NATIONAL INSTITUTES OF HEALTH • DEPARTMENT OF HEALTH AND HUMAN SERVICES

Global Health Matters

FOGARTY INTERNATIONAL CENTER

A training session sponsored by the Utilizing Health Information for Meaningful Impact in East Africa through Data Science (UZIMA-DS) research hub within the DS-I Africa program.

Courtesy of UZIMA-DS research hub

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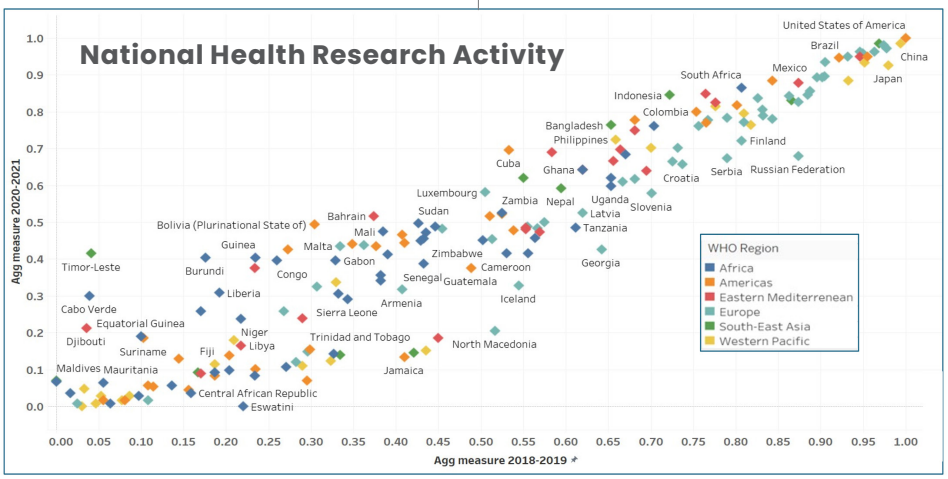
STRENGTHENING RESEARCH CAPACITY
helps build global health resilience and American leadership

AT THE FOGARTY INTERNATIONAL CENTER, we have long championed research capacity building as a cornerstone of global health. Our mission is not abstract; it shapes how countries advance health outcomes for all and respond to evolving challenges, thereby creating value for American health security and scientific leadership. A recent analysis in *Annals of Global Health* provides timely, data-driven evidence reinforcing this perspective.

In this multi-country analysis, co-author Shirley Kyere and I examined national health research activity in the years immediately preceding COVID-19 and assessed how those same countries contributed to global research output during the early years of the crisis. As seen in the Figure, the findings are striking: countries with stronger pre-existing research capacity (X-axis) produced substantially more research during the emergency period (Y-axis) than countries with weaker capacity. This association is stronger than correlations with GDP, population size, or disease burden. In short, research capacity matters — and it matters decisively.

These results validate what Fogarty and our partners have observed for decades. Research capacity built in advance enables countries to generate evidence rapidly when new health challenges arise. It allows institutions to pivot and answer urgent questions—not by creating systems from scratch but by redeploying trained people, laboratories, data platforms, and collaborative networks. Importantly, this capacity is not disease specific. Skills developed through work on HIV, tuberculosis, noncommunicable diseases, or maternal and child health are readily transferable when circumstances change.

Evidence from broader research capacity literature illustrates how this pivot happens in practice. A report we published in *American Journal of Tropical Medicine and Hygiene* highlights how countries with established laboratory networks and trained scientific personnel were able to repurpose existing infrastructure during health emergencies to support diagnostic testing, genomic sequencing, and operational



Scatterplot of National Aggregate Metric of pre COVID research activity 2018–19 vs. National Aggregate Metric of COVID 19 related research output, 2020–21 in countries with population >100,000 (N = 180).

Courtesy of Peter Kilmarx and Shirley Kyere

research. In multiple settings, laboratories originally strengthened for routine disease surveillance were rapidly adapted to characterize emerging pathogens, while locally trained researchers shifted their focus to outbreak-related clinical studies and data analysis. These transitions were possible not because of emergency-specific investments, but because core research systems were already in place. In Jamaica, for example, prior Fogarty-supported training in virology at the University of the West Indies enabled Professor John Lindo and colleagues to pivot rapidly to COVID-19 research and diagnostics, leading to the establishment of in-country genomic sequencing capacity that provided timely data to inform national public health decisions.

The contrast is instructive. Where such capacity was limited, countries faced delays in generating local evidence, often relying on external actors to define research priorities and interpret findings. Where capacity was stronger, local investigators led studies, informed national decision-making, and contributed knowledge to the global scientific community.

This distinction reinforces a central lesson from the *Annals of Global Health* analysis: preparedness is cumulative. It is built over time through sustained investment in people and institutions, not assembled in response to a crisis.

This framing also helps move the discussion beyond narrow conceptions of preparedness. Health emergencies are not isolated events; they sit along a continuum of evolving health challenges. Research capacity strengthens health systems' ability to respond to uncertainty, whether that uncertainty arises from emerging infections, changing disease patterns, environmental stressors, or demographic transitions. Countries with strong research ecosystems are better positioned to adapt across this spectrum.

Importantly, this approach aligns squarely with an America First global health strategy. Investments in global research capacity do not detract from U.S. interests, they reinforce them. Stronger research partners abroad enhance global surveillance, accelerate scientific discovery, and improve access to timely data that protect Americans at home. They expand the global pool of scientific talent and create opportunities for collaborations that advance U.S. research leadership and economic competitiveness.

As we look ahead, Fogarty's mission remains clear. By strengthening research ecosystems around the world, we help ensure that when health challenges emerge the response is faster, more grounded in evidence, and more fair. Building research capacity is not only central to global health resilience, it is also crucial to American leadership in science worldwide.

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profile

Emma Lawrence and her research team members Betty Nartey and Amanda Adu-Amankwah hold devices and smartphones (with apps) used to monitor blood pressure at home.

Can home blood pressure monitoring during pregnancy lower risks to moms and babies?

As a practicing OB-GYN in Michigan, Emma Lawrence, MD, routinely sees and treats hypertensive disorders of pregnancy, which include chronic or pregnancy-associated high blood pressure and pre-eclampsia (a persistent form of high blood pressure). "It's a big cause of maternal morbidity and some maternal mortality in Michigan," says Lawrence, a clinical associate professor of obstetrics and gynecology at the University of Michigan Medical School. These disorders are also a leading cause of a mother's death during childbirth in the teaching hospitals of Ghana.

Chosen for a Fogarty fellowship, Lawrence decided to investigate home blood pressure monitoring among pregnant women in Ghana. The COVID-19 pandemic inspired her project idea. "All of a sudden in my clinical practice in Michigan, we were trying to have our pregnant patients *not* come to the office every week for their prenatal visits. So we started home blood pressure monitoring." Prenatal home blood pressure monitoring spread across the U.S. and also gained traction in Europe... would it also work in a lower resource setting?

Acceptability & feasibility

Lawrence's Fogarty project addressed this question: Can home blood pressure monitoring help lower maternal mortality rates at the Korle Bu Teaching Hospital in Accra, Ghana's capital city? To answer this, she used a mixed methods approach, which combines quantitative and qualitative research methodologies and then integrates the analysis of each. "So we collect lots of survey data and also delve more deeply into interviews and qualitative data. It gives you a much more well-rounded story to tell." Designing the study, she focused on two key aspects of adoption: acceptability and feasibility. First and foremost, she needed to understand whether obstetric providers

Emma Lawrence
MD, MS

Fogarty Fellow
2021-2022

U.S. Institute
University of Michigan

Foreign Institute
Korle Bu Teaching Hospital, Ghana

Research topic
Adapting and evaluating smartphone app-enhanced home blood pressure monitoring among pregnant women in Ghana

Current affiliation
Department of Obstetrics and Gynecology, University of Michigan

Photo's courtesy of Emma Lawrence

believed home blood pressure monitoring was acceptable for women at risk of hypertension during pregnancy. "If OB-GYNs and midwives weren't going to use it or didn't think it would work, then there's no point," says Lawrence.

Through surveys and interviews, she found that obstetric providers felt optimistic about implementing home monitoring. "They saw themselves using the data clinically, with more data helping them diagnose pre-eclampsia earlier in pregnancy and so improving outcomes." Yet her analysis also identified barriers to access. "Providers worried that some patients, those who didn't have any formal education or didn't have any numeracy, would struggle when checking their pressure or interpreting the values. Plus, there's no centralized triage phone line for patients to call if their blood pressure readings are high." In the end, Lawrence's exploration of home blood pressure monitoring for pregnant women in Ghana provided the preliminary data needed to begin subsequent research projects that would address the challenges identified.

Country familiarity

The first time Lawrence went to Ghana was in 2006 when she was a volunteer in Kumasi, the second largest city in Ghana. "It was the summer after my freshman year in college. It was such a transformative, wonderful experience for me that I started going back every summer—I became hooked!"

Volunteering in Ghana meant a lot of time spent in hospitals. "I saw my first vaginal delivery in Ghana. I saw

Emma Lawrence and her Ghanaian research collaborators (from left, Betty Nartey, Ama Tamatey, and Perez Sepenu) attend a pre-eclampsia symposium.

