



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

Humanitarian Paul Farmer discusses global health equity

By Shana Potash

The formula for global health equity, according to longtime champion Dr. Paul Farmer, is a combination of research, training and delivery of care. But that last component, he says, doesn't always get enough attention.

During a recent visit to the NIH, Farmer reflected on his decades of experience treating the world's poorest people and addressed what can happen when communities do, or don't, have the "staff, stuff, space and systems" needed to improve health. His talk, "Against Balkanization: Research + Training + Care = Global Health Equity," was the 2016 David E. Barmes Global Health Lecture, sponsored by Fogarty and NIH's National Institute of Dental and Craniofacial Research (NIDCR). The speaker series honors the late David E. Barmes, who was a special expert for international health at NIDCR.

A physician and medical anthropologist, Farmer chairs the Department of Global Health and Social Medicine at his alma mater, Harvard Medical School. He is also the chief strategist and co-founder of Partners in Health (PIH), a nonprofit that provides care, builds capacity and strengthens health systems in impoverished communities. Launched in 1987, PIH has expanded well beyond its initial site in Haiti and now operates in 10 countries.

Dividing time equally between research, training and caregiving—the standard at most medical schools—must also apply to global health programs, Farmer said, suggesting that students should spend more time delivering care.

"You can't do research on people, especially sick people, without taking care of them," he explained. "That's what is right about an American teaching hospital. And, that's

Photo by Bill Bronson, NIH



Dr. Paul Farmer, co-founder of Partners in Health, addresses global health equity in a talk at NIH.

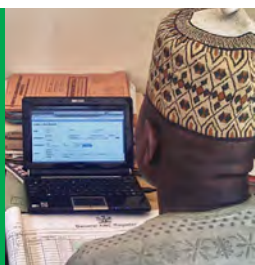
the way global health needs to be as well. Too often, I think sponsoring institutions, including universities, try to skip over the caregiving part."

Farmer began spending time in Haiti before he started medical school and has lived with one foot there and the other in Boston since the 1980s. His career as a physician specializing in infectious diseases and global health equity was shaped by the emergence of HIV/AIDS and the view from his two very different locations.

He recalled earlier days in the epidemic when some people thought antiretroviral drug regimens would be too costly or too complicated to administer in developing countries. But PIH, which began using the medications in rural Haiti in 1997, showed it could be done. More recently, the two districts in Rwanda where the nonprofit operates haven't had a case of mother-to-child transmission of HIV for at

. . . continued on p. 2

FOCUS



Examining big data to track and forecast spread of infectious diseases

- Strengthening surveillance with nontraditional data
- Comparing epidemic and weather forecasting
- Using big data to elucidate transmission dynamics

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Humanitarian Paul Farmer discusses global health equity . . . continued from p. 1



Photo on left by Bill Branson for NIH. Photo on right courtesy of Paul Farmer

(Above left) While visiting the NIH campus, Partners in Health co-founder Dr. Paul Farmer (center) joined NIH Director Francis S. Collins (left) and Fogarty Director Roger I. Glass (right) to plant a tree in front of Fogarty's Stone House. The event was to reciprocate for a tree planting by Drs. Glass and Farmer in Rwanda (at right), one of the countries where Partners in Health operates.

least two years. And, Farmer pointed out that 15 million people are alive today because of support from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), launched in 2008.

"That's the fruit of science that I'm talking about," he said. "That's the kind of effect we can have when we link knowledge that comes out of basic science and clinical trials to an equity platform. And it's a pretty amazing story."

Farmer praised the NIH for investing in studies of Ebola and Marburg, two viruses that have caused outbreaks in Africa. "NIH, the jewel in the crown on this country, is a

Enthusiastic attendees met with Farmer following the lecture.

global institution," he said, giving special recognition to NIH's National Institute of Allergy and Infectious Diseases (NIAID). "I don't believe the reason NIH and NIAID invested in Ebola was just because they were frightened it would be used as a bioweapon. This is science. This is a pathogen that afflicts people and nonhuman primates, and that's reason enough."

"You bring local people into the research so they care about it. Fogarty has this as its MO. Nowhere in the world are there not people who would like to be deeply involved in research."

— DR. PAUL FARMER, CO-FOUNDER, PARTNERS IN HEALTH

PIH is at work in one of the countries most affected by Ebola, Sierra Leone. Farmer described arriving there in 2014 and heading to a hotspot in Port Loko, a few hours from the capital. PIH clinicians helped staff a treatment center in an abandoned school rather than waiting for purpose-built units because the need was so great. Health professionals and family caregivers in this war-torn country were dying alongside the people they were tending to because they "didn't have the staff, stuff, space and systems they needed," he said, citing this as another example of why research, local capacity building and caregiving must be linked.

