



FOGARTY INTERNATIONAL CENTER • NATIONAL INSTITUTES OF HEALTH • DEPARTMENT OF HEALTH AND HUMAN SERVICES

CUGH examines implementing solutions for impact

By Ann Puderbaugh

CHICAGO—With a mandate to improve health across the planet, attendees of the 10th annual meeting of the Consortium of Universities for Global Health (CUGH) were encouraged to unleash the unique power of their institutions to enhance the translation and implementation of knowledge so the world's underserved can benefit. "We know that putting what works into scale will save millions of lives," said CUGH chair, Dr. Ann Kurth, in her opening address. "We need to work together across borders and across ideologies," she said, encouraging attendees to synergize efforts to improve health for all.

More than 1,750 academics, practitioners, administrators, students and others, representing 50 countries, attended the gathering. In keeping with the conference's implementation science theme, Fogarty's Center for Global Health Studies (CGHS) organized a panel discussion to explore ways to advance the field.

"We need a more coordinated approach to implementation science capacity building that identifies the most useful content for stakeholders," said Dr. Rohit Ramaswamy of the University of North Carolina. He's been developing a multi-tiered concept to provide different, but complementary, levels of training for researchers, implementers, policymakers and those involved in care delivery. It's not helpful if trainees return home ready to put implementation science theories into practice but their stakeholders don't understand what they're talking about, Ramaswamy noted.

Two case studies of HIV-related implementation science projects that were shepherded by Fogarty's CGHS were presented. With adolescents identified as a key population for disease transmission in Africa, a collaboration has been established to enhance effective



Consortium of Universities for Global Health Chair Dr. Ann Kurth opened the 2019 annual meeting with a call for action to advance implementation science.

use of evidence to improve HIV prevention, screening and treatment of young Africans, aged 15-24. The Adolescent HIV Prevention and Treatment Implementation Science Alliance (AHISA) provides a space to facilitate dialogue and exchange of ideas among researchers, implementers and decision makers, said Fogarty's Dr. Rachel Sturke, who manages the program.

An initiative to prevent mother-to-child-transmission of HIV—another CGHS project—resulted in formation of the Nigeria Implementation Science Alliance (NISA), a national effort to coordinate research and capacity building efforts among stakeholders. Established in 2015 with a focus on research productivity and development of independent investigators, NISA has already generated two funded NIH

. . . continued on p. 2

FOCUS



Fogarty programs build capacity and spur NCD research

- Evaluation shows 600 researchers trained, 982 publications produced
- Broad range of diseases and conditions studied across the lifespan
- Ongoing challenges and unmet needs require continued support

Read more on pages 6 – 9

CUGH examines implementing solutions for impact

... continued from p.1

grant proposals and more than seven published research papers. Projects are always multi-site, multi-partner and involve issues that have potential for national scope and impact, said Dr. Nadia Sam-Agudu, of Nigeria's Institute of Human Virology.

To strengthen NIH's global mental health initiatives concerning children, the National Institute of Mental Health (NIMH) co-hosted a workshop during the conference to gain insights that will inform its future programs. Eighty-five percent of the world's youth live in low- and middle-income countries (LMICs), where access to diagnosis and treatment is lacking. "Youth mental illness is one of the most urgent mental health problems worldwide," according to NIMH Director Dr. Joshua Gordon. "Early interventions can improve outcomes," he said, yet there has been little research on how to apply existing knowledge and practices for use in low-resource settings. Proven diagnostic techniques—such as using mobile devices to track eye contact in young children—could be adapted for use in LMICS so that diagnosis and treatment of autism could begin earlier, he said. Using cellphones or other portable devices to administer such tests "is imminently implementable worldwide."

But implementation without maintaining quality of care is also an enormous problem in LMICs. In a session organized by Fogarty, panelists presented the results of a recent U.S. National Academies of Sciences, Engineering and Medicine (NASEM) report that shows up to 8 million deaths occur each year from lack of access and poor quality of care in developing countries—more than HIV, TB and malaria combined. The study examined what an ideal health system would look

like and recommended a shift in focus and ownership of health to the communities, said Dr. Marcel Yotebieng, an author of the report and faculty member of Kinshasa University and Ohio State. NIH funds a broad range of studies on how to improve quality of care through 18 grants in 14 LMICs, said Fogarty's Dr. Linda Kupfer, who helped coordinate NIH's participation in the NASEM report.

Photo courtesy of CUGH



Fogarty's Dr. Ken Bridbord was awarded CUGH's highest honor by its director, Dr. Keith Martin. (see page 11)

At another session, Fogarty Fellows and Scholars shared their stories of their early-career experiences at NIH research sites and the positive outcomes that resulted. The program's first landscape architect, Dr. Leann Andrews of the University of Washington, presented her successful efforts to improve a Peruvian slum community's health by working with residents to construct gardens full of herbs, medicinal plants, fruits and vegetables. By making their surroundings safer and more attractive, boosting food security and access to medicines, and improving water quality, she found residents reported a decrease in depression and gastrointestinal illness, as well as fewer falls and injuries.

