NATIONAL INSTITUTES OF HEALTH • DEPARTMENT OF HEALTH AND HUMAN SERVICES

Global Health Matters

FOGARTY INTERNATIONAL CENTER

Photo courtesy of Dr. Christie, UCLA

Cameroonian trauma care physician, Dr. Marpha, learning to perform smartphone-based ultrasound on a standardized patient

SEPT/OCT 2025 | ISSUE 5

FOGARTY'S ROLE IN the "Make America Healthy Again" agenda

The MAHA initiative comes at a pivotal time. America faces significant health challenges, but it also has unmatched opportunities to learn from and contribute to global science.

AS THE UNITED STATES EMBARKS ON THE *MAKE AMERICA HEALTHY AGAIN* (MAHA) AGENDA, it is worth reflecting on how global health research collaboration contributes directly to improving health here at home. The MAHA goals, including reducing chronic disease in children and improving health across the lifespan, cannot be solved in isolation. The Fogarty International Center and NIH's broader global research collaborations offer a proven model.

Learning from global experience

The U.S. ranks poorly compared with other high-income countries on many health indicators, including obesity, diabetes, life expectancy, and diet-related disease in children. Through NIH-supported collaborations, we can learn from countries that have made measurable progress in these very areas. For example, Fogarty-supported research in Latin America has documented how front-of-pack labeling, school-based nutrition programs, and restrictions on ultra-processed foods reduce childhood obesity. These findings are directly relevant as U.S. policymakers grapple with rising rates of pediatric obesity and the associated lifetime burden of diabetes and cardiovascular disease.

Comparative research on environmental health in Asia, Africa, and Latin America has yielded low-cost tools to monitor pesticide and chemical exposures. These methods, developed under resource-constrained conditions, can be applied domestically to improve surveillance and reduce chronic disease risk. The MAHA agenda emphasizes upstream prevention, and global science provides models for how this can be achieved affordably and effectively.

Building capacity that endures

Fogarty's mission has always been to strengthen research capacity in low- and middle-income countries (LMICs). Over decades, we have supported the training of more than 8,000 scientists worldwide. Many of these individuals have gone on to lead national research institutions and guide major global health programs. Supporting people ensures that U.S. investments in global science are multiplied many times over, with returns that reach our own shores. Importantly, capacity building abroad directly supports U.S. preparedness. During the COVID-19 pandemic, long-established partnerships enabled rapid data collection, viral sequencing, and evaluation of vaccines and therapeutics in LMICs. These collaborations informed global responses while providing early warning and critical insights for protecting Americans.

Implementation across borders

Another lesson from global partnerships is the power of implementation science. Many LMICs have pioneered cost-effective, community-based approaches to chronic disease prevention and care. For example, team-based models for hypertension management developed in Nigeria and South Africa are now informing how we address cardiovascular disease in underserved U.S. communities. Similarly, mobile health tools created to deliver mental health care in Peru and Brazil are being studied as low-cost options for American patients with depression and diabetes. By supporting research in diverse settings, Fogarty and NIH help identify what works, why it works, and how it can be adapted. This body of evidence provides the MAHA initiative with tested strategies for improving health outcomes in rural and resource-limited U.S. settings.

Value for U.S. taxpayers

Some may ask: *Why should the U.S. invest in research beyond its borders when health needs at home remain pressing?* The answer is clear—global research produces tangible returns that improve U.S. health. It generates cohorts of highly trained scientists who can partner with U.S. teams; delivers interventions tested under real-world conditions; and provides comparative benchmarks that allow us to measure our progress. Global partnerships also accelerate innovation pipelines, bringing forward new diagnostics, therapeutics, and digital tools that strengthen our domestic health systems.

NIH's international research portfolio aligns well with MAHA's priorities. Current programs address brain and nervous system disorders, chronic and noncommunicable diseases, environmental and occupational health, multimorbidity management, and mobile health technologies. Each is designed with an eye toward dual benefits: advancing science abroad while yielding health gains for American communities.

Fogarty's and NIH's international collaborations have built a vast reservoir of knowledge, capacity, and innovation that can be harnessed for the American people. By recognizing the impacts of global health research, we can ensure that our investments pay dividends both abroad and here at home—making America truly healthy.

Global Health Matters
FOGARTY INTERNATIONAL CENTER

Fogarty International Center
National Institutes of Health
Department of Health and Human Services

September/October 2025
Volume 25, Issue 5
ISSN: 1938-5935

Publishing Director
Andrey Kuzmichev

Editor-in-Chief
Susan Scutti

Contributing Writers/Editors
Mariah Felipe-Velasquez
Amanda Stearns

Digital Analyst
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Graphic Designer
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The Fogarty International Center is dedicated to advancing the mission of the National Institutes of Health by supporting and facilitating global health research conducted by U.S. and international investigators, building partnerships between health research institutions in the United States and abroad, and training the next generation of scientists to address global health needs.

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profile

A training session for research assistants

Jepchirchir Kiplagat
PhD, MPH

Fogarty Fellow
2021-2022

U.S. institution
Indiana University

Foreign institution
Moi University, Kenya

Project
Integrating hypertension and diabetes screening and management with HIV care services for older adults feasibility study

Current affiliation
Moi University School of Public Health

Integrating HIV and chronic disease services for older patients in low-resource settings

In 2007, Jepchirchir Kiplagat, PhD, worked as a ressearch assistant in the Academic Model Providing Access to Healthcare (AMPATH) program,

a partnership between Moi University and Moi Teaching and Referral Hospital in Kenya and a consortium of North American institutions led by Indiana University that aims to foster collaborations among health centers and universities that serve populations with significant unmet needs.

"We were looking at morbidity and mortality of people living with HIV admitted to the hospital. My job was to look through the files and see if these are newly identified people living with HIV or people who have been living with HIV and now being admitted due to other conditions."

