowship in Toronto.
- A trainee-led global surgery journal club meets quarterly to discuss new academic literature.
- Trainees may complete surgical electives in LMICs and complete a Global Health Education Initiatives certificate.
- Established framework for Global Surgical Scholars program to provide early opportunity for trainees to engage in global surgery.

Faculty Support

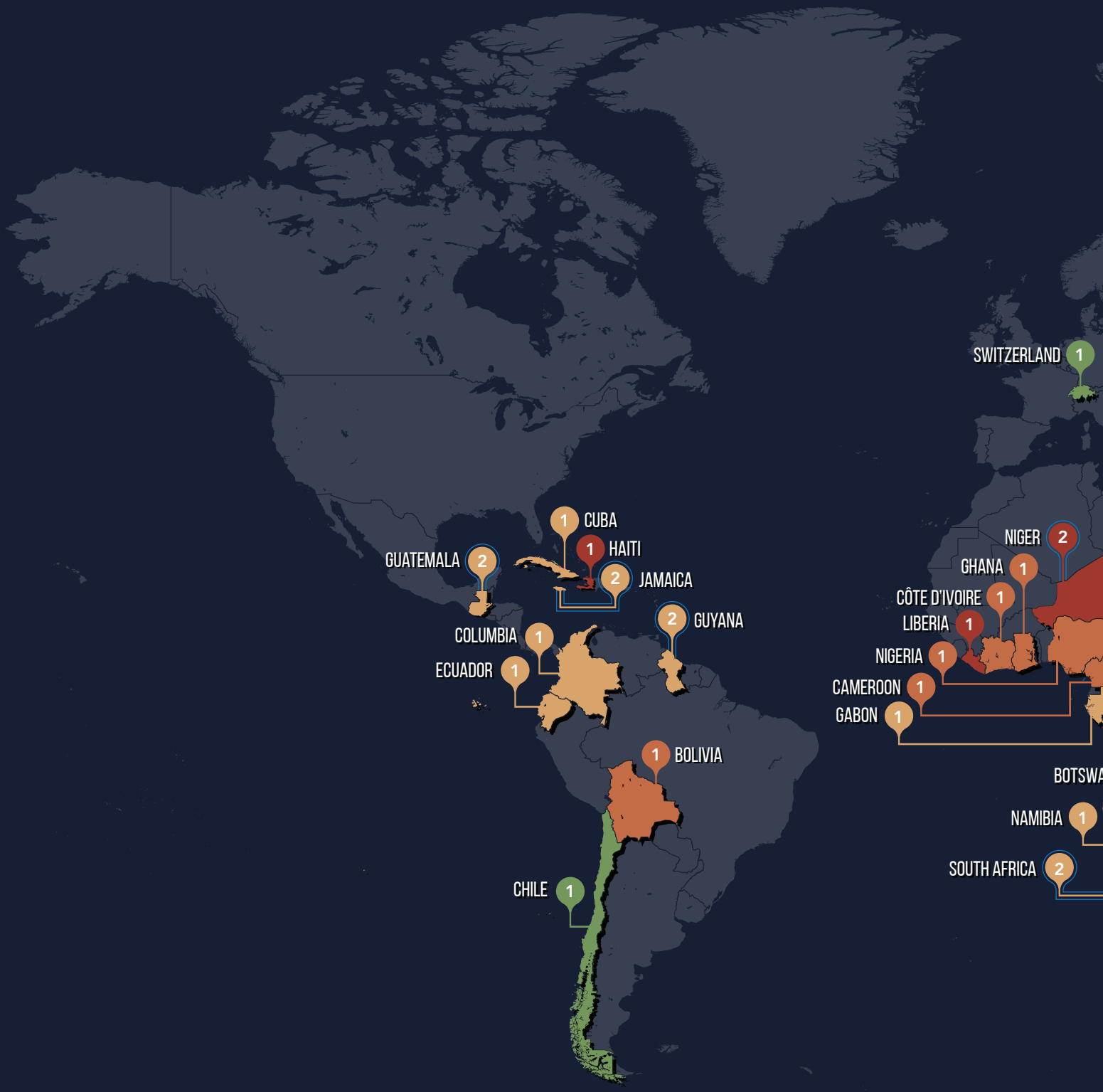
- Faculty members who wish to advance their careers on the basis of global work can hold the Professor of Global Surgery designation.
- Approximately 40 faculty members have independently organized capacity-building missions to LMICs, including trainee involvement and research publications. (Please refer to our prospectus to read further).
- The George Robert Swan Chair in Global Surgery supports projects being led in particular geographic regions in Asia, Canada and Caribbean.