Other Fogarty Fellows presented their studies of cervical cancer in Malawi, mental illness in Kenya, HIV/AIDS

in Peru and TB in Tanzania. Fogarty Director Dr. Roger I. Glass said he was encouraged by the caliber of these emerging global health leaders. "I'm so proud of you all and to see that by investing in youth, through the impact of this program, we are launching careers that will endure for 30 years."

Mentoring—essential for early-career scientists—is not often part of the culture at LMIC research institutions. That was the topic of a session to launch a supplement published by the journal of the American Society of Tropical Medicine and Hygiene (ASTMH) that provides recommendations and case studies to spur mentorship programs in low-resource settings.

"This is a call to action, not just an academic discussion," said ASTMH CEO Karen Goraleski, who introduced the session. "We have to change the way business is being done." LMIC scientists need a mentoring approach tailored to their unique circumstances, which often include very divided gender roles, respect for hierarchy and seniority, and a colonial history that has left a legacy of authoritarian attitudes, said Dr. Willy Lescano, a co-author and professor at Peru's Cayetano Heredia University.

The publication was inspired by a series of "Mentoring the Mentor" workshops hosted in LMICs by faculty of Fogarty's Global Health Program for Fellows and Scholars. "We spend a tremendous amount of our time, resources and thought in training the next generation of global health leaders," said Glass, "so we really do have an investment in doing this better, in developing a mentoring roadmap for the future, to ensure the satisfaction and success of our trainees, and to keep them on the research track."

RESOURCES

<http://bit.ly/cugh2019>

Scientists urge cross-cutting stigma research

By Karin Zeitvogel

Stigma is a barrier to better health for vulnerable populations worldwide, despite many new interventions and scientific discoveries making strides against stigmatized conditions ranging from HIV/AIDS to depression. In a series of articles published in *BioMed Central (BMC)*, scientists are calling for stigma research to be broken out of silos that focus on a single condition or population and instead develop approaches that cut across illnesses, demographics and scientific disciplines. Effective solutions will require the expertise of researchers, practitioners, policymakers and community members, and transdisciplinary teams of scientists from public health, medicine, psychology, sociology, anthropology and other fields, working together, according to the authors of the “Collection on Stigma Research and Global Health.”

Making such changes to stigma research would help to advance understanding of the drivers, manifestations and outcomes of stigma, and lead to a unified response to it, the collection says. The impact of such a shift in stigma research focus would be felt worldwide, the researchers note, because, although the burden of stigma is heaviest in low- and middle-income countries (LMICs), it also occurs in developed countries, including the U.S.

“Breaking down disease silos and working across disciplines and scientist-community member boundaries would allow us to effectively address health-related stigma and enhance health equity globally,” said Fogarty advisory board member and grantee, Dr. Gretchen Birbeck, who edited the collection. “While medical advances put better health within reach of many, stigma deters care-seeking, which generates or perpetuates health inequities,” added Birbeck, a University of Rochester professor who spends most of her time providing clinical care and conducting research in Zambia.

Often ingrained in cultural norms and institutional policies, stigma is a powerful barrier to better health for all. Community, cultural and institutional attitudes to people with stigmatized conditions, along with internalized stigma that an individual might feel, and the prejudice, discrimination and stereotyping they face, must be addressed by research, according to the BMC collection, which was inspired by a 2017 workshop convened by Fogarty’s Center for Global Health Studies.

During three days of meetings, U.S. and LMIC experts



brainstormed how to reduce health-related stigma across disease areas, populations and settings, and refined the agenda for global stigma research. “The collection reflects the challenges, priorities and opportunities identified during the workshop—including dealing with the ethical challenges we face when conducting stigma research, developing strategies to engage stakeholders and community members, determining how to study stigma across conditions, and deciding which interventions are the most effective at reducing stigma,” said Birbeck. “Ultimately, the aim of the workshop and the collection of articles is to improve lives around the world by catalyzing new research approaches and collaborations that help to move the critical field of stigma research forward.”

The workshop also informed a stigma research program launched by Fogarty in 2018, aimed at improving HIV/AIDS prevention, treatment and care in LMICs. This effort builds on the Center’s previous stigma program, begun in 2002, that awarded \$17 million through 18 awards.

For stigma science to continue to advance, scientists must focus on developing, securing funding for, implementing and scaling up interventions, said Birbeck. These interventions must take into account new challenges. For example, as treatments for HIV improve, people with the virus are living longer and are at greater risk of becoming disabled or developing cancer, epilepsy or another noncommunicable disease that also carries a burden of stigma. “The next stage for stigma science has to be the development and implementation of scalable interventions that address the intersectionality of stigma,” said Birbeck. “Not only would this complement the understanding that scientists already have of the causes, manifestations and outcomes of stigma, but it could improve the health of millions worldwide.”

RESOURCE

<http://bit.ly/stigmaBIOMED>

PROFILE

Fogarty Fellow fights cholera in Bangladesh

By Karin Zeitvogel

Dr. Eric Nelson still vividly remembers the distraught father he met in Dhaka when he was a Fogarty Fellow in 2005-06. “Holding his daughter in his arms, he gripped my arm and implored, ‘Doctor, I have three children. Two died yesterday from cholera. Please save this child,’” Nelson recalled.