During her day-to-day activities, Kiplagat noticed an elderly woman who remained for more than a month on the ward while being treated for oral thrush, diarrhea, and other conditions. "It took quite some time before she was actually tested for HIV (and found to be living with the virus). I, myself, would never have thought to test her. I wondered, *How many cases of HIV in older adults are actually missed? How does their unknown status impact their health?"*

Over the years, Kiplagat would recall her observation, that HIV testing disproportionately includes young adults and not older adults, yet it wasn't until 2021 that she found an opportunity through Fogarty's *Launching Future Leaders in Global Health (LAUNCH) Research Training Program* to address some of the unmet needs of older adults living with HIV.

Complex interactions

The number of adults aged 50 or older living with HIV, an estimated 13% of all people living with HIV, continues to grow, explains Kiplagat. Successful antiretroviral therapy (ART) contributes to this rising trend, as do new infections among older people.

HIV, ART, and aging interact in complex ways, says Kiplagat. "ART extends life expectancy, yet long-term use can increase the risk of metabolic complications such as insulin resistance (impaired sensitivity to the hormone that regulates blood sugar), dyslipidemia (atypical levels of fats in the blood) and hypertension (high blood pressure)." Often HIV infections are accompanied by chronic inflammation, which accelerates aging and raises cardiovascular risk. Overall risk of coronary heart disease in people living with HIV is about twofold higher than in uninfected people.

Yet there are positives: "Older adults living with HIV have about 97% to 98% viral load suppression, so we really need to maintain those rates," says Kiplagat. While her PhD work revealed that fragmented health care services and systems make it difficult for older adults with HIV to remain in treatment, she hypothesized that holistic care would help them adhere to treatment plans.

Her Fogarty project investigated whether integrating hypertension and diabetes screening within the HIV care platform would be feasible and acceptable to both healthcare providers and patients. Interviews with healthcare providers revealed that structural issues, including a lack of both time and guidelines, diminished but did not extinguish their motivation to provide blended services.

Some of a community health volunteer's necessary supplies

BMC Geriatrics has published Kiplagat's early findings from her Fogarty project, while a second paper is slated for publication in *PLOS Global Public Health.* "One of its key findings is that 50% of older people with HIV had hypertension, yet less than half of them had achieved hypertension control," she says.

Policy shifts

Today, Kiplagat's Fogarty-funded research is shaping discussions within Kenya's Ministry of Health. "I've become a person they call—and continue to call— asking about integration of non-communicable disease services into the HIV care platform for older people." Importantly, a comprehensive geriatric assessment developed in the U.S. and Canada is currently in testing at AMPATH based on her recommendation. "It's important to assess conditions early so they can be managed instead of participants developing difficult-to-control complications."

Now a lecturer at Moi University School of Public Health, Kiplagat is working on a National Heart Lung and Blood Institute (NHLBI)-funded project, *Community-Based Medication Adherence Support for Older Adults Living with HIV and Hypertension.* "Fogarty gave me a platform to generate preliminary data and refine my research questions and establish this collaboration, making it possible for me to compete for NHLBI funding."

For this pilot study, community health volunteers are tasked with making home visits, measuring blood pressure, conducting motivational interviews, and arranging pills for older adults living with HIV. The project ranges across three sites in Kenya affiliated with AMPATH: a rural facility, a peri-urban facility and an urban facility. "We spent time between 2023 and 2024 refining the intervention through co-design workshops with the patients, the caregivers, the health-care providers, and the community health volunteers. We are now four months into the one-year pilot of the intervention and, hopefully, by May of next year, we will begin assessing its feasibility and budget impact," says Kiplagat. After these steps, the project will run full- scale.

> **"THE FELLOWSHIP ALLOWED ME TO STEP INTO GLOBAL HEALTH RESEARCH ARENA, YET CONTINUE TO REMAIN DEEPLY ROOTED IN THE REALITIES OF LOCAL HEALTH SYSTEMS."**

Jepchirchir Kiplagat trained in health systems research and epidemiology.

Photo courtesy of Jepchirchir Kiplagat

EMERGENCY MEDICINE & TRAUMA CARE

Emergency medicine focuses on managing and evaluating critically ill and injured patients, while trauma surgeons provide care for patients who require immediate operations.

THESE SURGERIES ARE A FREQUENT OCCURRENCE. Injuries rank as the greatest single cause of surgical disease globally, disproportionately affecting low and middle-income countries (LMICs).

Emergency medicine and trauma care services are widely available in higher resourced settings, but in LMICs these specialty services are too often poorly developed… or all-together absent. Emergency departments, when they exist, may be staffed by health care professionals lacking in specialty training. Meanwhile, limited budgets preclude investment in prehospital systems, such as ambulance services or technologies for communication between first responders and hospitals.

The following researchers, funded by Fogarty and the National Institutes of Health, are working to strengthen various aspects of emergency medicine and trauma care in Pakistan, Cameroon and Rwanda.

First-responders practice ambulance-based telemedicine while caring for an infant

Courtesy of Junaid Razzak

Research in Karachi can help save lives across the globe

DURING THE COVID-19 PANDEMIC, the world witnessed the bravery of thousands of frontline health care workers who risked their lives responding to the urgent call for help. Yet not all health care professionals felt capable of answering that call. "So when everybody's running away, what exactly makes you run towards the problem? That's what you want to study," says Dr. Junaid Razzak, professor and vice chair of research, Emergency Medicine, New York Presbyterian Weill Cornell Medicine. Though Razzak conducts much of his research in low- and middle- income countries (LMICs), his work has applications across the globe, including in the U.S.

Self-efficacy

Razzak's iRise project, a study funded by Fogarty's Mobile Health: Technology and Outcomes in LMICs (mHealth) program, assesses whether using an mHealth app to strengthen the self-efficacy of ER personnel increases their willingness to respond to a public health emergency. Razzak and his team are conducting this research in Karachi, Pakistan's most populous city (with 20 million residents).

iRise is based on prior work by the team during the 2009-10 swine flu and other epidemics. This previous research showed that boosting, through a training intervention, people's sense of control and ability to manage risks made it more likely that they would respond in a crisis. However, because the training intervention is conducted in-person and lasts several hours, it posed a challenge to busy Emergency Departments.

How could this model be improved? Razzak says, "When you're in a crisis situation, you want to reach a lot of people where they are. The way to do that is to use telecommunications."