Photo's courtesy of Emma Lawrence

my first C-section in Ghana." She realized that "medicine was really cool and surgery was cool and OB-GYN was cool." Though interested in public health, she'd never seen herself as a doctor and so hadn't prepared for that career. At this point she pivoted, entering a post-baccalaureate program to fulfill the necessary pre-med requirements, before continuing onto med school.

Lawrence first learned about Fogarty's Launching Future Leaders in Global Health Research Training Program (LAUNCH) through conversations with her mentor, Cheryl Moyer, PhD, MPH, a co-principal investigator for the Northern Pacific Global Health LEADERs Research Training consortium, one of six LAUNCH consortia. "I wanted a career in research so a long, in-depth, mentored experience—a year-long Fogarty fellowship—would help me begin."

During her Fogarty year, Lawrence faced "all the usual challenges of doing global health research. It takes a long time to get ethical approval and there's always some delay. You're trying to communicate with teams between time zones and the internet's going out…all of those logistical things go wrong." A difficulty specific to her project was scheduling interviews. "OB-GYNs and healthcare providers are busy everywhere, but especially in a place like Ghana where patient volume is really high." To overcome this, her team put a lot of effort into recruitment and found themselves rewarded. "Most providers were eager to participate because they cared about the topic."

Because Lawrence believes that home blood pressure monitoring can be adapted internationally, she and her team have been intentional as they adjust the practice to Ghana. "The tenets we use to address all the usual considerations—translating to local languages, considering cultural context, training lower literacy populations—can be used in similar settings." Utilizing the skills, experiences, and collaborative techniques developed during her fellowship year, she's currently working on two projects funded by Fogarty that are related to home blood pressure monitoring for pregnant women: a K award (a career development grant) and an R21 award (intended for smaller research projects).

"WE'RE IMPLEMENTING AND EVALUATING HOME BLOOD PRESSURE MONITORING NOW. HOPEFULLY, WE'LL GET GOOD RESULTS AND THEN WE'LL WORK TOWARDS SCALING UP."

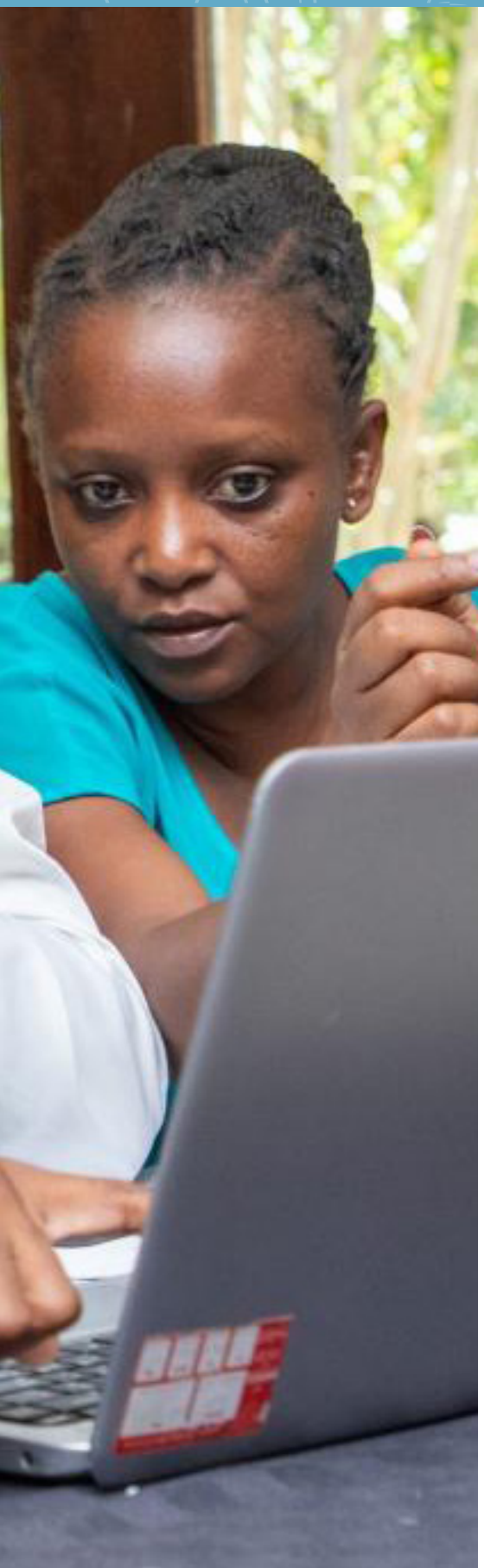
Lawrence's global work focuses on optimizing maternal and neonatal health outcomes,

DS-I Africa

UZIMA Data Science website

FOCUS

PROGRESS REPORT



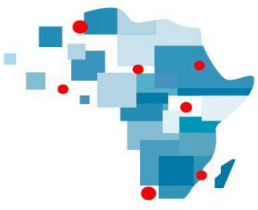
The Harnessing Data Science for Health Discovery and Innovation in Africa (DS-I Africa) initiative has an austere yet ambitious vision: **To create and support a pan-continental network of data scientists and technologies able to transform health.**

DS-I AFRICA IS A CONSORTIUM led by African and U.S. investigators who hope to solve the continent's most pressing public health problems by collaborating across disciplines with individuals and groups from academia, government and the private sector. It began with **19 projects** in 2021 and grew to a total of **38 projects** in 2023.

In practical terms, the aim of each project is to develop new tools and applications that can be implemented in Africa and also shared, adapted, and harmonized globally. To achieve this goal requires a fully articulated ecosystem of structures and programs. DS-I Africa, then, comprises the eLwazi Open Data Science Platform (ODSP) and Coordinating Center (CC), seven research hubs, seven research training programs, four ELSI (ethical, legal, and social implications) research projects, 13 PFI (partnership for innovation) research projects, and six research education projects.

Specifically, the ODSP develops and maintains a data sharing gateway for existing resources plus new data generated by the initiative's research hubs. The CC provides the framework

Participants work together during a data journalism training session sponsored by the Utilizing Health Information for Meaningful Impact in East Africa through Data Science (UZIMA-DS) research hub within the DS-I Africa program.



for direction and management of common activities, while supporting the steering committee that governs the consortium. The research hubs and innovation projects advance population-relevant, affordable, and scalable data science solutions. The training programs educate the next generation of data scientists, support faculty development, and implement new master's and PhD curricula in African institutions, while the education projects focus on short-term courses, workshops, and hackathons. The ELSI projects examine data privacy, cross-border data sharing, and other, relevant ethical issues.

Collaboration is foundational to the DS-I Africa program, and so a culture of partnership is integrated throughout the ecosystem. The African investigators leading the projects engage with other data science networks and activities across the continent and across the globe. In a paper published in *Data Science Journal*, Francis E. Agamah, University of Cape Town, and his co-authors note that varied "partnerships foster creativity and strengthen projects."

To complement DS-I Africa, Fogarty and partners provided administrative and funding support for the development of a collection of articles by researchers to be published in the *Springer Nature* portfolio of journals. In 2022, the scientists identified key topics; one year later, they formed writing teams. The primary goal of the collection is to provide a benchmark for the state of the field that can be used to assess progress over the next several years. Yet the collection also aims to highlight the importance and potential of data science to improve health and also to discuss new trends and opportunities, exchange ideas, and stimulate new thinking.

As DS-I Africa approaches the end of its initial funding phase, a single issue, perhaps the most crucial, remains top of mind. "Sustainability has emerged as a critical priority for its long-term success," writes Agamah and his colleagues. To address this, the consortium has begun developing a strategic plan to ensure the continuity of operations, research outputs, and regional capacity-building efforts.

More than 250 scientific DS-I Africa publications have already appeared in journals. This number continues to grow. The following pages summarize just a sample of the consortium's published research.

Sharing health data responsibly: A model for ethical collaboration

One of the biggest challenges that DS-I Africa scientists face is understanding how to manage and integrate data within their research projects. "This ended up being far more complex than anybody anticipated," says Michèle Ramsay, PhD, a professor in the Division of Human Genetics and the Sydney Brenner Institute for Molecular Bioscience at the University of the Witwatersrand (Wits) in Johannesburg. "The data comes from people who have generously given their samples, so managing that responsibly is interesting yet difficult. What is challenging is the negotiation with research groups about the data, making sure that ethics committees have approved the studies in line with the participant informed consent and that it's legal, and then combining data sets from different countries."

Ramsay, along with Scott Hazelhurst, PhD, professor of bioinformatics at Wits, is a co-principal investigator for DS-I Africa's Multimorbidity in Africa: Digital Innovation, Visualisation, and Application (MADIVA) research hub. MADIVA studies multiple chronic diseases in African populations using long-term health, demographic, and genomic data from the Africa Wits-INDEPTH Partnership for Genomic Studies for two communities, Bushbuckridge (Agincourt), South Africa and Nairobi, Kenya, and also data from their Health and Demographic Surveillance Site and additional nested research studies.