“In 2005, no one should have been dying of cholera,” Nelson said. “To me, this simple meeting expressed failings at so many levels and crystallized my purpose as a researcher and clinician.”

Nelson was paired with Dr. Ashraf Khan from Bangladesh for the year-long Fogarty fellowship. After training together at NIH, the two researched different topics in Bangladesh, with Nelson focusing on cholera transmission in mice.

Nelson’s days started before dawn, when he would pump water from a Dhaka pond into a barrel on the back of a flatbed rickshaw and then accompany the rickshaw to the hospital. Throughout the day, he would run between the “mouse-house,” the hospital and lab, always making time to study and analyze what was going on around him. “As a Fellow, I learned how to be a good observer and how to act on those observations, such as building tools that improve care in challenging environments,” Nelson said.

As often happens in science, one project or idea led to another. For weeks, as he watched the Bangladeshi lab technician who was studying samples under a darkfield microscope to see which ones contained cholera and which didn’t, Nelson mentally calculated that around half were autoclaved, meaning they were cholera-free. That discovery eventually led to published papers in which Nelson identified key factors that contribute to the understanding of cholera transmission. “One was starvation of *Vibrio cholerae* in nutrient-limited pond water, and the second was predation by little viruses called phages that infect and kill the *V. cholerae*,” Nelson explained. “About half the samples that were autoclaved had these viral particles.”

As he continued his research, Nelson found antibiotics in the majority of cholera patients who insisted they



Eric J. Nelson, M.D., Ph.D.

Fogarty Fellow: 2005-2006

Fellowship at: Int’l Center for Diarrheal Disease Research, Bangladesh

U.S. partners: Massachusetts General Hospital, Harvard Medical School, Tufts University School of Medicine

Research areas: Cholera transmission

hadn’t taken the drugs. What this said to Nelson was that scientists studying cholera transmission have to think not only about how phage particles affect cholera transmission but also about how antibiotics do. That finding, in turn, led Nelson to help create a tool, which seeks to change antibiotic prescription habits among doctors. Thirteen years after the fellowship, Nelson and Khan officially conducted their first project together in 2018, running a clinical trial to test whether this tool was more effective in paper form or as a mobile phone app at changing the behavior of doctors managing diarrheal disease in challenging environments. The trial, which looked at doctors’ decision-making processes when ordering fluid replacement and prescribing antibiotics, not only achieved some significant outcomes but also exemplified the “international collaboration that the NIH and Fogarty make possible, and the huge return on investment that Fogarty gets when it supports early-career researchers,” Nelson said.

Nelson was recruited during his Fogarty fellowship by then-director of icddr,b, Dr. David Sack, to collaborate on a method to rapidly train personnel to manage cholera and shigellosis outbreaks in resource-poor settings. Called Cholera Outbreak Training and Shigellosis (COTS), the method he helped to devise has since been used globally. An updated version is part of an immersive one-week outbreak response course Nelson leads in Haiti.

Nelson attributes the innovative projects he’s been involved with to the support he got from Fogarty and NIH as an early-career scientist. “Every aspect of my research has been positively impacted by Fogarty, in ways that are still declaring themselves,” he summarized. “Had Fogarty not put me at the bench for a year in Bangladesh, my portfolio would either be empty or filled by traditional bench science.”

JONATHAN SAMET, M.D., M.S.

Dr. Jonathan Samet has spent decades researching the health risks of inhaled pollutants, including secondhand smoke and particles in outdoor air such as those in vehicle exhaust. A longtime Fogarty and NIH grantee, he has conducted research around the world, including in China, Latin America and Africa. A pulmonary physician and epidemiologist, Samet was named dean of the Colorado School of Public Health in 2017. Previously, he was the director of the University of Southern California (USC) Institute for Global Health, and a professor and chair of the department of epidemiology at Johns Hopkins University's Bloomberg School of Public Health.



What impact has your tobacco research had?

The Fogarty-supported tobacco projects I've been involved with have seeded many important things. When I first went to China in 1995, for instance, there was one person doing tobacco control with a tiny budget. There were smoke-free zones in the airport and everyone would be smoking in them. That has changed, and work funded by Fogarty, the Bill & Melinda Gates Foundation and, more recently, the Bloomberg Initiative, has played a big role in bringing about those changes. Today, social norms around secondhand smoke have shifted, and an increasing number of Chinese cities, including Beijing and Shanghai, have restrictions on smoking in public places.

Fogarty support also helped to start the tobacco control program at the National Institute for Public Health of Mexico, which has become a regional leader in tobacco research and training. But there's still work to do because there's always a new issue in tobacco control. Who was talking about vaping three years ago? That crept up on us, and today, it's hugely popular among young people.

What is your current Fogarty project?

As part of the GEOHealth Hubs program, supported by Fogarty, the National Institute of Environmental Health Sciences (NIEHS), CDC and Canada's International Development Research Centre, we're putting in place monitors for airborne particles in the capital cities of Ethiopia, Kenya, Rwanda and Uganda, to try to understand what air pollution levels are.