Phase one of the study developed and pilot-tested an appropriate mHealth curriculum based on factors identified as being able to improve self-efficacy and willingness to respond (WTR).

Following completion of the project's phase one goals, the team is now planning a randomized controlled trial to see whether the mHealth intervention makes a difference on an individual level. Translation of research from a low income setting to a high income country such as the U.S. is all about first understanding a general principle, explains Razzak. If the principle works, then it can be implemented anywhere.

Leadership

Aga Khan University (AKU) is a research-led international university with campuses in Pakistan, East Africa and the United Kingdom. It's oldest campus is based in Karachi, a seaport and major commercial and industrial center located on the coast of the Arabian Sea.

AKU is where Razzak launched his capacity building efforts centered on emergency medicine research. His attendance at a Fogarty discussion of investment in injury and trauma research inspired this work. One thing that stood out was that injury is a huge problem globally." Injury may be a problem for the local population, but it's one that also affects travelers, he explains. The most common cause of death or injury among U.S. travelers is a road accident.

"We applied for a Fogarty grant (to build research capacity focusing on injury, trauma and disaster in LMIC settings) and we received the award soon after I moved back to Pakistan (from the U.S.) a year later," says Razzak. With approval from AKU's board, Razzak established an independent academic department of emergency medicine, the first in any university in the global south. "That single residency program became a model for the rest of the country and now there are over a dozen such programs across the nation.

The AKU-based program continues to build research leadership at the PhD level with Fogarty investments. Overall, its impact has been "huge," having changed the bedside care of patients coming to emergency departments in this fifth largest country in the world. "It also has provided training opportunities for many U.S. PhDs and master's students," says Razzak. "We're trying to create a truly regional impact using the leadership built through this 20-year process, so we took the program to Afghanistan and subsequently to East Africa.

Courtesy of Junaid Razzak

Training first-responders in Pakistan

Prehospital systems

"When I ran an emergency medical service (EMS) in Karachi, one of the shocking numbers was how many children were dying in ambulances each day—anywhere from five to 25 or 30 children," says Razzak. His FEAMER trial, supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, addresses this issue directly.

Dr. Junaid Razzak

His research team's first step was answering the question: *Why are so many children dying in ambulances?* Prehospital transport times were not the problem: instead the team discovered that a lot of the children who died were newborns.

"Many paramedics are uncomfortable dealing with small babies, because that's not an area where they've spent a lot of time training," says Razzak. Of course, the same is not true of experienced pediatric emergency physicians. He thought, *What if we connect ambulances to physicians via video so they can jointly take care of really sick babies?*

Before building out their video link, the researchers conducted focus group discussions and in-depth interviews among providers and parents to air any concerns. Everyone—parents, paramedics and physicians—thought it was a "no-brainer," since any reduction in the time to recognize and treat illness would have great impact in a population of small children, says Razzak. "We knew the video quality would potentially hurt or help, so we went through this whole elaborate process of testing the quality until we were really comfortable with both the technology and the process."

Currently the team is conducting a trial where half of the ambulances have what they call "ambulance-based telemedicine," while the remainder do not. "We are recruiting 700 critically ill children and looking at the potential change in outcomes." Razzak believes the study should be complete in a couple of months.

At a conference where he presented early outcomes of the trial, attendees told him how important this could be for rural America where transport times can last hours.

"If we can show no harm was done and help was provided, we will not have to do any additional studies for this to have direct application. I think it will become a standard of care, which will help thousands, if not millions of children worldwide."

Courtesy of Presbyterian Weill Cornell Medicine

Courtesy of Sudha Jayaraman

Technology enhances the value of Rwanda's prehospital emergency system

SUDHA JAYARAMAN
is a trauma surgeon and surgical intensivist with a background in public health.

In the U.S., most of us think of trauma surgery as an emergency operation that's needed to stop life-threatening bleeding caused by car crashes or gunshot wounds. And when we think about that, we imagine an ambulance racing to a hospital where a surgical team rushes the patient into an operating room. While that does exist in many regions, it doesn't exist everywhere in the U.S.

And it doesn't exist everywhere across the globe.

"In many parts of the world, there may be an investment made in hospitals or even in surgeons, but no investment has been made in the system that makes it all work," says Dr. Sudha Jayaraman, a trauma and acute care surgeon and faculty member at the University of Utah. "Whether it's a car crash, or somebody having a heart attack, or a kid in respiratory distress, you need a system that functions and can handle all those different types of emergencies."

Her current Fogarty grant, Rwanda 912: an mHealth Application to Improve Quality of Trauma and Emergency Care in Kigali, focuses on building out the country's prehospital system for emergency care.

Political will

Jayaraman first began working in Rwanda in 2011 during her fellowship with Brigham and Women's Hospital in Boston. "It turns out that the Rwandan government had set up Service d'Aide Medicale Urgente (SAMU), a division of emergency medical services, which most governments in LMICs haven't. It was a small department, but it had a very methodically-kept system—all on paper, but methodical."

Jayaraman immediately recognized that this existing system would be a great foundation on which to build and turned to Fogarty for support for a project: Evaluating the Quality of Prehospital Emergency Care in Kigali, Rwanda. "We did very natural things, such as ask: Who's trained and what are they trained in? What if we tweak their training to see if we can improve the quality of care … and then measure that change?" The buy-in was immediate among staff and those in government; everyone could see the value of more training, more organization, and more systems. Implementation of training, checklists, and standardized care followed, all with positive results.

The only problem was coordination, notes Jayaraman. If somebody called in an emergency, someone would be there and ready, 24 hours-a-day to answer the call. Unfortunately, that person couldn't simply say, We'll send you an ambulance. "Instead, they first had to ask

The Rwanda Build and 912 Rawanda teams meet at the U.S. Embassy

Courtesy of Sudha Jayaraman

questions, like: What's the closest landmark that we should look for to find you? Are you within 10 blocks of this landmark?"

To help her with the Rwanda 912 project, Jayaraman turned to long-standing partners, including Dr. Menelas Nkeshimana, who'd studied for six years in China, receiving his MBBS from Tianjin Medical University in 2008, with an additional year spent at China's Central South University as general scholar in cardiology funded by UNESCO. Since returning home to Rwanda, he's become the guy everyone gives the most difficult problems.