To help think through complex data issues and come up with guidelines for MADIVA, Hazelhurst turned to a PhD law student, Daphine Tinashe Nyachowe. The resulting published paper (and part of Nyachowe's PhD thesis), *Balancing protection of participants and other stakeholders with openness,* is "about understanding how to share data from a legal perspective and an ethical perspective," explains Ramsay.

Nyachowe and her co-authors begin by noting that research in low- and middle-income countries holds unique challenges, such as limited research infrastructure, fears of data exploitation, and the need to protect communities from harm or stigmatization. To address these issues, the MADIVA data access and sharing policy balances three interests: protecting research participants and communities; promoting open science; and safeguarding researchers and institutions. Guidelines set clear

rules for who can access data, under what conditions, and when. The policy also allows for controlled data sharing, includes temporary embargo periods (so local researchers can publish their work), and requires ethical approvals and data security measures.

MADIVA has resulted in other publications as well, including a review of the literature to uncover multimorbidity patterns and gaps in African-ancestry populations. The MADIVA team analyzed 232 publications from 2010 to 2022 and found diverse multimorbidity patterns among different African-ancestry populations, though cardiovascular and metabolic diseases were the most common. "The trend we saw was that, if people are studying diaspora populations, often one element of the multimorbidity was mental health, while in continental Africa, infectious diseases, such as HIV, malaria, or tuberculosis, feature within the multimorbidity spectrum and contribute to accumulation of long-term conditions," says Ramsay. The review also identified a lack of translational research as one of several research gaps and emphasized that African Americans should not be treated as proxies for all African-ancestry populations. "We just don't have enough data representative of African regions and ethnic groups to really make good conclusions," says Ramsay.

Another MADIVA publication is "the first from the machine learning side of the project" and it aims to improve how multimorbidity is understood in African populations, says Ramsay. MADIVA employs "automatic stratification of the data," a technique that does not begin with the researchers' hypotheses but instead uses machine learning to sort the data, revealing, for example, which groups are overrepresented by multimorbidity or what the associated characteristics of multimorbidity (such as a person's age or cholesterol level) are. The findings show that certain high-risk groups appear consistently across both locations (in South Africa and Kenya), suggesting that these patterns are robust and transferable within the African context. Ramsay and her co-authors note that this work demonstrates how modern data science tools can complement traditional public health research, while laying a foundation for more context-specific and precise research to manage health conditions in Africa.

Additional MADIVA findings will soon be published. For instance, the team is working on parallel papers that explore automatic stratification of data when applying different machine learning algorithms. One study isolates data from a subgroup of people who don't have diabetes to understand the probability of them developing the disease in five years, explains Ramsay. "So we can stratify the data at baseline, and then stratify it again at a second point, asking, 'Who developed diabetes and who didn't,' and then we can ask the data, 'What are the characteristics of those people who developed it in five years?'" The researchers can then use this information to develop an intervention.

Meanwhile, Ramsay hopes for continued funding of DS-I Africa. Having worked with the NIH-funded Human Heredity in Health in Africa (H3Africa) consortium, she saw how researchers were able to amass data during the first five years but lacked enough time for analysis and collaboration. "That second five-year period of H3Africa was super productive," says Ramsay. If DS-I Africa is given a similarly long trajectory, much more valuable knowledge will come out of its many projects. "Science takes time, it's not something that you can rush."

Article: *Balancing protection of participants and other stakeholders with openness: African lessons from the MADIVA data sharing and access policy* ***Publication:*** *Global Health Action, 2025.*

Michele Ramsay

"Science takes time, it's not something that you can rush."

Building a long-term data resource to track teen mental health

Understanding what shapes young people's emotional well-being is urgent in Africa, yet long-term data that tracks how social, economic, and health factors affect mental health over time is lacking. To address this gap, researchers combined information from five HIV prevention studies conducted in rural South Africa between 2012 and 2022. The dataset includes 6,253 teens and young adults ages 13 to 24 and combines mental health screening results with household surveys and clinic records. Two screening tools were included, allowing researchers to study depression, mental health disorders, and suicidal thoughts alongside factors such as education, food insecurity, exposure to violence, sexual behavior, and HIV status. Findings indicate that mental health challenges are common, with significant levels of depressive symptoms and suicidal ideation. The resource provides insight into how mental health alters as teens grow into adulthood and offers a foundation for research and the design of culturally relevant mental health interventions for Africa.

Article: *Harmonization of a multimodal dataset to evaluate adolescent mental health in rural South Africa,* ***Publication:*** *International Journal of Population Data Science, 2023.*

Can AI transform colorectal cancer detection in sub-Saharan Africa?

Colorectal cancer (CRC) rates are rising in sub-Saharan Africa. More than 60% of patients are diagnosed at stage 4, an indication that the malignancy has spread from the large intestine to other organs. Sadly, just 1% of these patients will survive five years or more.

"In this paper, we wanted to demonstrate the gaps that exist in care and care delivery," says Akbar Waljee, MD, a gastroenterologist and professor at the University of Michigan, who collaborated with colleagues from DS-I Africa in the U.S. and at Aga Khan University in Nairobi, Kenya.

In Kenya and other low resource settings, the results of a biopsy can take many weeks, Waljee says. When patients wait that long for a diagnosis, a suspected cancer may spread. Faster results can happen with an AI-enabled clinical decision support system. For example, computer algorithms that examine population-level data can identify which patients are at the highest risk and should be prioritized for screening. Other pattern recognition algorithms can scan biopsy images to identify abnormalities that warrant closer inspection by pathologists.

The likelihood of AI-enabled health applications across Africa is high due to advancements in cloud computing, mobile phone penetration, supportive innovation ecosystems, and other factors, says Waljee. Since publication, he and his colleagues have made considerable progress: "We have an open-source tool now that can say either 'cancer or no cancer' much faster, likely within days. It's been deployed for validaidation. We're testing and validating it in the right environment."

Akbar Waljee

Born in Kenya, Waljee was exposed early in life to the importance of health and health care in low-resource settings. Today, in addition to teaching, he works as a staff physician and research investigator at the Veterans Administration in Ann Arbor, Michigan. "Because of my background, I wanted to work with an underserved population."

Often, he thinks: What innovations and advancements can help underserved communities?

AI is one innovation that might help to bridge gaps in service, he says. "The DS-I Africa consortium is a valuable tool for us to reciprocally learn across the world. Some technologies could also benefit people in the U.S., because we have populations that are resource limited as well."

Still Waljee warns that we must be thoughtful about the uses of technology and make sure they are "ethical, effective, and fair."

Article: *Artificial intelligence and machine learning for early detection and diagnosis of colorectal cancer in sub-Saharan Africa.* ***Publication:*** *Gut (the journal of the British Society of Gastroenterology), 2022.*

Fulfilling the promise of data science in Africa

Data science is rapidly transforming healthcare and research by analyzing vast amounts of information from sources such as hospitals, smartphones, social media, wearable devices, and genomic technologies. These tools help improve disease surveillance, precision medicine, public health planning, and responses to outbreaks. New technologies like artificial intelligence and large language models are accelerating this transformation across many sectors. Data science could help African countries leapfrog outdated systems and deliver more effective, affordable care. However, African populations are underrepresented in the data used to build many health algorithms, which can lead to biased or inaccurate results. Many current tools used in Africa were developed elsewhere and may not fit local needs. Efforts such as international funding programs, training initiatives, and research networks are building African capacity in data science. Still, stronger ethical governance, better laws, inclusive datasets, and safeguards against bias and data exploitation are urgently needed.

Article: *The promise of data science for health research in Africa* ***Publication:*** *Nature Communications,* 2023.

Using transparent AI methods for breast cancer gene discovery

Can machine learning improve breast cancer prediction by identifying the most important genes linked to tumor presence? To explore this question, the researchers used a public breast cancer dataset with more than 1,200 patient samples and thousands of genes. After narrowing down the gene list, they applied several predictive models to determine which genes were most useful for distinguishing cancerous from non-cancerous samples. Specifically, they used explainable machine learning methods that clarify how and why predictions are made and found the Leaving-One-Covariate-In method consistently identified 10 most critical genes for predicting cancer cases. Overall, the study demonstrates that combining explainable machine learning with biological validation leads to more trustworthy and clinically relevant prediction models.

Article: *Breast cancer prediction based on gene expression data using interpretable machine learning techniques.* ***Publication:*** *Scientific Reports, 2025*

Photo courtesy of University of Michigan Medical School

TREATING AND CURING DRUG-RESISTANT TB DISEASE IS COMPLICATED. DRUG-RESISTANT TB MUST BE TREATED WITH SPECIAL MEDICINES.