Our focus is on capacity building and helping to develop scientists in East Africa who do environmental health work and want to advance policy through research. Fogarty's aim is to develop researchers who can generate the evidence needed to affect policy, and be willing to step in and talk with policymakers about what their evidence shows. We're giving them the tools to do that.

What has this research achieved so far?

In Kampala and Addis Ababa, we've completed a complicated assessment of child respiratory health in relation to air pollution. After identifying schools with a range of air pollution levels, we put an air quality monitor in each of 10 schools in both cities. We've collected data about respiratory health and measured lung function in about 1,000 children—100 from each school. We've also installed centrally located monitors in each city.

What challenges have you faced?

When we started this work five or six years ago, there were very limited monitoring data available in Africa, there were some people involved in air pollution research and control, but no real enforcement capacity. The sources of air pollution in major cities are themselves complicated—things like trash burning, factories spewing out smoke, diesel vehicles. A lot of the world's older diesel vehicles—the ones that blast out black smoke when they go down the street—have ended up in Africa. There are the problems that arise from using fuels that pollute indoors and outdoors, whether it's burning wood or biomass, charcoal or animal dung. While the problem is well recognized, what to do about it is a challenge.

Communication of risk is another challenge. With air pollution, people know it's bad when the levels are extraordinary. Your eyes burn, you can't see, there's no question that it's harming you. But as levels go down, people learn to live with pollution.

What can the US learn from this research?

Although the U.S. has made great progress in bringing down air pollution, it remains a global issue. The pollution generated in China, for example, circulates around the world. So when there's control as a result of research in China or Africa, there are benefits to Americans. Steps that are taken to reduce air pollution locally also are expected to have benefits in terms of greenhouse gas emissions.

Fogarty programs build capacity and spur NCD research

By Shana Potash

At the start of the century, as the threat of noncommunicable diseases (NCDs) in the developing world was emerging, Fogarty launched a series of programs to prepare local scientists to address the looming crisis, which claims 32 million lives each year. Between 2001 and 2017, Fogarty and its NIH partners invested nearly \$80 million to establish NCD research partnerships between U.S. and low- and middle-income countries (LMICs) institutions, and build related research training programs.

Under the Fogarty programs, more than 600 investigators have received long-term NCD research training and, along with their mentors, have addressed a variety of topics from

Noncommunicable diseases (NCDs) claim 32 million lives in developing countries each year. To help address the epidemic, Fogarty has supported NCD research and training programs since 2001.

cardiovascular disease to aging disorders, and mental health to environmental health, publishing nearly 1,000 articles. Researchers have examined NCDs across the lifespan; sought to understand how diseases interact with each other; and explored risk factors and other cross-cutting issues. In addition to research and training, the nearly 80 funded projects spurred the creation of curricula and degree programs, and new health practices and policies in countries throughout the developing world.

“Noncommunicable diseases are a complex problem, and research and training needs continue to evolve.”

– DR. ROGER I. GLASS, FOGARTY DIRECTOR

Three of Fogarty’s NCD programs were reviewed recently by the Center’s Division for International Science Policy, Planning and Evaluation to determine how the initiatives enhanced research collaborations and built sustainable research capacity in NCDs. The team examined grant and publications data, surveyed U.S. investigators and foreign collaborators, and interviewed Fogarty staff to determine the impact of the NCD programs. The findings have been posted online and include recommendations for future priorities.

The evaluation and the latest Fogarty funding opportunities for NCD research training programs come at a critical time. Heart disease, cancer, diabetes and other NCDs disproportionately affect people in poorer countries. More than three-quarters of all NCD deaths globally occur in LMICs, according to the WHO. Driven by an aging population, rapid urbanization, unhealthy lifestyles and other forces, the burden of these chronic diseases is expected to increase further unless proven interventions are implemented. Part of that challenge, as noted in a 2018 WHO report, is that many countries lack research capacity.

“Noncommunicable diseases are a complex problem, and research and training needs continue to evolve,” said Fogarty Director Dr. Roger I. Glass. “This evaluation shows the substantial progress we have made but also points out the tremendous need for continued support.”

Photo by China Photos/Getty Images



Resources: <http://bit.ly/NCDResearchEval>

Programs evolved to meet new challenges

Fogarty’s NCD research training programs began with 14 grants awarded through the International Clinical, Operational and Health Services Research and Training Award (ICOHRTA) in 2001. Several years later, after an update to the Global Burden of Disease Study highlighted the NCDs with the highest burden in developing countries, Fogarty launched another program focusing on cancer, lung disease, diabetes and cardiovascular disease, known as the Noncommunicable Chronic Diseases Research Training Program (NCoD). Those two programs were eventually consolidated into a new initiative when program officer Dr. Kathleen Michels recognized the need for a more holistic approach. The Chronic, Noncommunicable Diseases and Disorders Across the Lifespan Research Training Program (NCD-Lifespan), which began in fiscal year 2011 and continues today, emphasizes research across the aging continuum and aims to support the science needed to develop and implement evidence-based interventions.

While not part of the evaluation, Fogarty has also seeded the NCD researcher pipeline through other programs focused on brain disorders, trauma and injury, and tobacco cessation. In addition, the Center has broadened the disciplines included in its Fellows and Scholars program to include cardiology, diabetes, cancer, kidney disease and other NCD specialties.