Events

- In addition to founding the concept, the Department of Surgery hosts the Bethune Roundtable in Global Surgery on a rotational basis. This interdisciplinary conference brings LMIC and local providers together to present scholarly work and discuss capacity-building strategies.
- Since 2016, the annual Global Surgery Symposium features lectures from international academic experts and faculty members.

BUILDING A GLOBAL FOUNDATION FOR **SURGICAL OUTREACH AN**

Why is the Department poised to make such a meaningful impact? We have dedicated much time and effort in the absence of strategic programma globe the University of Toronto's Global Surgery Program has reached, and how many of our faculty are leading outreach and developing capacity each country's name indicates the number of visiting surgeons. Data from Canada and the United States of America have been excluded for the pu

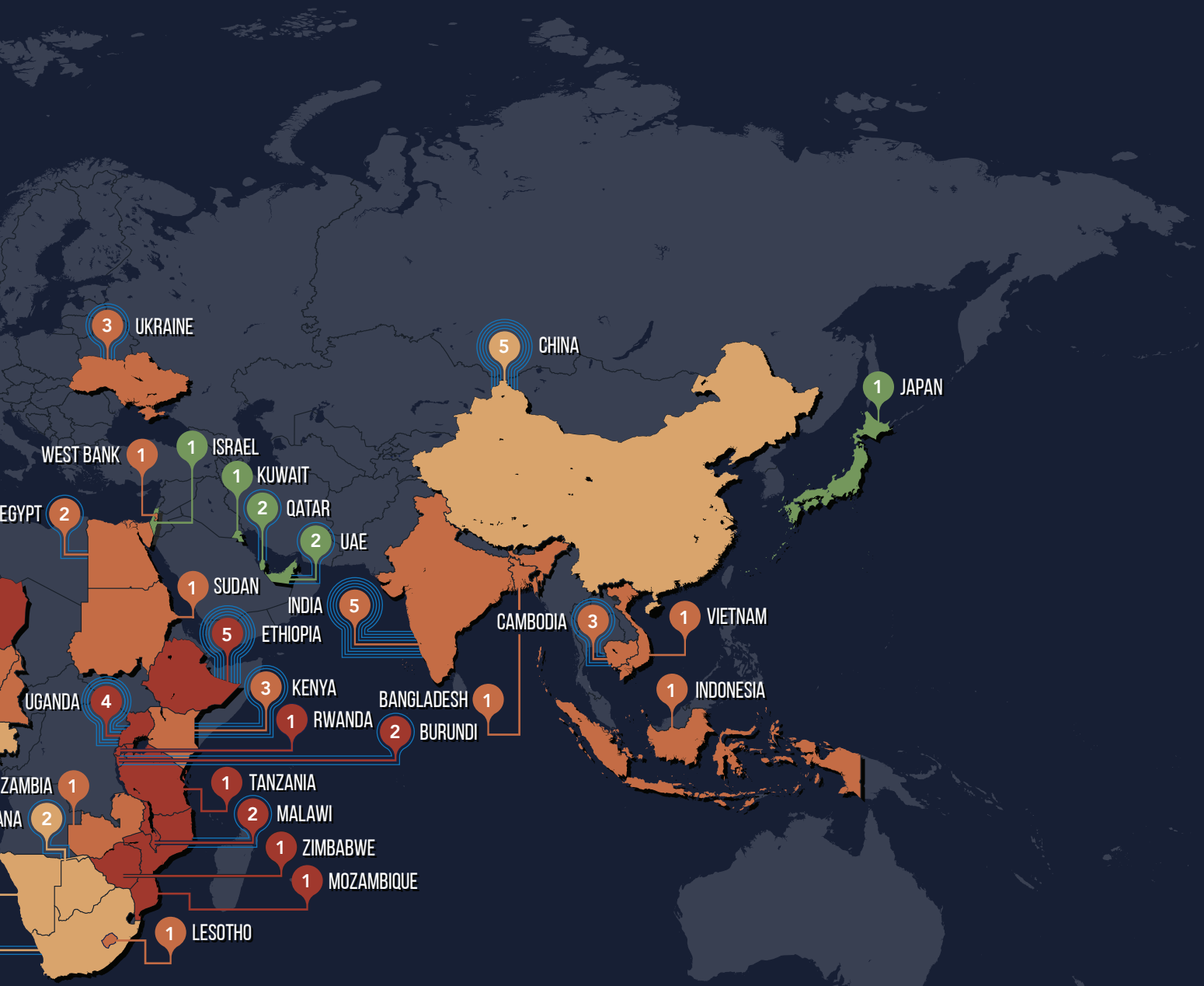


ND EDUCATION 2013-2018

tic investment. Check out the map below to see where across the
building efforts in the most important places. The number beside
urpose of this map.

ECONOMY (GNI per capita)

- High-income ($12,056 or more)
- Upper-middle-income ($3,896 to $12,055)
- Lower-middle-income ($996 to $3,895)
- Low-income ($995 or less)



04 > Program Elements/Funding Opportunities

The following chart lists the core elements of a global surgery program and their associated costs. It is important to emphasize that these values only represent the *minimum cos*ts; that is the baseline costs necessary for one year, of successful implementation, or one individual in the respective area. Each element can be leveraged for ongoing success, either as an expendable or endowed investment.

Program Element	Minimum Annual Funding Required
Chair: Appoint a Chair of Global Surgery in the Department of Surgery	***$120,000*** salary and benefits
LMIC International Fellowships: Extend support to the Prakash Fellowship program to allow additional LMIC surgeons to complete fellowships in Toronto.	***$80,000*** per individual salary
SSTP Scholarship in Global Surgery: Support trainees in the Surgeon Scientist Training Program who are interested in completing global surgery research projects.	***$70,000*** per individual salary and benefits