Another long-standing Jayaraman collaborator is Melissa Watt, PhD, a research professor at University of Utah who previously spent a Fulbright year in Tanzania and worked for the United Nations and an international NGO in South Africa and in Eastern Europe. Watt says, "When Jayaraman started Rwanda 912, she brought me on board in order to contribute in qualitative methods, intervention development, and training of local mentors."

Accelerating change

Imagine a densely populated city of more than a million residents living in high-growth areas where change is rapid, businesses come and go, and street addresses have not yet become standardized.

Within this urban sprawl, how do you find someone experiencing a medical crisis?

Given that Fogarty's mHealth program focuses on innovating technology, she turned to a Kigali-based start-up, Rwanda Build Program. The software accelerator had been working for local businesses, and the tech team had gathered location data which they'd learned to deploy on top of Google Maps. "Essentially they asked, How do you need to apply all this data for ambulances?" says Jayaraman.

Incremental steps

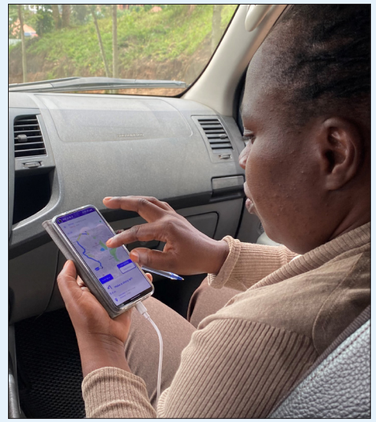
As development of the software platform advanced, new challenges arose. The folks who knew every road like the back of their hand now needed to learn how to navigate using an electronic map on cell phones.

The team included the end-users in their design process, says Jayaraman. "First, we built a rudimentary start-stop application and got everybody to use it alongside providing their usual care," and then they released "increasingly sophisticated" iterations of the program.

Eventually users could see where ambulances across the entire city were located, the availability for each, and which one was closest to an emergency caller. They ended up getting more ambulances and putting out more ambulance bases. They began to really build," says Jayaraman.

Seventeen candidates have received training and acquired advanced degrees through Jayaraman's two Fogarty grants in Rwanda. Capacity building impact also includes five or six software developers and "literally more than a hundred people who have now learned how to use the software and deliver care for the 1.2 million residents of Kigali," she says.

"Historically, there's not been a whole lot of support for surgeons engaged in global health research. This work is a great example why more support should be given to surgeons."



Eugenie, head of the nursing team, uses the app while heading to an emergency

Courtesy of Sudha Jayaraman

THESE UCLA SURGEONS ARE REDEFINING GLOBAL HEALTH

Cameroon sits on Nigeria's border at the junction of east and central Africa. Its population of nearly 31 million people reside primarily in the west and north while the interior is sparsely inhabited. Eight of its 10 regions are francophone, the remaining two anglophone.

"When I was a surgery resident and started looking into global health research, I found published data from about four countries in Africa on injury work done in lower income settings—and they were all from anglophone countries," says Catherine Juillard, MD, MPH, a trauma surgeon and critical care physician at the University of California, Los Angeles (UCLA). A conversation with Africans suggested that an existing language bias leads to this imbalance. "So I thought, 'Okay, the francophone world is my niche,' and I reached out to Dr. Martin Monono at Cameroon's Ministry of Health, and that's how our work there began."

Just as translating from French to English is effortless for Juillard, it's also easy to translate much of her trauma research work from Cameroon to the U.S. "In the U.S., we have what we call trauma deserts—swaths of the country that are not well serviced. So if something works in Cameroon, the same proof of concept could be applied to U.S. areas that lack access to accredited trauma centers."

A web of teamwork

For years Juillard has been working with co-primary investigator Dr. Alain Mefire-Chichom of University of Buea in Cameroon alongside various colleagues and trainees from their universities. The two currently receive funding from the NIH Common Fund's Harnessing Data Science for Health Discovery and Innovation in Africa (DS-I Africa) program as well as Fogarty's Global Trauma and Injury Research Training Program. Meanwhile, S. Ariane Christie, MD, an assistant professor in residence at UCLA's David Geffen School of Medicine, joins them in their research while leading related projects supported by an International Research Scientist Development Award (IRSDA) and a grant from Fogarty's Mobile Health: Technology and Outcomes in Low- and Middle-Income Countries (mHealth) program.

"It's really hard to untangle all the different pilot projects and main projects and side projects and the people involved, but everything works together," says Juillard. The UCLA team's main objective is to train a cohort of Cameroonians, a mix of MPH and PhD students and postdocs, who work on at least one project, and sometimes a portfolio of projects, as a way of building research capacity in the African country.

Christie notes that UCLA has developed a strong model of co-mentoring U.S. and African trainees and bidirectional learning opportunities, so that Cameroonian trainees

Photos courtesy of UCLA

frequently partner with U.S. trainees and researchers (and vice versa). With trainees arriving from across the nation and the world, UCLA plants the "seeds of investigation and innovation in multiple contexts" while enhancing the skills of its global health trainees so they can start their own programs in other universities, other parts of the world.

"Constantly, everything that we do is to build this capacity both within Cameroon and globally. The possible direct applications to other countries and the U.S. are huge," says Christie.

Translating innovations

Every trauma patient who rolls into an emergency department in a high-income setting receives an ultrasound "within about two minutes" to detect and identify the location of bleeding, explains Christie. "In Cameroon, not only is this not done, but most of the really critically injured patients don't get any imaging at all." Her mHealth project trains trauma providers in Cameroon to use a phone-based ultrasound—a handheld probe connected to a phone—to detect internal bleeding or other life-threatening injuries early enough to save lives.

Specifically, her project addresses the fact that, in the U.S., it takes months of constant practice with an expert to learn how to use the device and interpret results. "In Cameroon, we don't have time for that. We don't have experts for that. We need to take these providers away for about five hours and send them back in knowing how to do this," says Christie. So she and her team developed a new curriculum, one that is whittled down to "just the things you need, nothing that you don't" so that trainees can use the device without undergoing a long apprenticeship.