NCD research training programs have impact

The three NCD programs combined provided substantial training for 660 scientists. Those opportunities, which lasted six months or more, included fellowships and certificate programs, master’s degrees, research and professional doctorate degrees, and postdoc positions. Nearly half of the long-term participants were in non-

NCD LIFESPAN PROGRAM OBJECTIVES:

- Strengthen research capacity of LMIC institutions so they can become national, regional and international centers of expertise in NCD research
- Support multidisciplinary research training across the research continuum
- Train a cadre of LMIC scientists in NCD research that will advance science and contribute to changes in clinical practice and public health policy
- Support training-related research that is directly relevant to the health priorities of the LMIC
- Integrate with existing NCD research and public health programs in the LMIC
- Strengthen core research support capabilities needed to manage grants at an LMIC institution.

NCD Lifespan program: 2011 to present

degree programs. While long-term activities were the core of the programs, most grants also offered workshops and other short-term opportunities to enhance skills in specific areas such as lab techniques, grant writing and research protocol development.

As signs of success, trainees and grantees were able to leverage their experiences to obtain funding for further research or research training projects. Half of the survey respondents reported having at least one trainee who

Top Categories of NCD Articles 2003-2015														
<i>Note: Articles can focus on more than one research area. As such, a grant can be counted in more than one NCD category</i>														
NCD category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Grand Total
Mental Health/Behavioral Health		1	7	4	2	12	13	10	10	15	9	20	25	128
Risk Factors						4	6	8	11	17	25	27	22	120
Cardiovascular Diseases					2		2	1	6	14	15	16	35	91
Substance Abuse/Addiction			4	3	1	5	6	7	6	13	11	8	12	76
Cancers			1				1	10	8	11	13	7	11	62
Metabolic/Gastro/Digestive Kidney Disorders	1		2		3	1	2		1	6	11	10	18	55
HIV/STIs/Infectious Diseases			2	5	1	8	6	4	4	2	6	12	4	54
Trauma/Injury	1		2		3	3	5	4	6	7	6	5	10	52
Neurological/Developmental Disorders		1	3	3	3	2	2	2	3	6	9	5	5	44
Maternal/Child Health				1		2			1	2		2	9	17
Reproductive							2	2	1	2	3	1	1	10
Environmental/Occupational Health									2	1	2		2	7
Bone Diseases							1		1	2	1	1		6
Eye Diseases						1	2	1					1	5
Respiratory Diseases							1			2		1	1	5
Oral Health										1			1	2
Aging Disorders												1		1
Grand Total	2	2	21	16	15	38	47	49	60	101	111	116	157	735

Case studies demonstrate impact on NCD policy

The evaluation contains several cases studies representative of how findings from NCD research projects have influenced health policies and programs in developing countries.

The opioid Tramadol has become extremely popular in the Middle East, including Egypt where a dangerously toxic version is sold cheaply on the streets. A research training collaboration between Cairo University and the University of California, Los Angeles conducted a multi-country study of Tramadol addiction. Evidence from this study and others helped inform the WHO, and the governments of Egypt and the United Arab Emirates about the treatment needs of Tramadol users and promoted the approval of appropriate medications in the two countries. The research found that *grand mal* seizures occurred in 28.5 percent of study participants during prior withdrawal periods. Because of that, treatment centers in Egypt and the UAE have seizure prevention strategies as part of their withdrawal management plans.

Findings from a research project in Vietnam helped convince the Ministry of Health to make child mental health a priority, and the national health insurance started covering certain conditions. The research was the product of a collaboration between Vietnam National University and Vanderbilt University in the U.S. Investigators conducted Vietnam’s first nationally representative child mental health epidemiology survey. Among its findings, significant behavioral mental health problems were associated with an approximately 350 percent increase for risk of academic functional impairment.

This 5-year-old Vietnamese girl was a participant in a study that increased her country’s interest in child mental health services.

Photo courtesy of Dr. Bahr Weiss



successfully obtained additional funding. Many former trainees now have positions in academia where, as the evaluation confirmed, their roles may range from “instructing the next generation of researchers, to leading clinical rounds at a university hospital, to conducting research in a lab.” Other alumni have assumed roles within the government or with not-for-profit organizations.

Building institutional capacity—creating a strong research environment—is another area where Fogarty’s NCD programs have made an impact. Grantees and collaborators from around the world provided dozens of examples of how their awards helped create courses or certificate and degree programs in topics that include cancer epidemiology, environmental sciences, nutrition, mental health, maternal and child health, and the ethics of clinical trials. Respondents also reported they had produced training materials and secured LMIC government commitments to increase staffing. The award, many said, enabled institutions to recruit or retain faculty interested in NCD research.

Outcomes include papers, protocols and products

Fogarty’s programs have added to the body of knowledge related to NCDs. The review found that 982 scientific publications citing an NCD grant were produced between 2003 and 2017. The three most common topics were mental health, risk factors such as obesity and nutrition, and cardiovascular diseases.

A bibliometric analysis examined, among other things, citation impact and collaborations. A key finding was that 69 percent of alumni grantees published at least three or more articles with an LMIC colleague after their NCD grant ended, signaling they had kept up the scientific relationship that was formed because of the program.

