



# SYSTEMS FOR TRAUMA AND BLOOD AND GLOBAL SURGERY LAB 2022-2023

## NAKUL RAYKAR MD, MPH

I am the Fellowship Director at the PGSSC and a trauma surgeon at Brigham and Women's Hospital. From 2013-2016, I was a Research Fellow in the PGSSC and had the opportunity to participate in much of The Lancet Commission on Global Surgery. I'm now focused on 'global surgery' after The Lancet Commission on Global Surgery, trauma systems, and novel strategies for blood transfusion in the world's lowest resource areas. The Global Surgery STAB Lab has critical partners in Guatemala, Chile, Kenya, and India. **Dr. Nobhojit Roy** and **Dr. Anita Gadgil** from The **World Health Organization Collaborating Centre (WHO-CC) for Surgical Care Delivery in LMICs** (Mumbai, India) are co-faculty in the lab.

PGSSC trainees will engage in a broad range of projects that includes quantitative, qualitative, systematic review, and modeling methodologies. We work with partners ranging from medical students to full professors of surgery in their respective countries. In addition to primary projects, trainees in this team will have plenty of opportunity (and are encouraged) to support manuscript development and writing by our global partners. Trainees who work with the teams in India will have the opportunity to additionally designate as fellows of the WHO-CC Mumbai. All trainees interfacing with LMIC partner teams will undergo an orientation to the collaborative research process.

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Current PGSSC Lab Members:  
Shreenik Kundu, Research Fellow  
Isabella Faria, Research Associate  
Eric Kim, Research Associate

## PROJECTS AND FOCUS AREAS

### Novel Strategies for Blood Transfusion in Low Resource Settings – Kenya and India

There is a massive shortage of blood available for transfusion in the world's poorest settings. You cannot build a surgical system if you do not have blood! GS STAB Lab received a \$100,000 grant from the Stepping Strong Foundation to study the feasibility of implementing a military innovation, walking blood banks, in a low-resource, *civilian* context. In 2022-2023, we will also build collaborations and launch studies advancing intraoperative autotransfusion and drone delivery for blood and qualitative studies surveying directors of transfusion medicine in LMICs on perspectives to improve the system. Learn more: <https://steppingstrong.bwh.harvard.edu/stepping-strong-innovator-nakul-raykar-md/> and <https://www.radcliffe.harvard.edu/opportunities-for-researchers/2023-exploratory-seminars/innovative-blood-transfusion-strategies-for-blood-deserts-in-low-and-middle-income-countries>

### Strengthening Trauma Systems

#### Trauma Systems Comparison Project

How does a trauma patient in an LMIC do compared to a patient in the United States? By comparing patient outcomes, we can learn which aspects of trauma systems contribute the most towards high-quality outcomes. We work extensively with one of the few multicenter trauma registries in an LMIC (TITCO Dataset, India). You will have the opportunity to practice quantitative analysis skills. In 2022-2023, we'll be merging the TITCO dataset with the US NTDB to create cross country comparisons, as well as incorporating datasets from Guatemala and Chile.

#### CrashSavers Trauma / Hemorrhage Control Simulator

Bleeding is the number one preventable cause of death in trauma! How can we minimize bleeding after a trauma and before a patient gets to the hospital? Part of a MIT Solve/Nesta/Intuitive \$500,000 grant to develop a low-cost hemorrhage control simulation for Guatemala pre-hospital providers. We are teaching packing, pressure application, tourniquets, and foley catheters. Learn more:

<https://globalsurgicaltraining.challenges.org/crashsavers>

### Defining Global Surgery After The Lancet Commission on Global Surgery

The clinicians in LMICs dedicated towards caring for the low-resource poor are the world's true 'global surgeons', but do they view themselves as such? This project focuses on elevating the concept of 'rural surgery' as global surgery. We will also work to develop a collaborative working group across PGSSC focused on promoting the next stages of The Lancet Commission on Global Surgery. We will focus on collaborative writing, opinion pieces, and surveys.

Ideal Skillsets: Protocol development, operational research

## REGIONS/COUNTRIES

India, Kenya, Guatemala, Chile