Christie heard from UCLA residents that they want shorter training for the eFAST, so she offered them her new curriculum. "This is something that we didn't design for American residents, but it may offer an advantage over the traditional curriculum used in the U.S.," says Christie. "A lot of our work focuses on modular, readily translatable solutions. Sometimes there's a direct plug-in to something in U.S., and sometimes it's in another lower resource setting."

Data streams

Juillard describes the Cameroon Trauma Registry, a product of her DS-I Africa grant and one of the largest multi-site trauma registries on the continent, as "a behemoth and a constant labor of love." Ten hospitals have contributed data from more than 15,000 patients, including follow-up reports, on some patients, spanning up to six months. "So we have an ability to understand a lot about trauma care in diverse settings in a way that we don't even have in the U.S."

Both Cameroonian and American investigators and trainees have begun to explore all kinds of questions using this registry.

One of Christie's analyses of Cameroon Trauma Registry data showed that giving IV fluid provides a survival advantage over giving blood in the Cameroon setting, where blood scarcity, quality, and delays and administration issues likely offset the known superiority of giving blood under ideal conditions. Christie says this work highlights the need for research to learn what is best to do when conditions are not ideal, since the answers may be different than what is assumed.

Surgical global health

Juillard's love of global health began when she became a rural health volunteer for the U.S. Peace Corps in Senegal, West Africa. While she was riding public transportation there, her bus driver hit a tree. "I came out injured but pretty much okay, though a lot of people didn't," she recalls. Years later, after graduating from medical school and starting her MPH, she took an injury prevention course at Johns Hopkins.

Smartphone Ultrasonography training

Courtesy of Dr. Christie, UCLA

"I realized—and it was a lightbulb moment—that epidemiology, all the tools of epidemiology, can be used for this problem of injury prevention."

"When I started, there was no such thing as 'surgical global health' and injury care was the forgotten stepcousin of public health," says Juillard. While there's more acceptance today, she still encounters "a cognitive bias about what is and isn't viable, what is and isn't bona fide public health research."

"If you're passionate about something and you think it matters, it probably has a place in global health," says Juillard.

Nídia Sequeira Trovão, PhD

Q&A

Sharing knowledge to improve health worldwide

Nídia Sequeira Trovão, PhD, a molecular epidemiologist, leads Fogarty's Genomic Epidemiology and Evolution of Pathogens (GEEP) section. She earned a bachelor's degree in molecular and cellular biology at the Universidade Nova de Lisboa, Portugal, and a master's degree in biomedical sciences from the Institute of Hygiene and Tropical Medicine, Portugal. Subsequently, she completed a PhD in the field of evolutionary virology while studying in the laboratory of Professor Philippe Lemey at KU Leuven, Belgium. Trovão is an expert in phylodynamic modeling of pathogens.

Please describe your role at Fogarty.

My expertise is in viral evolution and transmission dynamics. Basically, I explore and examine "family trees" of viral sequences (phylogenetics), which can reveal how different viral strains relate to each other and how transmission occurs over time (phylodynamics). So Fogarty's section on Genomic Epidemiology and Evolution of Pathogens (GEEP) is about understanding the epidemiology, the evolution, and the transmission dynamics of viral diseases using genetic sequences and modeling. Essentially, we want to understand what the mutational mechanisms are that lead to emergent infectious events. We also want to trace the source of events so we can control outbreaks.

GEEP focuses on a very broad spectrum of viruses and viral threats, mostly respiratory viruses, such as influenza, SARS-CoV-2 (the virus that causes COVID 19), and respiratory syncytial virus. Yet we also study other pathogens, including HIV, rotavirus, and measles, and we're very interested in viruses at the human-animal interface, such as H5N1, which can occur when bird viruses spill into dairy cattle and from there into humans.

Besides this research focus, GEEP also has a capacity building initiative. Our goal is to develop the workforce in low- and middle- income countries (LMICs), so that scientists can address public health needs and threats within their own nations and regions. I have trained more than 1,000 scientists worldwide during my time at Fogarty through both Fogarty-led workshops and outside seminars.

What does a typical day look like for you?

If it's a Monday, I'll be defining the priorities in terms of projects of the week. Phylodynamic modeling is time consuming and computationally intensive, so we need to always address what type of analyses have finished running on the servers, what can we start working on next, and what other important questions should be addressed and prioritized based on public health needs. On most days, I also go to our shared lab channel and see if my students and colleagues have any questions that I need to address so they can continue their projects.

My work also encompasses a lot of meetings with collaborators. We always keep in touch so that our work can continue as smoothly as possible. While doing genetic analyses, we often need to ask our collaborators to provide additional information about the pathogen sequences and about the patients from whom they were collected. In genomic epidemiology, it's only when we merge additional data into the genetic analysis that we can answer the more interesting and prominent questions.

Part of this work also involves going through genetic sequences, searching genetic databases, and putting together vast background data sets of genetic sequences so that we can see how our study sequences compare.

Usually, I also work on visualizing results so that they are easy to interpret from the public health perspective. And I write papers and create presentations for conferences.

Have there been any standout moments or accomplishments in your career?

There are many, too many to list! One is the opportunity to learn so much and at the same time to share my knowledge. I believe we need as many hands as possible to make healthcare better and to improve health nationwide and worldwide. It's been great to work towards building a stronger global workforce to help address public health emergencies.

Lois Cohen, an abiding NIDCR star, shares memories of Fogarty

When Lois Cohen, PhD, thinks of the Fogarty International Center, she sees Stone House (its building on the NIH campus) in the early 70s shortly after Fogarty was established in 1968. “I have memories of Margaret Mead living there, and we would come and sit in the living room and listen to her talk.” Other scholars, including microbiologist Albert Sabin, also resided in Stone House and gave lectures there and so provided attendees with “the intellectual stimuli to think outside our boxes. I mean, I was a sociologist, but sitting on the floor next to me was an immunologist or a chemist, a virologist, a cultural anthropologist… Fogarty is the place where the disciplines come together and we all sit and learn and have some exchange.”

“That’s what Fogarty has meant to me. It’s been an intellectual platform to share insights from global research experiences for the purpose of advancing biomedical and behavioral research,” says Cohen.