NCD Publications and Impact	
<i>Bibliometric indicator</i>	<i>Value</i>
Number of citations (times cited)	7,761
Mean citation count	13.13
Median citation count	7
<i>Bibliometric indicators for NCD articles supported by Fogarty programs, 2003-2015</i>	

“Overall the results of the bibliometric analysis and co-authorship network suggest that grantees and alumni are producing high quality scientific articles, continuing to foster collaborations between U.S. and foreign scientists, and have contributed to important empirical evidence to combat NCDs in LMICs,” as noted in the assessment.

Grantees and their collaborators have made other contributions to science. When asked what their project produced, 19 investigators—nearly half of those who responded—reported developing clinical protocols for use

in LMICs. They include a clinical trial of a therapy targeting breast cancer and a protocol to manage sickle cell disease. Seventeen grantees reported building patient registries and databases; 11 created software and analytic tools; and four produced devices or prototypes.

Challenges and unmet needs

While progress has been made, tackling NCDs will require many more well-qualified researchers and mentors, according to the evaluation. Grantees and collaborators who were surveyed named a range of research topics that still require attention. “Adding to this need, the diversity of NCDs that make up the epidemic adds complexity to the process of building capacity. For example, a country may have built a critical mass of researchers in cardiovascular disease, but there remains a lack of experts that can manage the growing diabetes, trauma/injury or hypertension issues in the country,” the review stated.

Many grantees pointed to implementation science research as an area for growth, given its value in developing health policy guidelines and determining how to adapt or scale up interventions. Funding was an issue, with many grantees noting that even though LMIC governments may recognize the benefit of NCD research, their national budgets are too strained to support it. Creating protected time for research was also identified as an ongoing challenge, given that faculty at LMIC institutions often have competing interests.

When asked about hurdles they faced in building capacity, some grantees said that five years of funding, which is typical for the research training grant mechanism (known as D43), was not long enough to effect change in some countries. The biggest obstacles within the research infrastructure at LMICs were related to grant management and accounting, and institutional review boards that were either lacking or slow to give approval.

Recommendations and next steps

Recognizing that LMICs are facing the dual burden of NCDs and infectious diseases, the evaluation recommended collaboration between those scientific communities and suggested that future iterations of the NCD program consider how to prioritize the nexus between NCDs and infectious diseases. Encouraging such comorbidity research, the review noted, will help build a highly skilled and nimble research workforce.

Priority also should be given to research topics that cut across diseases, including prevention and implementation science, common risk factors, developmental origins, maternal and child health, and stigma. An emphasis also should be placed on research areas that so far have been under-

represented in research training such as metabolic disorders, hearing issues and chronic kidney diseases. Additionally, investigators may want to consider requiring each trainee to write and submit a grant proposal, because the process and feedback could help them take a critical step toward becoming an independent investigator.

Some of the evaluation’s findings have been incorporated into the newest funding opportunity announcements, which have deadlines in November 2019 and 2020. In a further effort to build institutional capacity, renewal applications funded solely by Fogarty must come from the foreign site. The move away from U.S.-led projects is intended to bolster LMIC institutions’ capacity to secure their own funding. New applications are expected to propose collaborations with a single LMIC institution as the major partner, thereby concentrating resources and training opportunities at one institution so a strong foundation is built.

Fogarty has additional funding opportunities to help NCD training program alumni and other early-career researchers make the transition to independent investigator. The Emerging Global Leader Award gives junior faculty at LMIC institutions financial support and protected time for research. And the Global Non-communicable Diseases and Injury Across the Lifespan: Exploratory Research program gives LMIC investigators the opportunity to jumpstart research programs related to NCDs, trauma and injury.

“These programs can prime the NCD research pipeline in LMICs by giving younger scientists additional opportunities to develop their research skills,” said Fogarty’s Dr. Glass. “It’s our hope these experiences will propel them toward becoming the scientific leaders in their countries who will in turn prepare future generations of researchers.”

Strong NIH support for Fogarty’s NCD programs

The NCD research programs have enjoyed broad support across NIH. Over time, Fogarty has had a dozen partners: the National Cancer Institute (NCI), National Center for Complementary and Integrative Health (NCCIH), National Institute on Aging (NIA), National Institute on Alcohol Abuse and Alcoholism (NIAAA), Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), National Institute on Drug Abuse (NIDA), National Institute of Dental and Craniofacial Research (NIDCR), National Institute of Environmental Health Sciences (NIEHS), National Institute of Mental Health (NIMH), National Institute of Neurological Disorders and Stroke (NINDS), National Institute of Nursing Research (NINR), and the Office of Dietary Supplements (ODS).

OPINION

By Dr. Roger I. Glass, Director, Fogarty International Center

New energy for global health is blossoming across NIH



There's a new wave of enthusiasm for global health sweeping across NIH. In addition to the continuing strong support from NIH Director Dr. Francis S. Collins, I'm pleased to have three new institute directors on campus who share our passion to build research capacity and fund studies to improve the health of the world's least fortunate. I was delighted to be joined in Kenya recently by

the relatively new directors of the institutes concerned with mental and child health research. There, they were able to see firsthand the impact their programs are having on the ground.