Global Surgery Coordinator: Employ a full-time dedicated coordinator to facilitate all aspects of a robust global surgery program within the Department of Surgery.	***$60,000*** salary and benefits
Project Funding: Offer competitive catalyst funding and grant support to University of Toronto faculty members pursuing global surgery work in a clinical, research, or educational capacity.	***$50,000*** grant support
Global Surgery Scholars Program: Offer GSSP trainees 3-6 months of funding support when completing their electives abroad.	***$40,000*** per individual scholarship
Education Activities: Fund ongoing global surgery educational events within the Department of Surgery including the Bethune Round Table, the Annual Global Surgery Symposium, participation in global conferences, mentorship support, etc.	***$30,000*** budget
Travel Costs: Provide trainees and faculty members with stipends to assist with travel-associated costs such as airfare, international insurance, and protected time away from clinical work.	***$30,000*** budget
LMIC Trainee Global Surgical Scholarship: Support local LMIC trainees in completing their surgical training in Toronto.	***$20,000*** per individual scholarship
MD Student Elective Scholarship: Foster early interest in global surgery through the provision of international opportunities for electives and research projects.	***$5,000*** per individual scholarship
Total Amount:	**$500,000**

05 > Concluding Remarks

Despite a rise in global health advocacy, the development of sustainable surgical care has been relatively slower to gather traction. It is estimated that over the past 30 years, only 1.5% of global development for health assistance (DHA) from governments and private organizations has gone towards the surgical burden of disease. Misconceptions surrounding the complexity of surgical systems are perpetuated by political agendas and siloed academic institutions within high-income countries. The cycle is compounded further when cross-country partnerships neglect to address realistic strategies for addressing the unique surgical needs of marginalized populations.

Albeit slower, we can confidently state that the current landscape is changing. The incoming cohorts of medical professionals are replete with individuals ready to dedicate their career trajectories towards the development of sustainable surgical care and many of them are at the Department of Surgery at the University of Toronto.