Partnerships

Cohen was recruited to the National Institute of Dental Research (an earlier incarnation of the National Institute of Dental and Craniofacial Research or NIDCR) on July 4, 1976, as Special Assistant to the Director David B. Scott. Around this time, dental practice in the U.S. was characteristically a fee-for-service solo practice enterprise (with mostly male practitioners). Dental insurance was rare. The institute’s research focused on: building a larger workforce commensurate with population health needs; expanding community-based prevention programs such as water fluoridation; transforming dentists into oral cavity physicians (so that their checkups include detection of early oral cancers); and examining health delivery system models to more effectively impact population health.

Discussions about national health insurance had begun with President Lyndon Johnson, Cohen says. “We began to look globally. In fact, we had to look outside our own national borders for unique models of health care delivery.” For instance, the Iron Curtain countries (the communist satellite nations of the USSR) had implemented “polyclinics” and these provided oral health care alongside general health care nationwide. Cohen wanted to learn more about them.

Cohen’s proposed study would look at national health systems in highly industrialized countries and how each nation integrated oral health into its system. She worked together with an oral epidemiologist, David E. Barmes, an Australian national. The plan was for Cohen and Barmes to develop a common protocol for collecting information across countries.

“It had never been done before—people had visited other countries and wrote up case study impressions of what was happening, but they never used common measurements that would enable comparisons.”

Photos courtesy of Lois Cohen

Lawton Chiles International House (Stone House)

Courtesy of Fogarty International Center

Stone House Meetings

Cohen and Barmes began their collaboration by asking researchers with cross-national experiences in the fields of health services research, epidemiology, health economics, health promotion sciences, statistics and other related sciences to advise them on the creation of a common protocol, which they could use to study and compare the different health care systems. “We convened teams of sociologists, health economists and health services researchers from the participating countries at Fogarty’s Stone House,” says Cohen.

Their first study, an important milestone in Cohen’s career, included sampling sites in 10 countries: U.S., Canada, Australia, Federal Republic of Germany, Japan, New Zealand, Ireland, Norway, German Democratic Republic and Poland.

The International Collaborative Studies of Oral Health Systems was the largest dental study ever launched, with more than 30,000 public respondents in total, representing three age cohorts.

A leader at NIH

Following the success of this study, Cohen and Barmes conducted a second study that looked at follow-up data from some of the sampling areas as well as two new Indian Health Service sites among the Navajo and Lakota populations. This second study also included an elderly sample (ages 65 to 74). Both the ICS-I and the ICS-II (as these studies became known) showed that the average U.S. oral health scores compared favorably with other nations’ scores, yet the gap between the best and worst scores was wider in the U.S. than in any other country.

Meanwhile, Cohen began to oversee international health at NIDCR in addition to her responsibilities evaluating the institute’s programs. In 1998, NIH brought Barmes on as a special expert seated at NIDCR. “When Fogarty brought together all of NIH’s international reps, he would come with me to those meetings and would influence a lot of people around the table. He helped everybody.”

During Harold Slavkin’s tenure as NIDCR’s Director, Barmes and Cohen helped write the institute’s global research agenda for its newly established office of international health. Working with Fogarty and international partners, the Cohen-Barmes team developed an agenda that prioritized a handful of issues, including optimal levels of fluoride, craniofacial anomalies (such as cleft lip and palate), oral manifestations of HIV, and the use of natural substances as oral therapeutics.

After Barmes passed in 2001, Cohen helped establish the NIH David E. Barmes Global Health Lecture series, which is sponsored by both NIDCR and Fogarty, to honor his lifelong dedication to research aimed at improving health for those in low-income countries.

An interdisciplinary mindset

“Everything was accidental,” says Cohen, when asked why she chose sociology for her career.

As a freshman, she attended University of Pennsylvania and then studied abroad for her sophomore year in Israel at the Institute for Youth leaders from Abroad. Her experiences in the then 9-year-old country included living among students and immigrants from both low-income developing countries and highly industrialized nations. Cohen says, “I hadn’t had all of this cultural exposure before—being with students from all over the world, seeing these absorption experiments, learning about cultures I didn’t know.” Before she returned for junior year, University of Pennsylvania assigned her a major, choosing sociology since she’d already taken two sections in that discipline. “Sociology really resonated with me following my experiences in Israel. I really liked it.”

Entering the field of oral health was another happy accident for Cohen. After her husband took a job at NIH, she searched for her own position there. A contact at the National Institute of Mental Health, which didn’t have any vacancies, suggested she try the Division of Dental Health. Its newly formed social studies branch immediately hired her.

Over time Cohen grew to love the field. “It was a real opportunity to do interdisciplinary research. There were so many issues that required social science skills rather than dental clinical skills.”

Global connection

The goal of integrating oral care into primary health care remains elusive in the U.S., still Cohen takes heart from the many significant strides made globally. The United Nations includes oral health in its Political Declaration on Prevention and Control of Noncommunicable Diseases and its various statements on universal health coverage.

Cohen’s current role at NIDCR includes maintaining connections within and among the global oral health community. She shares oral health research highlights with staff at Fogarty, NIDCR, NIH and global organizations. Her work naturally extends beyond NIH. She recently helped launch the first African Association for Dental Education in Casablanca. “The dental schools had never had an organization where they could share information and gain support and build their capacity.”

Fogarty remains essential to maintaining ties with, and learning from, the global community, says Cohen. “So much is happening outside the U.S. that we must keep up with if we’re going to stay at the cutting edge.” It’s important that researchers “go where people are in better oral health” to learn. Yet they also need to study dental practices in less-developed countries.

“EVERYTHING WE DO IN THIS COUNTRY COSTS AN ARM AND A LEG. WE’RE SO HIGH TECH, WE’VE FORGOTTEN HOW TO DO THINGS IN LOW-COST, SIMPLE WAYS.”

Courtesy of Lois Cohen

A 1970 meeting of social science investigators at the Stone House (Cohen, white dress; Barmes stands to her right).