A visit to an innovative project in rural, western Kenya particularly impressed National Institute of Mental Health (NIMH) Director Dr. Josh Gordon. By enhancing irrigation and improving productivity of farmers living with HIV, researchers found it's more likely the farmers will adhere to their antiviral medication regimens and keep their clinic appointments. A few hours' drive away in Eldoret, Kenyan and U.S. researchers are studying how to keep adolescents with HIV on treatment using peer advisors and group therapy. They're also investigating how to treat depression and trauma to improve control of HIV infection, and alleviate mental health symptoms. I encourage you to read Dr. Gordon's full blog post about his travels, which he sums up with this observation, "Through cutting-edge research around the world, global efforts yield truly global impacts."

My colleague Dr. Diana Bianchi, director of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), said it was "an unforgettable experience." Her visit included time at a busy public hospital in Nairobi, as well as rural sites in western Kenya. She reported being very impressed by the fact that post-partum mothers are housed and fed in the hospital for weeks and months after delivery of a premature baby, and are incorporated into the daily nursery routine by providing expressed breast milk and changing their babies' diapers. She was also struck at how clinical and implementation research is embedded in the overall culture and operations at Moi University, even more so than in many American academic medical centers.

She reported being moved by her interactions with children and families who are living with HIV/AIDS. She also said she was inspired by many of the women working to reduce HIV infections among adolescent girls and young women through the program called DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe women). Administered by the President's Emergency Plan for AIDS Relief (PEPFAR), the DREAMS partnership includes the Bill & Melinda Gates Foundation and other private organizations.

Overall, the trip was a powerful demonstration of the impact NIMH and NICHD investments have made in advancing global health capacity and research, with a reminder that real people's lives depend on this vital work.

Back home in Bethesda, I was pleased to have Dr. Gordon and the new National Institute of Biomedical Imaging and Bioengineering (NIBIB) Director Dr. Bruce Tromberg join me for a discussion with Fogarty's advisory board. Both gave us valuable insights into how we might spur innovation in global health and build LMIC capacity in bioengineering and other related fields.

Arriving at NIH from the University of California, Irvine, Dr. Tromberg said many engineering schools now have improving human health as their top goal. Engineering is even being combined with medicine as a new discipline. For instance, his predecessor, Dr. Roderic Pettigrew, is now building the first such fully integrated national program at Texas A&M University. I was also excited to hear that Dr. Tromberg is a proponent of engineering capacity building, having led a two-week workshop in Côte d'Ivoire to teach entrepreneurship and innovation to African scientists. Indeed, he said the experience changed his life. Now that sensors and other components are inexpensive and more easily accessible in LMICs, technologies for health can be adapted to suit local needs, he said. Portable tools can be developed to reduce barriers to care, improve access and democratize human health.

With this wonderful energy and enthusiasm from my new colleagues, I'm more optimistic than ever that by working collaboratively across NIH, we can speed advances to improve the health of all people.

RESOURCES

<http://bit.ly/NIHglobalhealth>



Bridbord, Holmes lauded as global health leaders

Drs. Ken Bridbord and King Holmes are co-recipients of the Consortium of Universities for Global Health 2019 Distinguished Leadership Award, the organization's highest honor. As longtime director of Fogarty's extramural programs, Bridbord created initiatives that provided research training for 6,000 scientists in low- and middle-income countries. Now retired, Bridbord is a Fogarty senior scientist emeritus.



Holmes, a Fogarty advisory board member and grantee, is professor and founding director of the Department of Global Health (DGH) at the University of Washington. In his more than 50 years of global health research and training, Holmes has collaborated with over 170 trainees and mentees, and has produced some 800 publications.



NIH cancer director Sharpless moves to FDA

Dr. Norman E. "Ned" Sharpless, director of NIH's National Cancer Institute since 2017, has been tapped to become acting FDA commissioner in April. Previously, Sharpless directed the Lineberger Comprehensive Cancer Center at the University of North Carolina. Sharpless treated leukemia patients and conducted research on cancer and aging.



Swaminathan named WHO's chief scientist

Dr. Soumya Swaminathan, a former Fogarty trainee, has been appointed to a newly created WHO position, Chief Scientist, charged with strengthening the organization's core scientific work. She had been deputy director-general for programs. A pediatrician and clinical researcher, Swaminathan was director general of the Indian Council of Medical Research before joining WHO.



Richards-Kortum added to Inventors Hall of Fame

Former Fogarty advisory board member Dr. Rebecca Richards-Kortum is among the 2019 inductees into the National Inventors Hall of Fame. A professor of bioengineering and director of the Rice 360° Institute for Global Health at Rice University, Richards-Kortum develops medical devices for use in low-resource settings.



Oral cholera vaccine developer Clemens honored

Dr. John D. Clemens, executive director of Fogarty grantee institution the International Centre for Diarrhoeal Disease Research, Bangladesh, is a co-recipient of Thailand's Prince Mahidol Award. Clemens and longtime collaborator Dr. Jan R. Holmgren of Sweden were recognized for developing an oral cholera vaccine that has protected millions of people.