Courtesy of David Rochkind for Fogarty

Workers in a TB lab in South Africa

Genomics, AI, and the fight against drug-resistant TB

Antimicrobial resistance (AMR) threatens the effective treatment of infectious diseases, particularly in low- and middle-income countries. Tuberculosis (TB), an infectious disease that mainly affects the lungs, contributes to AMR, with drug-resistant TB complicating control efforts and requiring longer treatments. Traditional diagnosis methods often fail to detect TB resistance, so this study explored the use of machine learning to predict resistance to four first-line TB drugs. The researchers combined whole-genome sequencing data with clinical information from Ugandan patients and then evaluated 10 machine learning models. Logistic regression, gradient boosting, and XGBoost models performed best overall, often outperforming standard tools on the Ugandan dataset. However, model accuracy dropped when tested on South African data, highlighting challenges in generalizing predictions across regions and bacterial lineages. ***Article:*** *Machine learning-based prediction of antibiotic resistance in Mycobacterium tuberculosis clinical isolates from Uganda.* ***Publication:*** *BMC Infectious Diseases, 2024.*

"I am because we are" -- Ubuntu in the age of Big Data

Data-driven health research and precision medicine are spreading rapidly across Africa, fueled by the continent's rich genetic diversity and growing investments in genomics. Questions about how personal health and genetic data are collected, shared, and used must be addressed, say the authors; a new ethics framework that is grounded in African philosophies is needed. They propose shifting research from a transactional model—where people simply provide data—to a participatory one that enlists people and communities as active partners. Recommendations for a social contract for genomics and data science in health include involving communities in setting research priorities, sharing power between data providers and users, providing public education about genetics, and giving people greater control over their data through dynamic consent. Ethically robust, culturally grounded governance is essential to build trust, prevent exploitation, and ensure that genetic research benefits all, the authors conclude.

Article: *Genomics and Health Data Governance in Africa: Democratize the Use of Big Data and Popularize Public Engagement* ***Publication:*** *Hastings Center Report, 2024*

Courtesy of USAID in Africa

Reviewing past uses of AI in support of early childhood development research

How has machine learning been used to support early childhood development (ECD) research? To map the existing literature, the authors reviewed 27 studies that applied machine learning techniques to developmental outcomes in children ages 0–8 years. Most studies came from high-income countries, with none from sub-Saharan Africa. Machine learning approaches—mainly supervised learning and deep learning—were most often used to predict cognitive, language, and motor development, typically in children older than 2. Common data sources included images, videos, and sensor data, while socially and environmentally relevant information was used less often. Typical limitations included small sample sizes and imbalanced datasets. Although many models showed good predictive performance, few were externally validated, explained their predictions, or integrated in real-world settings.

Article: *Application of machine learning in early childhood development research: a scoping review.* ***Publication:*** *BMJ Open, 2025.*

Courtesy of NIAID Courtesy of USAID in Africa

Courtesy of Firefly

Synthetic data allows for safe sharing in low-resource settings

The Kaloleni-Rabai Health and Demographic Surveillance System (KRHDSS) is embedded in seven rural and three peri-urban community health units centered around Mariakani township, Kenya. Set up by Aga Khan University (AKU) in 2017, KRHDSS holds information on more than 103,000 residents. The beauty of such a large dataset is it collects data over time, so it can reveal otherwise undetectable health patterns that affect a community, says Dorcas Mwigereri, a research fellow at AKU. "We can study separate diseases, comorbidities, and also look at how one disease leads to the development of another."

Unfortunately, accessing, using, and sharing medical data is restricted by the necessary regulations to protect patient privacy, and this constrains the development and deployment of new technologies within health systems, says Mwigereri. "How do we solve this problem? That's where synthetic data comes in—synthetic data creates a dataset with the same statistical properties as the original data yet with minimal privacy risks."

One way to create synthetic data is by using a generative adversarial network (GAN), a type of machine learning model, that can anonymize information in a dataset with complex structures. So which GAN would work best in the Kenyan context? Mwigereri and her colleagues evaluated fidelity (how well a model reproduces the statistical patterns of the original data), utility (how well a model supports analysis and prediction), and privacy (how well a model protects confidential data) across three open-source GANs and found CTGAN performed best overall.

Good performance within a specific context is crucial when creating synthetic data, says Mwigereri. To explain why, she recalls using Teladoc, an automated, AI-enabled health care service, while studying in the U.S. "The feedback was 'we're not able to understand what you're saying, please get in touch with the facility.' My accent is different. Clearly this model was not trained with data from my context—an African context."

In Kenya, there are 47 tribes. Other African nations similarly include different populations. Meanwhile individual countries do not always share a unifying language. "African researchers need to collect enough data from our people to create technologies that fit our societies, so that we can then co-create solutions with researchers in the U.S., in the UK, wherever."

As she completes her PhD, Mwegereri continues working on two additional DS-I Africa projects in Kenya. One uses AI with data collected across five facilities to identify healthcare workers prone to depression. The other relies on electronic health records (EHRs) to distinguish women in danger of developing gestational diabetes mellitus. The data is there in the EHRs, but it was collected for clinical purposes, not research, so it's not yet accessible to researchers, says Mwigereri.

"If we sort out the issues around data access, Africa will see improvements in the healthcare sector... he who owns the data, owns the insights."

Article: *Synthetic data generation of health and demographic surveillance systems data: a case study in a low- and middle-income country.* ***Publication:*** *JAMIA Open, 2025.*

Examining alcohol use and stroke risk

Stroke is a leading cause of death and disability in many sub-Saharan African countries. Most studies that explore interactions between alcohol and stroke focus on other regions, due to a dearth of relevant data on the continent. To address this issue, researchers conducted a multicenter study in Nigeria and Ghana, comparing people who'd recently experienced a first stroke with stroke-free adults. The researchers examined different patterns of alcohol consumption, ranging from lifetime abstinence to heavy drinking. Most participants, particularly women, were lifetime abstainers; current drinkers were more often younger men and more likely to smoke. The findings indicate that moderate, binge, and heavy drinking are linked to higher odds of stroke.

Article: *Association between alcohol consumption and stroke in Nigeria and Ghana: A case-control study.* ***Publication:*** *International Journal of Stroke, 2024.*

> **"HE WHO OWNS THE DATA, OWNS THE INSIGHTS."**

Dorcas Mwigereri

Courtesy of Dorcas Mwigereri / DS-I Africa

Agricultural research helps farmers in Vietnam grow more rice and lesson the impacts of extreme weather on food security.

A new collection focuses on extreme weather adaptations and their impact on public health

The journal *Annals of Global Health* has published a special collection of articles to showcase how community-based adaptation strategies in the face of extreme weather events are impacting public health outcomes globally.

Lessons from the field: Case studies to advance research on climate adaptation strategies and their impact on public health comprises 14 original research articles and an editorial. The collection captures multiple extreme weather adaptation strategies deployed in low resource settings and how these tactics impact public health. This collection aims to highlight research across various geographies, environmental stressors, and adaptation strategies. Five case studies are from Africa (Chad, Ethiopia, Kenya, Madagascar, and Nigeria), four from Asia (Federated States of Micronesia [FSM], India, Pakistan, and Thailand), and five from Latin America and the Caribbean (Brazil, Guatemala, Mexico, Nicaragua, and multiple small island nations in the Caribbean). There are surveys of various environmental stressors, including drought and extreme weather events (as seen in Ethiopia, Brazil, and Mexico) and excessive rain and high heat stress (as seen in Madagascar, Kenya, Thailand, and the Caribbean islands). Distinct population categories investigated in these studies include pregnant women, coastal residents, agricultural workers, hospital patients, pastoralists, older adults, and children.

Primarily, the collection aims to build a solutions-oriented science model focused on the health threats posed by extreme weather events, while increasing the visibility of local adaptation research already underway in many low resource settings around the world.

One of the central issues addressed by this special collection is the disproportionate impact of extreme weather events on the health and wellness of populations in low- and middle-income countries (LMICs). Current health systems, which often lack preparedness and policy frameworks, remain inadequate.

While adaptation strategies have been (and continue to be) developed and proposed to prepare for weather impacts, the scientific evidence base is limited and too often driven by high-income country researchers. Examples of these adaptation strategies include heat resistant crops, behavioral changes, green infrastructure, wetland restoration, coastal land preservation, microfinancing, and effective awareness-building and communication.

Overall, more scientific investigations are needed to understand how adaptation strategies can be deployed to address deteriorating health outcomes. And, ideally, LMIC scientists, who offer unique insights and contributions due to their first-hand experience of the investigated issues, will lead research activities in their countries or, at the very least, participate in those studies.

Adaptation strategies often fail to focus on public health concerns, resulting in a lack of actionable strategies for vulnerable populations, observe the authors of an editorial accompanying the collection. For example, population health research examining chronic health effects of altered environmental conditions remain scarce. Yet sharing lessons learned is always crucial. The hope, then, is this special collection will stimulate a cross fertilization of ideas that will help accelerate adaptation solutions for improving health outcomes at local, national, regional and global levels.

This collection was commissioned by Fogarty International Center and led in collaboration with Dr. Praveen Kumar, a former NIH-scholar and an associate professor based at the Boston College School of Social Work; it received additional support from the NIH Health and Extreme Weather (HEW) initiative.