"You bring local people into the research so they care about it. Fogarty has this as its MO (modus operandi)," Farmer said. "Nowhere in the world are there not people who would like to be deeply involved in research."

RESOURCE

Videocast: bit.ly/2016BarnesLecture

Photo by Bill Branson, NIH



Fogarty invests \$10M in trauma, injury training

Death and disability from injury and trauma are global concerns that disproportionately affect low- and middle-income countries (LMICs). To help tackle the problem, Fogarty is funding eight projects that will train LMIC investigators to research the most effective ways to prevent and treat injury and trauma. The grants total \$10.3 million over 5 years.

More than 5 million people worldwide die each year from injuries resulting from traffic accidents, falls, violence and other causes, with most of the deaths occurring in LMICs, the WHO reports. Injuries are more prevalent in poorer areas than wealthier ones because of factors including less safe living, working and travel conditions, lack of focus on prevention and limited access to quality emergency care and rehabilitation services.

“Creating in-country experts who can help identify, develop and implement strategies to prevent and treat injury and trauma is key to reducing death and disability,” says Fogarty Director Dr. Roger I. Glass. Fogarty and NIH partners have been supporting injury and trauma research training since 2005.

Six academic institutions in the U.S. and one in Ghana received awards in the latest round of funding. Together, their projects will strengthen research capacity in more than a dozen countries in Africa, Asia and Europe.

Most of the grants are renewals that will be used to broaden existing programs, while three awards will fund new projects. The University of Texas Southwestern Medical Center in Dallas will launch the first NIH-funded injury research training program in Nigeria and Ethiopia, the most populous countries in sub-Saharan Africa with some of the highest injury rates in the world. Training courses will provide a combination of formal instruction and mentored research.

Another new award went to the University of Pennsylvania, which is collaborating with the University of Botswana and the Botswana Ministry of Health. Training will focus on two priorities for the country—community and domestic violence, and road traffic collisions. Independent investigators will be offered 2-year master’s programs, while clinicians, health administrators and criminal justice professionals will be offered short-term training as associate investigators.

In addition, Johns Hopkins University received a new grant to provide trauma and injury training in Vietnam



Fogarty is supporting research training programs to help address the burden of trauma and injury in developing countries.

that will focus on surveillance, community-based interventions and research on the long-term social and economic consequences. Johns Hopkins University also received additional funding to strengthen a program that began in Pakistan. Grantees plan to develop a doctoral program for injury research in the country, as well as expand training efforts into Afghanistan.

A longtime collaboration between Kwame Nkrumah University of Science and Technology (KNUST) in Ghana and the University of Washington built research capacity at KNUST to the point that it will now lead the effort, with U.S. colleagues providing assistance. Grantees aim to develop short-, medium- and long-term training in the West African region and offer master’s and doctoral degrees.

The University of California, Los Angeles, working with the South African Research Consortium, will prepare investigators to conduct biobehavioral research to minimize the effects of community violence and intentional injuries, specifically depression and post-traumatic stress disorder. Grantees hope to broaden their existing program to include neurobehavioral and intervention research. NIH’s Office of Research on Women’s Health is co-funding this effort.

The University of Iowa, which helped build a school of public health and an injury research unit in Romania, will now introduce research training to three other countries: Armenia, Georgia and Moldova. Former Romanian trainees will become the trainers. Research will focus on acute care, road traffic safety, and violence against women and children.

Finally the University of Maryland and Ain Shams University in Egypt will continue training health professionals in Egypt, Sudan and the Arab Middle East in the latest methodologies in trauma resuscitation, injury research and data collection. The program uses a combination of formal courses and mentored research.

PROFILE

Fogarty Global Health Fellow studies sickle cell immunity

By Karin Zeitvogel

The brother and sister playing in the clinic at Dar-es-Salaam's Muhimbili National Hospital reminded Dr. Emmanuel Balandya why he chose to focus his research as a Fogarty Global Health Fellow on the role of immune cells in sickle cell disease.

"Both had sickle cell anemia, which is the most common, and often most severe, form of sickle cell disease," Balandya said. "Thinking about what they will go through—especially in an African setting—reminded me of how much work remains to be done on sickle cell, and how wide the knowledge gaps are."

Sickle cell disease is a group of inherited disorders that cause hemoglobin, the protein in blood that carries oxygen around the body, to change red blood cells into a crescent—or sickle—shape, and become inflexible and sticky. Sickled red cells can cause a blockage in the circulatory system, preventing blood from carrying oxygen to tissues and organs, and causing pain and sometimes death. Most babies with sickle cell disease are born in Africa, and 50 to 80 percent of them die before the age of 5. The most common cause of death in children with sickle cell is infection. Tanzania ranks fourth in the world for sickle cell disease prevalence after Nigeria, the Democratic Republic of Congo and India.