Abdool Karim awarded by Kuwait for HIV research

Longtime Fogarty grantee Dr. Salim Abdool Karim shares Kuwait's 2018 Al-Sumait Prize for Health, a Kuwaiti award honoring people and organizations that address challenges in Africa. Abdool Karim, director of the Centre for the AIDS Programme of Research in South Africa, was recognized for his contributions to HIV/AIDS treatment and prevention.

NIH releases plan for women's health

NIH has developed a strategic plan to advance science to improve women's health with a framework to integrate sex and/or gender influences into research, provide disease prevention and treatment tailored to women's individual needs, and ensure women in biomedical careers reach their potential. Full report: <http://bit.ly/NIHwomen>

Supplement improves infant outcomes

For women in resource-poor settings, taking a certain daily nutritional supplement before conception or in early pregnancy may improve growth of the fetus, according to an NIH-funded study. The supplement is fortified with vitamins and minerals, and provides protein and fat. Journal article: <http://bit.ly/NutritionForMoms>

WHO publishes malaria control guidelines

For the first time, WHO has published a comprehensive set of evidence-based guidelines for malaria vector control. The resource consolidates more than 20 sets of WHO recommendations and will be updated on an ongoing basis. Full report: http://bit.ly/WHO_malaria

WHO posts R&D spending by country

New analysis from the WHO Global Observatory on Health R&D shows that only 41% of 75 countries analyzed met their health R&D spending targets using the most recent data available. Some low-income countries allocated a higher percentage of their GDP on health than high-income countries. Website: http://bit.ly/WHO_benchmark

NIH, FDA host treatment collaboration tool

To encourage information sharing of treatment practices for neglected diseases and emerging or drug-resistant infections, the NIH and FDA have built a tool called Collaborative Use Repurposing Engine (CURE). The aim is to capture and centralize the global experience of new uses of approved medical products—both positive and negative. Website: <https://cure.ncats.io>

PAHO studies youth health in Americas

Half of all deaths of young people in the Americas are due to preventable causes such as homicide, traffic fatalities and suicide, according to a new report by the Pan American Health Organization (PAHO). The study examines various health aspects of the region's 237 million young people and provides recommendations for improvement. Full report: http://bit.ly/PAHO_youth

Funding Opportunity Announcement	Details	Deadline
Global Infectious Disease (GID) Research Training Program (D71) (D43) Clinical Trial Optional	http://bit.ly/IDtraining	July 25, 2019
Global Brain and Nervous System Disorders Research Across the Lifespan (R21) Clinical Trial Optional (R01) Clinical Trial Optional	http://bit.ly/NIHGlobalBrain	Nov 7, 2019
Emerging Global Leader Award (K43) Independent Clinical Trial Required (K43) Independent Clinical Trial Not Allowed	http://bit.ly/NIHGlobalLeader	Nov 7, 2019
Noncommunicable Diseases and Disorders Research Training Programs in LMICs (D43) Clinical Trial Optional	http://bit.ly/NCDtrain	Nov 12, 2019
Ecology and Evolution of Infectious Diseases Initiative (EEID) (R01)	http://bit.ly/EEIDNIH	Nov 20, 2019

For more information, visit www.fic.nih.gov/funding

Global Health Matters

March/April 2019

Volume 18, No. 2 ISSN: 1938-5935

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

Managing editor: Ann Puderbaugh
Ann.Puderbaugh@nih.gov

Writer/editor: Shana Potash
Shana.Potash@nih.gov

Writer/editor: Karin Zeitvogel
Karin.Zeitvogel@nih.gov

Web manager: Anna Pruett Ellis
Anna.Ellis@nih.gov

Designer: Carla Conway

All text produced in Global Health Matters is in the public domain and may be reprinted. Please credit Fogarty International Center. Images must be cleared for use with the individual source, as indicated.

SUBSCRIBE:
www.fic.nih.gov/subscribe



**READ
DOWNLOAD
SUBSCRIBE**

Poor quality drugs pose “health emergency,” study says

Photos by Nico Rametier/FDA



Poor quality and fake medicines (top photo) are an urgent threat.

More than a quarter of a million children die each year due to poor quality and fake medicines, according to a study published in March in the *American Journal of Tropical Medicine and Hygiene*. The assessment by a team of experts from the public and private sector concludes that a “pandemic” of falsified and substandard drugs for treating malaria, pneumonia, hypertension and other diseases has become a “public health emergency,” especially in low- and middle-income countries. It cites evidence that up to 155,000 children die every year due to fake malaria drugs alone, and that a similar

number die from low-quality or counterfeit antimicrobial drugs prescribed to treat pneumonia. Other common fake drugs include prescription opioids and medicines for heart disease, erectile dysfunction and cancer.

Fogarty senior scientist emeritus Dr. Joel Breman, a co-author on the study, said that fake drugs are often peddled over the internet and sometimes linked to organized crime and terrorist groups. Poor quality drugs cost the global economy an estimated \$200 billion per year, Breman said, and contribute to the growing problem of antimicrobial resistance.

RESOURCE

Journal article: http://bit.ly/ASTMH_fakedrugs