HEW's Research Coordinating Center is CAFÉ, which brings together stakeholders across government, NGOs, industry, researchers, and funders. CAFÉ—an NIH-supported initiative of the Boston University School of Public Health and Harvard T.H. Chan School of Public Health—works toward building a global Community of Practice to advance extreme weather and health research. Please join: **https://www.climatehealthcafe.org/**

Photos courtesy of NIH HEW Initiative

Joseph Zunt, MD

Q&A

Serendipity in life & work

Joseph Zunt, MD, is a Professor of Global Health at the University of Washington School of Public Health and a Professor of Neurology at the University of Washington School of Medicine. His research focuses on infectious diseases, neglected diseases and tropical medicine, neurology, and stroke. His earliest work in Peru examined the neurologic manifestations of HTLV-1 infection in female sex workers; this led to studies of other sexually transmitted infections and resulted in improved testing and treatment of marginalized populations. Zunt has mentored hundreds of U.S. and international students, physicians and post-doctoral candidates in nine countries through various programs, including the Fogarty Global Health Program for Fellows and Scholars / Launching Future Leaders in Global Health Research Training Program (LAUNCH).

Tell us about your earliest research opportunity in Peru in 1996.

Serendipity influences careers, as I often tell my mentees. I met my wife in an international health group while in medical school and we both had a desire to incorporate international research into our careers, but neither of us found an opportunity to do that during medical school or residency. While applying for my infectious diseases fellowship, I spoke with Dr. Joan Kreiss, who directed the University of Washington Kenya collaboration at the time. Brain imaging was not available in Nairobi, so she directed me to Dr. King Holmes, who mentioned a retroviral infection of interest circulating in Peru and said he'd be happy to mentor me there. Dr. Will Longstreth and I wrote a supplement request for a Fogarty International Research Collaboration Award (FIRCA) and that paid for my first research project in Peru. Holmes also mentored my wife, who was completing her master's and examining sexual networks of HIV among pregnant women in Peru. So my wife and I, along with our 7-month-old son, moved to Peru for 10 months. During that time, I met and worked alongside Peruvian colleagues who over time became lifelong friends, collaborators, and co-principal investigators on grant after grant.

What is the focus of your current research?

I continue to write grants and manuscripts, but over the years I've become more engaged in mentoring trainees through the steps of becoming a scientist. That said, I continue to be involved in research related to HTLV-1, stroke, dementia, and CNS infections, such as tuberculosis. We currently have three research training programs: One in HIV, another in stroke, and LAUNCH with trainees across all disciplines.

Through LAUNCH, I started working with architects and landscape designers at the UW College of Built Environments. For example, we worked with the floating communities along the Amazon. As you can imagine, if you live in a floating home, your sewage usually goes straight into the water. So one of the projects looked at the floating hyacinth and how it attracts E. coli onto its roots. Another aspect of that work was building floating gardens. These impoverished communities are now growing their own vegetables and fruits and then selling them to buy protein.

We also have a project in Northern Peru looking at cognitive impairment. Because most participants lack formal education, the researchers are not able to use traditional evaluations of cognitive function, so they've come up with some very innovative ways of looking for cognitive impairment. Another trainee working in Nepal under similar constraints used objects that people would recognize from their daily activities and then have them match it with diagrams to figure out how their brains are working.

Do you work in the U.S.? Does your international work translate to the U.S.?

I participate in a nationwide study to better understand stroke during HIV infection. Our project that defined herpes simplex virus as the most common etiology in people with meningitis/encephalitis in Peru applies everywhere, including the U.S. The same is true of our research in central nervous system tuberculosis,

Photos courtesy of Jo Zunt

which has resulted in a better understanding of diagnostic approaches and outcomes.

I also help develop guidelines now. Our network of neuro-infectious disease specialists is fairly small, so as you meet people and network, you start getting invited to participate in the development of guidelines and chapters and other activities around the question of "How do we treat these specific brain infections optimally?" It has been very rewarding to be invited to participate in or lead the development of guidelines. This has probably been the most impactful work I've done—publishing guidelines for all sorts of different infections that are then adopted across the U.S. and the globe.

Why direct the Northern Pacific Global Health (NPGH) Fellows consortium for LAUNCH?

It is invigorating when the LAUNCH consortia come together each year in July at NIH. You walk into the room, you have over a hundred trainees from 40 plus countries, and it's... it's palpable. You found your people. That warm, embracing feeling of altruism and desire to create new knowledge that'll improve health is just so appealing. That's one of my favorite weeks of the year.

One of the joys of directing NPGH is the fantastic group of collaborators involved in training the next generation of U.S. and international research scientists, as well as our outstanding program team members, who improve the program each year. Another joy is working with our Fogarty colleagues, who provide steadfast support.

What do you tell students who want to become global health researchers?

Follow your passions. When I was a fellow, a professor advised me to be careful when choosing a master's thesis project, as it could end up becoming my career. HTLV-1 infection was my thesis project and I'm still collaborating on projects related to this infection.

Find a trusted collaborator in the country where you work—someone who can serve as a guide to local customs, introduce you to the local research community, and help you navigate cultural differences.

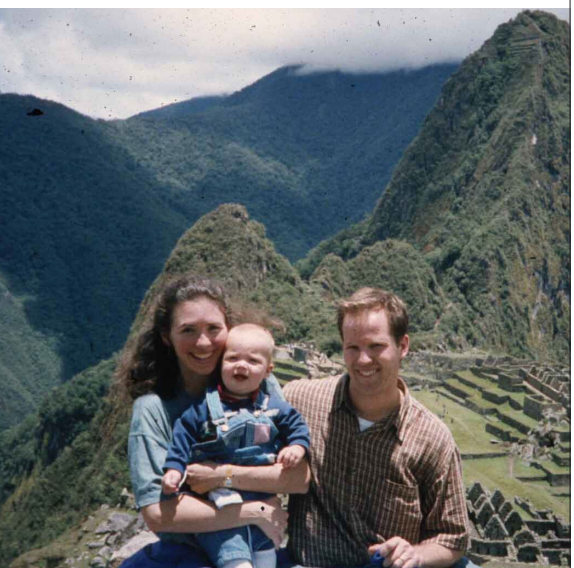
Ensure a good set of mentors. You may have one mentor who provides career advice, another who guides you on methodologic approaches to your research, and another who offers you leadership tips. Mentors connect you with learning and funding opportunities, and potential collaborators. I know a lot of people and can connect a trainee with those who may be a perfect fit.

Do you wish to add anything else?

Research capacity building is a very slow process, but if you look at where Fogarty-supported trainees are today, they are now leaders of institutions and government agencies who appreciate the benefits of their own training and are available to mentor successive generations of trainees. Innovation of devices and processes that improve health is a very tangible result of Fogarty's—and the NIH's—investments in research training.

Left to right: Stacey Chambers (NIH), Richard Benson, MD, PhD (NIH), Joe Zunt, Judith Coan-Stevens (NIH), Patricia Garcia, MD, PhD, and Fogarty Director Peter Kilmarx, MD.

Joe Zunt with his wife, Kay Johnson, MD, MPH, and son, Andrew Zunt.



"I SEE MY ROLE AS A FACILITATOR AND A CONNECTOR FOR STUDENTS SEARCHING FOR A GOOD MENTORING TEAM. I'M HAPPY TO TALK, EVEN THOUGH I MAY NOT BECOME EVERYONE'S MENTOR. I KNOW A LOT OF PEOPLE AND CAN CONNECT A TRAINEE WITH THOSE WHO MAY BE A PERFECT FIT."

LORETTA SWEET JEMMOTT
Creating skills-based interventions to change behavior…and health

Loretta Sweet Jemmott

LORETTA SWEET JEMMOTT ALWAYS WANTED TO BE A NURSE.

"When I was about 7 years old, I was hit by a car and spent weeks in the hospital. The people in white uniforms came and took care of me and made a crying kid smile," says Jemmott, PhD. She wore a cast from her chest to her toes and required months of physical therapy. "That experience shaped my thinking: a caring person could bring somebody like me back to life. After that, I kept telling my parents, 'I wanna be a nurse, I wanna be a nurse!'" Her parents worked extra jobs, doing everything they could, so that she could go to college and fulfill her dream.

While in nursing school, Jemmott made reducing teen pregnancy and sexually transmitted infection (STIs) her aim, because she'd seen the impact of both on her Philadelphia neighborhood. It was the 1970s: A teen who became pregnant was sent to live with extended family and no longer attended school. Jemmott's first nursing job was at an obstetrics and gynecology hospital, where she cared for patients with high-risk, complicated pregnancies. Many of these patients, she soon discovered, were teenagers. "I was too late. They were already pregnant."

Be Proud! Be Responsible!

Jemmott, who is now the M. Louise Fitzpatrick Endowed Professor of Community and Home Health Nursing at Villanova University, went back to the University of Pennsylvania (where she later became a faculty member) for a master's degree in psychiatric nursing, specializing in child, adolescent, and family mental health. "Before this, my programs had been lacking a systems approach. We are all part of a larger system, and our behavior is impacted by those around us," she said. After completing her master's degree, Jemmott returned to her community to offer comprehensive, systems-based programs that included parents, peers, and partners.

Soon she realized she couldn't accurately evaluate her work. To do that, she needed to learn how to conduct research. "I went back to school one more time to get a PhD in education at Penn, specializing in human sexuality education," says Jemmott. She finished her doctorate in 1987, during the early years of the HIV/AIDS crisis. Though little was known about the virus, one thing was clear: "We could prevent HIV infections if we could get people to practice safer sex."