Balandya's project—which was supported by the National Heart, Lung and Blood Institute (NHLBI), Fogarty and the University of California Global Health Institute (UCGHI)—focused on the role played by T and B lymphocytes in the immunity of Tanzanian children with sickle cell anemia. In a review article published in the *American Journal of Hematology*, Balandya noted there is a "critical shortage of insight" on immunity in sickle cell anemia, and particularly on acquired immunity. Limited studies have indicated dysfunction of T and B cells in patients with sickle cell anemia, which may affect vaccine reactivity, Balandya said in the article. Enhancing understanding of the immune function in sickle cell anemia would help improve vaccine efficacy and could reduce transplant rejections and autoimmune diseases, he hypothesized.

Support from the Fogarty Global Health fellowship was vital to allowing Balandya "to combine the knowledge I



Emmanuel Balandya, M.D., Ph.D.

Fogarty Fellow: 2015 – 2016

Fellowship at: Muhimbili University of Health and Allied Sciences, Tanzania

U.S. partners: University of California, San Francisco
University of Nebraska Medical Center, Omaha

Research Topic: Immunity in sickle cell anemia

gained in the U.S.—where I did my Ph.D. at Dartmouth College on a Fogarty AIDS International Training and Research Program scholarship, and postdoctoral work at Harvard Medical School—with my medical training, and apply them to research on a disease that's a serious challenge in sub-Saharan Africa," he said. "This grant was the only bridging support I got and allowed me to continue my research after returning to Tanzania from the U.S."

During the fellowship, Balandya had the opportunity to work with renowned sickle cell experts Dr. Julie Makani of Muhimbili University of Health and Allied Sciences, Dr. Stephen Obaro of the University of Nebraska Medical Center and Dr. Teri Reynolds of the University of California, San Francisco. He also was able to visit the NIH, where he met with leaders including the directors of Fogarty and the NHLBI, and gained insight into which research and training grants are available to young African investigators.

Balandya said he hopes data produced by his research will result in more cost-effective sickle cell interventions being adapted for and introduced in Africa.

"Governments have rolled out some interventions, such as vaccinations against secondary illnesses, which have proven effective elsewhere in reducing deaths from sickle cell disease," Balandya said. "But in Africa, sickle cell has to compete for limited resources with illnesses like HIV, TB or malaria. Research initiatives help promote care for people living with sickle cell, but too few benefit. So our hope is that successful outcomes from projects like ours will convince African governments to mainstream more interventions for sickle cell."

SOUMYA SWAMINATHAN, M.B.B.S., M.D.

Former Fogarty trainee Dr. Soumya Swaminathan has been director general of the Indian Council of Medical Research (ICMR) since 2015, overseeing dozens of research centers around India. A pediatrician and clinical scientist known for her tuberculosis research, Dr. Swaminathan is also head of the Department of Health Research at India's Ministry of Health and Family Welfare, and has held numerous other domestic and international posts. She is a lead investigator on an NIH-funded study on tuberculous meningitis and a past member of the TB steering committee of the NIH-supported International Maternal Pediatric Adolescent AIDS Clinical Trials network.



What impact has Fogarty had on your career?

The training programs I did through Fogarty built my self-confidence and leadership qualities. Through the many people I met, I learned that, as scientists, we all talk the same language, that nationality is an artificial barrier in the world of science. I view Fogarty as an organization that brings together people of different backgrounds and gets them to speak one language—the language of science.

My first experience with Fogarty was a short-term fellowship at UCLA in 2000, working with Dr. John Fahey and his team. I came to the fellowship a pure clinician, and thought I was just going to see patients and learn about clinical research. But instead, Dr. Fahey threw me into a lab and said, “You have to do some hands-on immunology!” So I ended up learning how to do sensitive immune-assays and flow cytometry, learned about immunology, took a course on HIV epidemiology, and did some clinics. It was an amazing eight weeks and I went back to India with lots of ideas for research. Then, in 2008, I attended a summer course on clinical effectiveness, also funded by Fogarty, at the Harvard School of Public Health.

How has Fogarty helped to build research capacity in India?

Fogarty has been transformative for Indian TB research. With Fogarty support, I've been able to send at least eight of my colleagues from the TB research center to do short-, medium- and long-term training programs in different areas of research—from nutrition to pharmacology and pharmacokinetics, to behavioral and social science research, to immunology. All of these people have come back enriched, and all of them are now principal investigators in their own right. Now, we have a multidisciplinary group that's doing all kinds of different research and getting their own grants.

What is the future of US-India collaboration?

It's a partnership of equals, in which both sides have a lot to learn from each other. The Indian research community

brings a lot of clinical experience and material to the partnership, as well as the very good insights of many Indian doctors. A key strength that the U.S. brings to the partnership is its system, which allows researchers to combine clinical work with basic science pathogenesis. In addition, I've always been struck by Americans' willingness to collaborate across disciplines, across universities and across centers. That's a page we should take out of their book.