Many external medical organizations operate by visiting communities for several weeks strictly to perform clinical work. These groups do not necessarily provide political or social advocacy, nor do they educate the local providers. In turn, any impact ceases once the organization departs and the local providers are none the more empowered to provide the same level of care as the visiting physicians. The Department of Surgery challenges this approach through its commitment to surgical capacity building. Instead, faculty members educate local medical professionals to provide care and educate the next cohort of learners, ultimately contributing to a stronger healthcare system and improved community health outcomes. In turn, a disadvantaged region experiences increased economic prosperity as it is no longer losing productive individuals to surgically-related disabilities.

As one of the world's largest and most talented generators of surgical capacity, our Department of Surgery has tremendous potential to act on these efforts through education and research development. Our faculty members and trainees have both the knowledge and drive to invoke system-levels changes required for long-term success. With minimal funding, they have laid the foundation for essential local partnerships and are primed for synergy. Yet without sustainable funding, this potential will only carry so far. A concentrated investment in Departmental efforts would ensure that LMIC learners were trained in adequate volumes and competencies to better serve their local populations, as well as translating academic research into more efficient delivery models to be globally shared. It can alleviate barriers to accessible knowledge for both patients and providers LMICs, strengthen the capabilities of their academic institutions and hospitals, and ensure that collaborative data efforts are unified rather than duplicated.

The impact of leaving the global surgical burden of disease unaddressed is far too dire to ignore any longer. As a capable body of talent and commitment, the Department of Surgery feels morally compelled to urgently act on the Lancet Commission's evidence and accompany our LMIC colleagues along the development of equitable surgical systems. Sustainable impact is only achievable through the engagement of committed partners in our community.

Dr. James T. Rutka | MD PhD FRCSC FACS FAAP FAANS FRSC
R.S. McLaughlin Chair of the Department of Surgery, University of Toronto

06 > A Success Story

Dr. Rajiv Singal

The Department of Surgery is proud of the international efforts undertaken by many of its faculty members and learners. Dr. Rajiv Singal, staff urologist at the Michael Garron Hospital (previously the Toronto East General Hospital) and Assistant Professor with the Department of Surgery, is a notable example of a direct investment translating into broad sustainable impact.

Dr. Singal made his first foray to Zomba, Malawi in June 2016. Several months prior, clinical colleague Dr. Bob Macmilian traveled to Zomba with routine surgical equipment for the Zomba Central Hospital, a facility that serves a region of nearly 4 million people. As a board member of Dignitas International, the trip provided firsthand exploration and understanding of the country's barriers to accessible, high-quality surgical care. Dr. Singal quickly realized that a lack of equipment and expertise was only the tip of the iceberg; a lack of surgical triage systems or anesthesiologists, a poorly-managed national healthcare system, and political corruption all threatened the promise of progress.

With the mantra *'start with what you know'* in mind, Dr. Singal began with his own area of surgical expertise and defined educational goals for his next venture to Malawi.

Prostate and bladder cancers are a hugely unmet need in Africa. Men typically do not seek treatment until the symptoms have advanced well into the later stages of disease; a grim prognosis when the region lacks updated surgical technology and sufficient healthcare providers. As well, outdated equipment renders several thousands of men chronically disabled and/or unable to void on their own. Most men utilize catheters that are years old. Dr. Singal established partnerships with a German group led by Dr. Henning Mothes to supplement some of the equipment needs, as well as relying on the generous donations from Dr. Macmilian.

On behalf of Dr. Singal and the University's coordinated efforts, five more trips to Zomba have been undertaken to provide basic urological care to over 440 patients. Most importantly, he has trained the local clinical health officers to perform specialized urological procedures as an effective mechanism for treating the backlog of male patients suffering from chronic conditions.

Dr. Singal has also integrated components of the Department of Surgery's Urology Resident Program into the visits. Our learners are able to develop their technical competencies in a unique environment that also incorporate elements of cultural sensitivity and political advocacy. In addition, Dr. Singal has established a partnership that will allow Malawian surgeons to receiving training through other COSECSA-accredited programs to foster a sustainable learning arrangement. Thanks to generous donor contributions, the first staff urologist has completed his training and is excited to contribute towards the training of the next cohort of learners in Zomba.