She and her boyfriend at the time (and now husband, John B. Jemmott III, PhD, a social psychologist and professor at University of Pennsylvania's Annenberg School of Communications) wrote a joint grant proposal, "Reducing HIV Infection Risk in Black Adolescent Men" and won an award from AMFAR, the Foundation for AIDS Research in 1988. It was the first HIV prevention randomized control trial that focused on helping Black male teenagers reduce sexual risk behaviors.

The Jemmott's called their skill-based intervention, Be Proud! Be Responsible! It is grounded in the "Theory of Planned Behavior," which provides a structure for researchers to examine "attitudes, normative beliefs, control beliefs, skills, and all the things that get in the way of a person's self-efficacy and control. Once you understand those issues, you can design an intervention to tap right into them," explains Jemmott.

The study reported significant reduction in risky sexual behaviors, more condom use, less partners, and more positive attitudes towards condom use at three months (96% of participants returned for follow-up) compared to the control group. Later, when replicated with teen girls, the program had the same significant findings; duplicated one more time with boys and girls, the program remained effective at 12 months. The Centers for Disease Control (CDC) Division of Adolescent and School Health selected *Be Proud! Be Responsible!* for implementation in schools nationwide.

Sister-to-Sister

In 1992, Jemmott received her first NIH grant from the National Institute of Nursing Research (NINR). "My randomized controlled trial, Sister-to-Sister, trained nurses on how to talk to Black women about HIV prevention." Jemmott's team developed one-on-one sessions (20-minutes-long) and group sessions (three hours-long), and then randomly assigned women to one of five interventions, some teaching skills, others informational. Among those who received the skill building interventions, sexual risk behaviors declined at 12 months, STI incidence also fell, and the 20-minute model proved as effective as the three-hour one. "People need skills to change their behavior. Information alone does not change behavior."

Later, the CDC selected Sister-to-Sister for further study and support. Jemmott recalls, "We worked with family planning clinics in and around Philadelphia and Baltimore to see if this intervention could be integrated into real-world settings and still be effective." Kenya's Ministry of Health invited Jemmott and her team to train providers and help integrate the intervention into their own health programs. Sister-to-Sister, the briefest intervention in the nation, is still being used today.

South Africa & Botswana: Building on what works

In 2002, when an NIH initiative sought to reduce HIV in Africa, Jemmott and her husband received funding from the National Institute of Mental Health (NIMH) to do randomized controlled trials for HIV prevention among teens in Eastern Cape Province, South Africa.

After taking time to build trust and learn cultural issues, social context, gender norms, attitudes, values, history, and the environmental and psychological factors influencing teen sexual behavior, they were ready to adapt and translate their adolescent HIV risk reduction intervention, "Let Us Protect Our Future," to the local context for South African teens. Discovering the schools lacked electricity to play videos, they prepared comic books for the kids to use when talking to their parents and to help reinforce what they learned. The Jemmotts also created an advisory board of parents, teachers, school principals, physicians, and representatives from the Ministries of Health and Education and NGOs, who provided input at every stage.

Finally, they implemented the intervention and followed the students for 54 months. "Our retention rate was in the 90s—90% retention at 54 months! It was the most effective intervention in changing sexual risk behavior," says Jemmott. Her team eventually trained and created a manual for teachers so they could continue without them. "It's still effective today."

While in South Africa, it became clear that the women's infections began with men, so the Jemmotts proposed an HIV prevention program exclusively for men. Funded by NIMH, they again put effort into community engagement and then rigorously designed their study. Following this success, the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) and Fogarty funded the Jemmotts in 2007 to construct teen HIV prevention projects in Botswana. Partnering with the University of Botswana on this capacity building initiative, they developed three pilot projects, designing one for churches, another for schools, and a third for clinics, where their aim was to reduce unsafe sexual contact among people already infected.

"We trained University of Botswana faculty on HIV risk-reduction behavioral interventions, including theory development, intervention design, participant retention, and statistical analysis—everything needed for HIV prevention research," says Jemmott. Next, the trainees created projects, while the team provided design and pilot-testing support.

Whether in southern Africa or the U.S., researchers need to invite the community into "the meeting before the meeting," says Jemmott. "Bring them to the table, listen to them, build trust, build a team, work together. Let them see that you're fighting for them." Looking back, Jemmott feels gratitude for all her funders, especially NINR. "NINR gives nurses an opportunity to do research that's impactful to patients."

"NURSES SEE THINGS THAT OTHER PEOPLE DON'T SEE BECAUSE WE'RE AT THE BEDSIDE… WE'RE IN THE FIELD… WE'RE AT THE POLICY LEVEL. WE ASK REAL AND IMPORTANT QUESTIONS THAT NEED TO BE ANSWERED. WE SEE WHAT'S NEEDED AND WE DO SOMETHING ABOUT IT!"

The enduring impact of Fogarty's Center for Global Health Studies

One fruitful initiative has revealed what the Fogarty International Center does best. The Center for Global Health Studies (CGHS), introduced in 2012, aimed to catalyze research investments at the National Institutes of Health (NIH) by addressing health challenges through multidisciplinary and multi-sector dialogue, collaboration, and training. The center achieved its goals by systematically gathering information and then convening experts to set a research agenda and develop activities around emerging topics.

"The original intention for CGHS was to create a space for scholars to come and work on various topics engaging across NIH with Fogarty as their base. When Dr. Roger Glass (Fogarty's former Director) asked me to lead it, I was eager to do more with it," says CGHS' former director, Nalini Anand, JD, MPH, now managing director of Georgetown University's Global Health Institute. Specifically, Anand harnessed Fogarty's unique ability to bring NIH institutes and other partners together around common challenges and interests.

Her vision proved true: CGHS has engaged more than 70 partners over time, including numerous other NIH institutes and centers; U.S. government agencies; foundations; global and U.S. academic institutions; multilateral organizations; and non-governmental organizations. These powerhouse partners collaborated with CGHS on various projects, 26 in total, ranging across several topic areas. Behavioral economics, childhood obesity prevention, mHealth research training, and tobacco control are among the many topics explored by CGHS. Implementation science and research capacity strengthening were common cross-cutting themes.

"We really focused on impact and engaging end users from the beginning," says Anand. "To operationalize this, we formed steering committees that included NIH partners, US and LMIC scientists and other relevant organizations, all of whom would benefit from the deliverables of the projects." She adds the aim of each project was tangible outputs, which would either move the field forward (such as catalyzing research collaborations) or provide a resource for scientists (such as a toolkit or training). "Importantly, we didn't take on an area or a project if we didn't have two or more interested NIH institutes or centers. We had to have partners if we wanted significant impact—given Fogarty's small budget, the majority of additional investments would come from other institutes and centers."

As part of its process, CGHS gathered input from NIH partners to ensure that each project met institutional needs, explains Anand. "For example, we would try to understand other institutes' questions around a particular topic and then we'd make sure the activity addressed those questions...and ensure that the right people were in the room to address them. Being small and nimble allowed CGHS to always have ears and eyes open to where the next opportunity might be."

CGHS' Adolescent HIV Prevention and Treatment Implementation Science Alliance (AHISA) provided a platform for an exchange among scientists and other stakeholders focusing on HIV in teens.

Courtesy of Borgogniels/Thinkstock

Measuring success

By a variety of measures, CGHS achieved its goals. Its 26 projects contributed to sustained capacity strengthening through mentorship, publication opportunities, workshops, and trainings across five continents. The projects also led to 220 collaborative publications in 51 journals, each with multi-country authorship. In turn, these publications have been cited 10,000 times, further influencing research.

Beyond the stats, Anand recalls how Dr. Echezona Ezeanolue, a participant in CGHS' Prevent Mother-to-Child Transmission (PMTCT) Implementation Science Alliance, started his own Nigerian Implementation Science Alliance at the University of Nigeria Nsukka. "He harnessed the PMTCT Alliance model but designed it as a locally sustainable initiative." Another example: a CGHS mHealth Training Institute faculty member teamed up with a participant to run a similar institute in Kenya. They planned, designed, and implemented it

themselves, though, in this case, Fogarty provided a supplemental award in support of the institute. "For me, these locally sustainable outcomes are the ultimate hope and dream of what CGHS (and NIH) can do," says Anand.

Highlighted projects

Impressive CGHS projects are too many to name, however the Adolescent HIV Prevention and Treatment Implementation Science Alliance (AHISA), a sequel project to the PMTCT Implementation Science Alliance, is a standout. Alliance members contributed to more than 1,200 peer-reviewed publications and received over $75,000,000 in follow-on NIH funding attributable to their AHISA work. Research findings from the alliance informed program and policy changes in three countries leading to the adoption of evidence-based guidelines and initiatives that can improve health. Finally, AHISA, which was developed and led by Fogarty's Rachel Sturke, PhD, and Susan Vorkoper, PhD, also helped train and mentor more than 250 people and resulted in 85 new institutional partnerships.