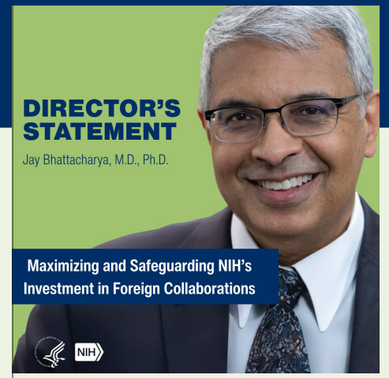
NIH DIRECTOR'S Message

NIH Director refines guidance for international research partnerships

The National Institutes of Health remains committed to its support of research collaborations with institutions and scientists outside the United States that help advance its mission. Over several months, NIH Director Jay Bhattacharya, MD, PhD, has discussed what NIH is doing to improve its oversight of funds going to foreign research institutions. Then in late August, he issued a statement, "Maximizing and Safeguarding NIH's Investment in Foreign Collaborations," to clarify the standards he's set for research partnerships across borders.

In this statement, Bhattacharya references the mission of NIH to seek fundamental knowledge about the nature and behavior of living systems and to apply that knowledge to enhance health, lengthen life, and reduce illness and disability. Given the overlapping drivers of health and safety in different countries, NIH actively conducts and supports international, in addition to domestic, research, he writes. In fact, global collaborations can drive scientific progress to benefit all, including the American public.

Yet Bhattacharya also notes that "support of international research should deliver both scientific and taxpayer value." Acknowledging that NIH is "tasked with being good stewards of U.S. taxpayer dollars," he advises the agency to pursue collaborations "judiciously, acknowledging that risks may not always be immediately apparent."



He emphasizes two overarching principles to guide NIH research partnerships abroad.

1. All research supported at international sites should have a clear scientific rationale to be conducted in a foreign country rather than in the United States.

2. All research supported at international sites should have direct potential to generate knowledge applicable to understanding, improving, or protecting the health of Americans.

He also cautions against misuse of NIH funding and resources, suggesting that it is of paramount importance to know exactly where "every dollar is going and to whom."

"NIH IS NOT ONLY A CATALYST FOR SCIENCE AND HEALTH, BUT ALSO A DRIVER OF U.S. ECONOMIC GROWTH. INTERNATIONAL RESEARCH PROJECTS, THEN, MUST ALSO AIM TO PROFIT THE AMERICAN PUBLIC."

Global HEALTH Briefs

Ebola sickens 64 patients in DRC outbreak

The U.S. Centers for Disease Control and Prevention reported 64 people with confirmed or probable Ebola virus disease as of November 5 in the Democratic Republic of the Congo (DRC) outbreak. Of these patients, 45 have died. Laboratory tests identified the Zaire strain, the most dangerous and common of Ebola strains, as the cause of the outbreak, first declared in early September. Africa CDC Director General Dr. Jean Kaseya traveled to DRC to meet with its Minister of Health early in the outbreak to discuss disease management, which includes increasing surveillance, contact tracing, laboratory capacity, and infection prevention and control efforts. Staff from the U.S. CDC are also assisting in the response in DRC's Kasai Province, where more than 42,000 people have been vaccinated against Ebola. Authorities say Ervebo, an approved vaccine, is effective in preventing infection with the Zaire strain. Ebola is a viral hemorrhagic fever that is spread by infected blood and other body fluids.

Genomic study tracks invasive subspecies of mosquitoes

Each year dengue, a mosquito-borne disease, causes hundreds of millions of infections worldwide. Jacob Crawford, PhD, of Verily Life Sciences LLC (Google's research organization) and his colleagues investigated the global migration paths of the *Aedes aegypti* mosquito—the primary disease vector of dengue, chikungunya, and Zika. The team sequenced 1,206 genomes from 73 globally distributed populations of *Aedes aegypti* and found that this lineage developed its preference for humans in West Africa. Later, during the Atlantic slave trade, this lineage arrived in the Americas, where an invasive subspecies, *Aedes aegypti aegypti*, emerged. Since then, the subspecies re-entered Africa and interbred with native populations, resulting in more robust dengue outbreaks and insecticide-resistant mutations. Global cases of dengue increased 10 fold over the past two decades, with more than 12 million cases and 7,700 deaths reported in the Americas and Caribbean, according to this NIH-supported study published in the journal *Science*.

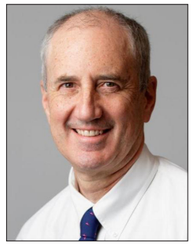
Marine sponge compounds show potential for treating Leishmaniasis

A research team at Tokyo University of Science isolated 10 natural compounds from marine sponges with the potential to transform leishmaniasis treatment. Leishmaniasis, a neglected tropical disease caused by unicellular parasites spread by the bite of infected sand flies, is prevalent across 90 tropical, subtropical, and southern European countries, affecting nearly 12 million people worldwide. Skin sores resulting from the disease can develop into deep ulcers. The discovered marine compounds, known as onnamides and previously linked to antitumor activity, show low toxicity and high selectivity, such that they kill the parasite while sparing human cells. The researchers believe these compounds, collected in Manza, Okinawa, hold promise for the development of new treatments for leishmaniasis and possibly other protozoan diseases, such as Chagas disease and African sleeping sickness. Their findings are published in *Marine Biotechnology.*

Impact Global Health report tallies the benefits of global health R&D

Spending on global health research and development (R&D) by high income countries pays off big, according to a report by Impact Global Health, a non-profit that provides data and tools to support global health R&D advocacy. The $71 billion invested in global health R&D between 2007 and 2023 has generated $511 billion in gross domestic product growth. This investment, 90% of which has been concentrated in institutions in high-income countries, has not only delivered life-saving innovations but also led to 20,000 patents and the creation of 643,000 jobs. The report identifies 22 health innovations originally developed for use in low- and middle-income countries—vaccines, diagnostics, delivery platforms, and treatments—that have delivered unexpected benefits to high-income countries.