Dr. Singal's efforts are testament to the long-term successes yielded through capacity building. He and his team have improved population health by enabling local healthcare providers to carry out medical procedures without external intervention, as well as developing talented educators for the next cohort of learners. They strive to establish the local hospital as a certified Centre of Excellence through a high concentration of expertise care and resources. It is through these reciprocal learning paths that Dr. Singal hopes to ultimately create a self-sustaining health system and improve men's health outcomes.

07 > Contact Us

For more information, please contact:

Joanna Giddens,
Strategic Plan Implementation Coordinator

joanna.giddens@utoronto.ca

Department of Surgery,
Stewart Building, 149 College Street, 5th Floor, Toronto ON M5T 1P5

www.surgery.utoronto.ca/global-surgery

08 > Global Surgery at the Department of Surgery

Dr. Andrew Howard

Director, *Office of International Surgery*
Orthopaedic Surgery, *The Hospital for Sick Children*
Associate Professor, *Department of Surgery and Institute of Health Policy, Management & Evaluation*

Dr. Avery Nathens

Vice-Chair, Global Outreach
Surgeon-in-Chief and Trauma Surgery, *Sunnybrook Health Sciences Centre*
Professor of Surgery, *Department of Surgery*

Dr. Lee Errett

G.R. Swan Chair in Global Surgery
Professor of Global Surgery, *Department of Surgery*

Dr. Mark Bernstein

Greg-Wilkins Barrick Chair in International Surgery
Neurosurgery, *Toronto Western Hospital*
Professor of Surgery, *Department of Surgery*

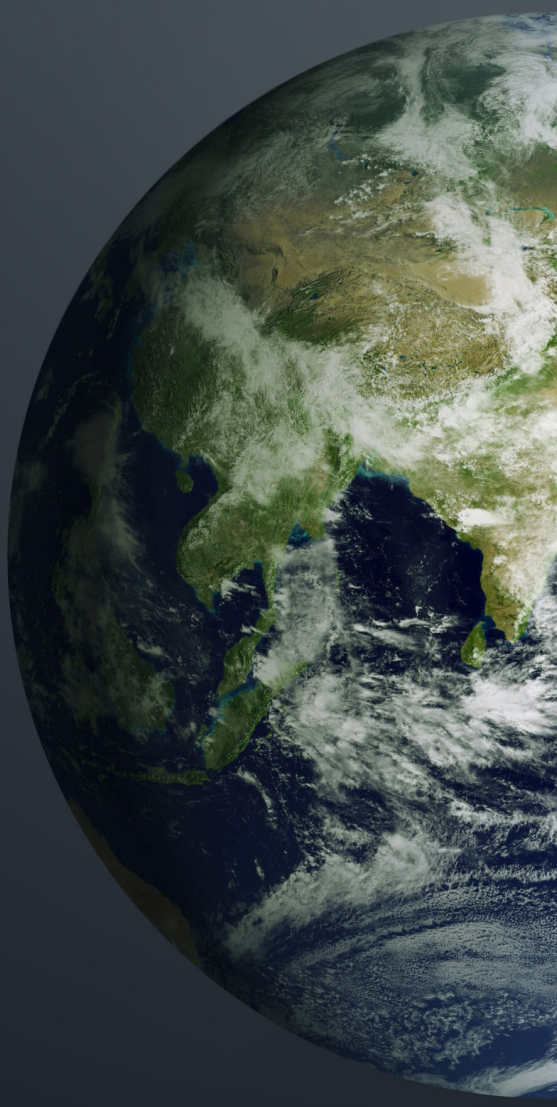
CONTENT:

Ms. Joanna Giddens
Dr. Andrew Howard
Dr. Avery Nathens

LAYOUT AND DESIGN:

Ms. Stacey Krumholtz


- BUSINESS
- NETWORKING
- SOCIAL NETWORK
- TECHNOLOGY
- MEDIA
- CREATIVE
- FINANCE
- INVESTMENT
- CULTURE
- ECONOMY



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