A more recent project, Artificial Intelligence (AI) for Health Research in Low-Resource Settings Globally, showed how CGHS contributed to larger NIH interests. "The goal for the project was to take a look at how NIH was investing in AI-enabled health science, and, in particular, what's happening in low and middle-income country (LMIC) settings that would present opportunities for Fogarty's leadership," says Fogarty's Senior Scientist Andrew Forsyth, PhD, who led the project.

Forsyth's analysis found that of NIH's 1,850 active AI health research grants, 97 focused on LMICs, representing $40.2 million of the total $1.66 billion portfolio, as of January 2025. "I was afraid that the LMICs were being left behind, so I was thrilled to see that wasn't the case—there was a lot of comparability between the U.S. and the LMIC settings." Compared to high income country (HIC) studies, LMIC-based studies emphasized diagnostics and treatment, health system optimization, disease surveillance and outbreak response, and telemedicine and remote care.

However, there are "many percentage points difference" between the proportion of LMIC-based studies of ethics and data governance, and capacity strengthening, and the proportion of HIC-based studies of these same topics, says Forsyth. Clearly, these are areas where Fogarty might help close gaps. "It would be beneficial to Americans to have a broader sampling of genetic diversity, given different prevalences of common diseases in LMICs." Recently, Forsyth presented his analysis of this CGHS internally at the NIH AI Summit. "My hope is to bring this knowledge to the broader NIH community, to use this knowledge to inform priorities at NIH broadly, and to ensure that AI-enabled health science benefits us all."

Finally, another remarkable CGHS initiative is The State of Data Science for Health in Africa Writing Project, which is intended to benchmark and assess progress over the next few years. In December 2022, Fogarty brought together African researchers in the fields of data science, bioinformatics, epidemiology, ethics, and biostatistics to develop a collection of scientific papers for publication in the *Nature* portfolio of journals (Springer Publishing). Attendees included guests from various organizations including the Gates Foundation, Wellcome, and the Network of African Medical Librarians.

This project, which was inspired by the Data Science for Health Discovery and Innovation in Africa (DS-I Africa) Initiative, developed a series of commentaries, opinion pieces, and reviews that revolve around enhancing health data infrastructure and utilization in Africa. The manuscripts highlight critical themes in African health data and research, emphasizing the need for digitization, standardization, and impartial data-sharing cultures, alongside strategic funding, to fully leverage data science for improved health outcomes across the continent and beyond. *Nature* is currently building a landing page on its website for the collection, noted Fogarty Program Director Laura Povlich, PhD, a Fogarty program director and DS-I Africa coordinator, who helped establish the writing project with Amit Mistry, PhD, former senior scientist at CGHS.

Anand concludes, "CGHS has been a proven vehicle for bringing NIH institutes—siloed NIH institutes—together around common goals and interests and leveraging their respective strengths, expertise, and resources to further the agenda around those goals."

Global Food and Nutrition Insecurity project

Photo credit: Tanya Martineau | USAID

CGHS HAS ENGAGED MORE THAN 70 PARTNERS OVER TIME, INCLUDING NUMEROUS OTHER NIH INSTITUTES AND CENTERS; U.S. GOVERNMENT AGENCIES; FOUNDATIONS; GLOBAL AND U.S. ACADEMIC INSTITUTIONS; MULTILATERAL ORGANIZATIONS; AND NON-GOVERNMENTAL ORGANIZATIONS.

Community

Langevin of the National Center for Complementary and Integrative Health retires

Helene M. Langevin, MD, director of NIH's National Center for Complementary and Integrative Health (NCCIH), has retired from federal service. Since assuming the role in 2018, she's led several NIH-wide initiatives to address chronic disease in the U.S. This includes the Whole Person Reference Physiome and Coordination Center, led by NCCIH and co-funded by 20 NIH institutes, centers and offices, which aimed to create a network map of healthy physiological function. Previously, Langevin was director of the Osher Center for Integrative Medicine, jointly based at Brigham and Women's Hospital and Harvard Medical School; a professor-in-residence of medicine at Harvard Medical School; and a professor of neurological sciences at the University of Vermont Larner College of Medicine, which Langevin has rejoined to help build a research program.

Woychik appointed to NIH's Make America Healthy Again strategy

Richard Woychik, Ph.D., will serve as senior advisor for NIH's Make America Healthy Again strategy. In this role, he will support efforts to identify the root causes of chronic disease, strengthen the nation's health resilience, and promote fair, data-driven prevention strategies. Since June 2020, Woychik served as Director of the National Institute of Environmental Health Sciences (NIEHS) and the National Toxicology Program. Under his leadership, NIEHS worked to advance the knowledge of exposomics (the science of understanding how the environment affects health across the lifespan), precision environmental health, the health impacts of extreme weather, and data science.

Koroshetz steps down from National Institute of Neurological Disorders & Stroke

Walter J. Koroshetz, MD, concluded his service as director of the National Institute of Neurological Disorders and Stroke (NINDS) on January 24. Koroshetz played a central role in leading the NIH BRAIN Initiative, a guide for challenging research that has expanded the ability to map brain cells and circuits, link neural activity to behavior, and lay the groundwork for more precise interventions across neurological and psychiatric diseases. Prior to NINDS, Koroshetz served as vice chair of the neurology service and director of stroke and neurointensive care services at Massachusetts General Hospital and professor of neurology at Harvard Medical School. His research career led to the development and validation of imaging techniques and tools that are now commonplace in stroke care. Overall, he played a significant role in the revolution of acute stroke care and the growth of the neurointensive care field.

Walsh appointed Director, National Institute of Environmental Health Sciences

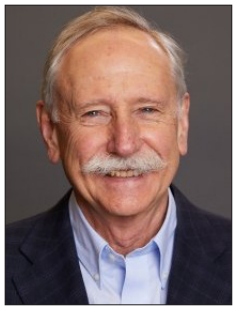
Kyle Walsh, PhD, is the new director of the National Institute of Environmental Health Sciences (NIEHS). A leading neuro-epidemiologist, Walsh's work on glial senescence (the deterioration, with aging, of a type of central nervous system cell) and gliomagenesis (the process leading to the transformation of normal glial cells into cancerous cells) has shed light on how genetic, epigenetic, and environmental factors can interact to influence the development of human disease. Before joining NIEHS, he led an interdisciplinary research program at Duke University. There he studied how the interplay of both heritable and modifiable risk factors can affect brain health, cancer outcomes, and aging. Walsh earned his Ph.D. in chronic disease epidemiology from the Yale School of Public Health and completed postdoctoral training at the University of California, San Francisco. As part of his responsibilities, Walsh will also direct the National Toxicology Program.

Gibbons retires from the National Heart, Lung, and Blood Institute

Gary H. Gibbons, MD, who served as director of the National Heart, Lung, and Blood Institute (NHLBI) since 2012, has retired from federal service. Under his leadership, NHLBI has made many scientific contributions in the fields of vascular biology, genomic medicine, and the pathogenesis of vascular diseases. The Systolic Blood Pressure Intervention Trial (SPRINT) showed that intensive blood pressure management significantly reduces the risk of death from cardiovascular events. The Cure Sickle Cell Initiative, launched in 2018, helped advance progress towards a cure for sickle cell disease. Prior to joining NIH, he served as the founding director of the Morehouse Cardiovascular Research Institute at the Morehouse School of Medicine, Atlanta. His research focused on investigating how connections between clinical phenotypes, behavior, molecular interactions, and social determinants contribute to cardiovascular disease.

Ramirez wins AIBS Innovative Leadership Award

The American Institute of Biological Sciences (AIBS) announced Julio J. Ramirez, PhD, as the winner of its Innovative Leadership Award, which recognizes commendable, innovative leadership in the biological sciences community. Ramirez is the R. Stuart Dickson Professor and Director of the Neuroscience Program at Davidson College, where he has served since 1986. Ramirez's research focuses on the recovery of function after central nervous system injury, with an emphasis on determining the functional significance of hippocampal neuroplasticity. Ramirez currently serves as the Chair of the Neuroscience Training Committee at the Society for Neuroscience. His research and teaching efforts have been supported by numerous grants from the National Institutes of Health as well as the National Science Foundation.

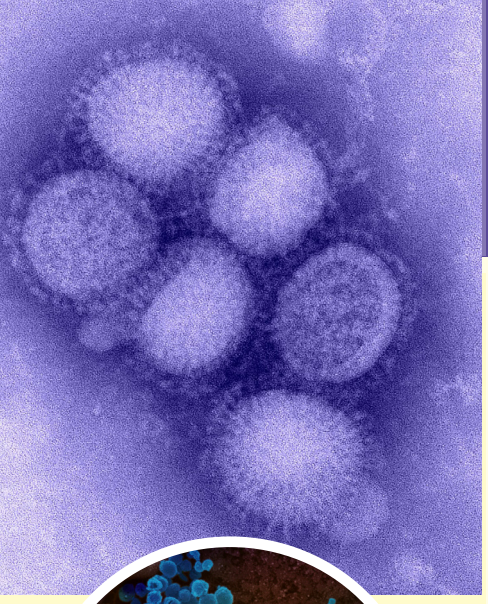


Willett honored with a Prince Mahidol Award

Walter C. Willett, MD, MPH, DrPH, received a Prince Mahidol Award for his work in the field of public health. Willett, a Professor of Epidemiology and Nutrition at the Harvard T. H. Chan School of Public Health, is considered a pioneer in modern nutritional epidemiology. One landmark study of his provided the first conclusive evidence linking trans fat consumption to increased risk of coronary heart disease; Willett also demonstrated that fat quality, not total fat quantity, is a key determinant of cardiovascular health risks. His research reinforced the principle that most chronic diseases are preventable through improved diet and lifestyle, and he proposed the "Planetary Health Diet," which can reduce premature mortality by up to 30%, equivalent to 15 million lives saved per year. He's a grantee of Fogarty, the National Cancer Institute, and the National Institute of Diabetes and Digestive and Kidney Diseases.