Community



Ted Trimble retires from global health duties at NCI
After 34 years at the NCI, Dr. Ted Trimble has retired from his position as senior advisor for global HPV and cervical cancer control. Trimble became the founding director of the newly established NCI Center for Global Health (CGH) in 2011 and served in that position until 2018. Under his leadership, CGH coordinated NCI efforts to strengthen global cancer research, train future generations of global cancer researchers, and translate research findings into cancer control policies. Prior to this appointment, Trimble served as head of gynecologic cancer therapeutics in NCI's division of cancer treatment and diagnosis, where he spearheaded the development of a national and international cancer research strategy for the treatment of cervical cancer, ovarian cancer, and endometrial cancer.

NAM selects Carl Nathan for Hamburg award
Carl F. Nathan, PhD, a long-standing NIH grantee, has received the 2025 David and Beatrix Hamburg Award for Advances in Biomedical Research and Clinical Medicine. Experts convened by the National Academy of Medicine selected Nathan, a professor of medicine and microbiology and immunology at Weill Cornell Medicine, for his research to improve understanding of innate immunity and his efforts to address antimicrobial resistance. His work has led to better diagnosis and treatment of tuberculosis and a range of other infectious diseases. Nathan's lab focuses on TB and host interactions to better understand and improve how the immune system kills antigens.

Pew scholars program awards Bramble, Brook
In September, Pew Charitable Trusts selected 22 researchers for its 2025 scholars program. One of the awardees, Matthew Bramble, PhD, an assistant professor at Children's National Hospital, is exploring the molecular biology of konzo, a neurological condition that causes paralysis in susceptible children in sub-Saharan Africa. His research examining the modulatory role played by the gut microbiome in the pathogenesis of konzo disease is supported by Fogarty. As a Pew scholar, he will receive four years of funding to continue this work, which is conducted in the Democratic Republic of the Congo.

Pew also selected Cara Brook, PhD, an assistant professor at University of California, Berkeley, who designs vaccines to immunize wild bats against viruses that can be transmitted to humans. Using techniques in immunology, mathematical modeling, and biology, Brook explores how Madagascar bats develop natural immunity to viruses and evaluates whether vaccines can boost this immunity. Her work could provide a new strategy for pandemic prevention that uses wildlife vaccination to eradicate viruses prior to human infections. Brook is a grantee of the National Institute of Allergy and Infectious Diseases.

Adekemi Adeniyan wins 2025 Roux Prize
The 2025 Roux Prize winner is Dr. Adekemi Adeniyan, executive director of Dentalcare Foundation. In her role at Dentalcare, Adeniyan has led the deployment of mobile dental clinics and Nigeria's first solar-powered tele-dental kiosk, delivering care to over 100,000 people in rural communities. She's trained more than 2,500 teachers and community health workers to promote oral health in their regions of Nigeria, where less than 20% of people have access to oral health care. The Roux Prize embodies the mission of the Institute for Health Metrics and Evaluation's Global Burden of Disease Study to quantify health levels and trends worldwide.

Abdool Karim, Bhutta jointly win Virchow Prize 2025
The Virchow Foundation jointly awarded Quarraisha Abdool Karim, PhD, and Dr. Zulfiqar A. Bhutta its 2025 prize in recognition of their leadership in advancing maternal, newborn, and child health. Abdool Karim, a clinical epidemiologist at Columbia University, studies HIV prevention among girls and young women. Her leadership of the Centre for the AIDS Programme of Research in South Africa 004 trial provided the first proof that antiretroviral drugs could prevent HIV infection in women, a finding that continues to impact global HIV prevention efforts today. A long-standing Fogarty grantee, Abdool Karim has built scientific capacity across Africa.

Bhutta, a pediatrician and public health scientist at Aga Khan University (Pakistan) and the Hospital for Sick Children (Canada), leads major studies on maternal, newborn, and child health, nutrition, and primary care. His research informs international and national guidelines and policies in South Asia, Sub-Saharan Africa, and other settings. Bhutta, who has provided technical assistance for various NIH grant projects, champions community health worker programs and nutrition interventions during the critical first 1,000 days of life. The Virchow Foundation annually honors outstanding contributions and lifelong achievements in global health.

Awandare wins 2025 Bailey K. Ashford Medal
The American Society of Tropical Medicine and Hygiene (ASTMH) has awarded Gordon Awandare, PhD, with the 2025 Bailey K. Ashford Medal. The award recognizes Awandare, who is a founding director of the West African Centre for Cell Biology of Infectious Pathogens (WACCBIP) at the University of Ghana, for his "outstanding and sustained contributions to tropical medicine, infectious disease research, and scientific capacity development in Africa." Awandare's work focuses on understanding the biology and immune response mechanisms of malaria, including disease pathogenesis. His research has paved the way for improved diagnostics, treatments, and vaccine development. ASTMH also celebrates Awandare for his leadership in building research infrastructure and nurturing scientific talent across Africa. Under his stewardship, WACCBIP has trained and mentored hundreds of young African scientists.

FUNDINGNEWS

SCAN
TO READ MORE

On behalf of the Fogarty International Center at the U.S. National Institutes of Health (NIH) the following funding opportunities, notices and announcements may be of interest to those working in the field of global health research.

Funding Announcement	Deadline	Details
International Research Scientist Development Award (IRSDA) (K01 Independent Clinical Trial Not Allowed) (K01 Independent Clinical Trial Required)	March 9, 2026	https://www.fic.nih.gov/Programs/Pages/research-scientists.aspx
Mobile Health: Technology and Outcomes in Low and Middle Income Countries (R21/R33 Clinical Trial Optional)	March 20, 2026	https://www.fic.nih.gov/Programs/Pages/mhealth.aspx
Global Infectious Disease Research Training Program (D43 Clinical Trial Optional)	August 6, 2026	https://www.fic.nih.gov/Programs/Pages/infectious-disease.aspx

NOW HIRING!

NIH seeks applications for new Fogarty International Center Director

The National Institutes of Health (NIH) is seeking applications from exceptional candidates for the exciting position of Director, Fogarty International Center. Candidates who are committed to scientific excellence and have the energy, enthusiasm, and innovative thinking necessary to lead a dynmic organization can apply here: https://go.nih.gov/qVVGQYt

NIH Fogarty

Fogarty International Center
National Institutes of Health
31 Center Drive
Bethesda, MD 20892

Advancing Science for Global Health