American Society of Tropical Medicine and Hygiene names Ko president

The American Society of Tropical Medicine and Hygiene (ASTMH) announced a new president and board members at its recent, annual meeting held in Toronto. ASTMH named longstanding NIH grantee Albert Icksang Ko, MD, president. Ko is the Raj and Indra Nooyi Professor of Public Health at the Yale School of Public Health and Collaborating Researcher at the Oswaldo Cruz Foundation (Fiocruz), Brazilian Ministry of Health. Previously, he was stationed at Fiocruz in Salvador, Brazil, for 15 years, while serving as a fellow and faculty member of Weill Medical College of Cornell University. He is currently a co-principal investigator of an NIH-supported cluster randomized controlled trial in Brazil, which is evaluating the effectiveness of Wolbachia-infected Aedes aegypti (a modification that reduces a mosquito's ability to transmit viruses) in reducing infection.



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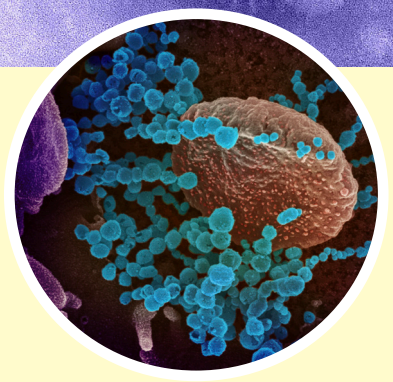

Understanding the early, difficult-to-detect spread of two pandemic viruses

New respiratory viruses have sparked global pandemics in recent decades: the 2009 H1N1 influenza outbreak and the 2020 SARS-CoV-2 outbreak. So far, their initial, hard-to-detect spread across the U.S. has been poorly understood, though this knowledge is crucial for future preparedness. In this study, researchers developed a new method to reconstruct how both viruses moved between U.S. metropolitan areas in their earliest stages. By combining health data with information on air travel, commuting patterns, and the tendency of some individuals to infect a disproportionately large number of others, the study found that both pandemics spread to most major U.S. regions within just a few weeks. Long-distance air travel played a larger role than daily commuting in early spread for both outbreaks. Yet, even with detailed mobility data, the findings describe early pandemic spread as fast and unpredictable. Simulations indicate that expanding wastewater surveillance beyond major hubs could help detect early introductions and slow initial spread. Fogarty's Cécile Viboud, PhD, contributed to this study published in *PNAS*.

High-dose rifampin does not reduce deaths from TB meningitis

Worldwide, 11 million people annually become ill with tuberculosis (TB), with about 2% of them developing meningitis, which occurs when TB bacteria reach the brain. Even when treated with a cocktail of antibiotics, roughly half of all patients who develop this complication either die or endure permanent damage, such as deafness or paralysis. A new, randomized controlled clinical trial, led by researchers at Makerere University, Uganda, included 499 adults with confirmed TB meningitis in Indonesia, Uganda, and South Africa. Patients received either the standard treatment of four antibiotics (including rifampin) or the same regimen with a higher dose of rifampin. (Until now, no one has investigated whether increasing the dose of rifampin, which doesn't penetrate the blood-brain barrier as efficiently as the other regimen antibiotics, might improve outcomes.) After six months, patients treated with the higher-dose rifampin mix did not experience improved survival rates. In fact, mortality was greater in the higher-dose group (44.6%) than in the standard-dose group (40.7%). Grants from the National Institute of Neurological Disorders and Stroke and the National Institute of Allergy and Infectious Diseases contributed to this study, which is published in the *New England Journal of Medicine*.

Daily drinking linked to 50% heightened mouth cancer risk in India

In India, cancer of the mouth is the second most common malignancy. An estimated 143,759 new cases of mouth cancer and 79,979 related deaths occur every year. An international team of researchers compared 1,803 people with confirmed buccal mucosa cancer (occurring in the lining of the cheeks and lips) and 1,903 people free of the disease between 2010 and 2021. Participants provided information on the duration, frequency, and type of alcohol they drank. Compared with those who didn't drink, the risk of mouth cancer was 68% higher for those who did, rising as high as 72% among those favoring internationally recognized alcohols (such as beer and wine), and as high as 87% among those opting for local brews. Concurrent alcohol and tobacco use raised risk levels all around. Ethanol might alter the fat content of the inner lining of the mouth, increasing its permeability and so, too, its susceptibility to carcinogens in chewing tobacco products, according to the researchers. Anil Chaturvedi, PhD, a senior investigator at the National Cancer Institute contributed to this study published in *BMJ Global Health*.

Global HEALTH Briefs

NIAID announces a new strategic vision

Dr. Jeffrey Taubenberger, Acting Director of The National Institute of Allergy and Infectious Diseases (NIAID), outlines a new strategic vision aimed at restoring public trust and better addressing today's most pressing health challenges in a commentary published in *Nature Medicine*. In the past, NIAID research focused on three areas: HIV, pandemic preparedness/biodefense, and all other infectious and immune-related diseases. Reflecting on lessons from the COVID-19 pandemic and growing public skepticism, NIAID leaders acknowledge a loss of trust and emphasize a renewed commitment to rigorous, evidence-based science. The new plan replaces the three priorities with two core pillars. First, NIAID will focus on infectious diseases that currently have the greatest impact on Americans, including ending the HIV epidemic, improving outcomes from common infections like influenza, addressing antimicrobial resistance based on patient outcomes, and supporting safer research practices by adhering to strict limits on high-risk gain-of-function studies. Second, NIAID will expand research into immunology, allergies, and autoimmune diseases, with greater emphasis on prevention, chronic inflammatory conditions, the role of the microbiome, and immune contributions to chronic diseases like diabetes and heart disease. NIAID aims to align its research more closely with real-world health needs in the United States.

DID YOU KNOW?

60%

of colorectal cancer deaths could be prevented with proper screening, a Johns Hopkins Hospital study estimated.

Community awareness campaign led to increase in early cancer detection

In Nigeria, most people with colorectal cancer are diagnosed too late for curative treatment. Investigators affiliated with the African Research Group for Oncology (ARGO, a consortium that includes 26 institutions across Nigeria) and Memorial Sloan Kettering Cancer Center, New York, conducted a six-month community awareness campaign offering information, education, and communication materials about symptoms and risk factors. Among 497 participants, 322 completed surveys before and after the campaign. Before the campaign, just under 17% demonstrated awareness of colorectal cancer compared to nearly 97% after the campaign. Individuals with indicators of colorectal cancer based on survey results were referred to an early diagnosis clinic. Among the 329 clinic-goers, 168 (51.1%) were identified as having colorectal cancer risk factors while 116 (73.0%) completed colonoscopies. Precancerous polyps—an abnormal growth in the lining of the colon that can become cancerous if not removed—were identified in 11% of the colonoscopy patients, while colorectal cancer was diagnosed in four (3.4%). The National Cancer Institute contributed to the funding for this study published in *CANCER,* a peer-reviewed journal of the American Cancer Society.

American company partners with Butantan Institute to develop rabies vaccine

California-based Replicate Bioscience and the Butantan Institute, a research organization linked to the São Paulo State Health Department, have signed an agreement to develop and commercialize a self-replicating messenger RNA vaccine for pre- and post-exposure prophylaxis against rabies. The self-replicating RNA (srRNA) platform is a new mRNA vaccine technology, different from those currently on the market. Replicate is one of the few companies worldwide that fully owns this technology, which has been tested in humans and shows a good safety profile with promising results. The agreement allows Butantan to incorporate the technology into its portfolio of products under development and expands opportunities for new vaccines. Butantan will conduct clinical trials, and, if successful, will market the rabies vaccine in Brazil and Latin America; Replicate will be responsible for markets outside of Latin America. This collaboration should accelerate improvements in cold chain storage (storing and transporting at continuous, controlled temperatures) and thermostability (the capacity to resist irreversible changes in structure or function) of the vaccine, which could boost adoption of srRNA technology and provide a cost advantage over conventional vaccine production.

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 (mHealth) (R21/R33 Clinical Trial Optional)	March 20, 2026	https://www.fic.nih.gov/Programs/Pages/mhealth.aspx
Global Infectious Disease Research (GID) Training Program (D43 Clinical Trial Optional)	August 6, 2026	https://www.fic.nih.gov/Programs/Pages/infectious-disease.aspx

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