We're making good progress with streamlining some of our regulatory processes in India, which, in the past, may have been a hurdle for international collaborative projects. The ICMR is engaged with a number of centers at the NIH.

How can global partnerships be expanded?

I'd love to see Fogarty stimulate and support south-south partnerships—say between India and Africa, or India and other Southeast Asian countries. I believe it's vital for researchers from different countries to pool their financial resources, knowledge and different areas of expertise to help make progress against diseases. To that end, I'm working to set up a consortium that brings researchers from different parts of the world to India to work together to address questions related to TB, which is still a major public health issue. India and five other countries—China, Indonesia, Nigeria, Pakistan and South Africa—accounted for 60 percent of the 10.4 million new tuberculosis cases in 2015, so they're on the front lines of the fight against the disease.

If we have international collaboration on TB, instead of people working in silos and possibly duplicating research, they would come together and pool not only financial resources but also all different kinds of expertise—from genomics and immunology to the insights gained by working in rural areas and seeing TB patients every day. Global consortia like the ones we're setting up in India are essential if we are to make progress against diseases like TB.

Big data for infectious disease surveillance, modeling

By Shana Potash

Big data derived from electronic health records, social media, the internet and other digital sources have the potential to provide more timely and detailed information on infectious disease threats or outbreaks than traditional surveillance methods, but there are challenges to overcome. A team of scientists led by the NIH reviewed the growing body of research on the subject and has published its analyses in a special issue of *The Journal of Infectious Diseases*.

Traditional infectious disease surveillance—typically based on laboratory tests and other epidemiological data collected by public health institutions—is the gold standard. But, the authors note it can include time lags, is expensive to produce, and typically lacks the local resolution needed for accurate monitoring. Further, it can be cost-prohibitive in low-income countries. In contrast, big data streams from internet queries, for example, are available in real time and can track disease activity locally, but have their own biases. Hybrid tools that combine traditional surveillance and big data sets may provide a way forward, the scientists suggest, serving to complement, rather than replace, existing methods.

“The ultimate goal is to be able to forecast the size, peak or trajectory of an outbreak weeks or months in advance in order to better respond to infectious disease

threats. Integrating big data in surveillance is a first step toward this long-term goal,” says Fogarty senior scientist Dr. Cecile Viboud, co-editor of the supplement. “Now that we have demonstrated proof of concept by comparing data sets in high-income countries, we can examine these models in low-resource settings where traditional surveillance is sparse.”



Experts in epidemiology, computer science and modeling contributed to the 10-article supplement. The researchers report on the opportunities and challenges associated with three types of data: medical encounter files, such as records from health care facilities and insurance claim forms; crowdsourced data collected from volunteers who self-report symptoms in near real time (part of the “citizen science” movement); and data generated by the use of social media, the internet and mobile phones, which may include self-reporting of health, behavior and travel information.

But big data’s potential must be tempered with caution, the authors say. Nontraditional data streams may lack

key demographic identifiers such as age and sex, and the information they provide may underrepresent infants, children and the elderly, as well as residents of developing countries. Furthermore, social media outlets may not always be stable sources of data, as they can disappear if there is a loss of interest or financing. Most importantly, any novel data stream must be validated against established infectious disease surveillance data and systems, the authors emphasize.

The journal supplement, “Big Data for Infectious Disease Surveillance and Modeling,” published in December 2016, contains reviews of recent uses of big data to strengthen disease surveillance, monitor antimicrobial resistance, identify adverse drug events, forecast disease outbreaks and connect travel patterns to the spread of disease.

Two nurses observe a young child suspected to have bird flu in a hospital in Indonesia.



Ensuring data privacy

Big data offer a “tantalizing opportunity” to provide more information for public health surveillance, but the authors say its use for that purpose is decades behind other fields such as climatology and marketing. Electronic health records with identifying information removed, for example, may be a resource to monitor infectious diseases outcomes, vaccine uptake and adverse drug reactions. Applying the data to surveillance has been slow, the authors say, in part because of ethical concerns about patient privacy. There’s also a scarcity of academic studies demonstrating how this type of data performs against traditional surveillance methods.

The supplement includes reviews of two non-traditional sources for monitoring influenza and other diseases—medical insurance claims and crowdsourced data.

Harvesting medical insurance claim data

Medical insurance claim forms, used in the U.S. and other countries, document the date and location of a doctor’s office visit as well as a diagnosis code, which researchers say is useful in tracking disease outbreaks, especially in large populations. Working with anonymized claim form data made available for research, investigators found “excellent alignment” between claim data for flu-like illnesses and proven influenza activity reported by the CDC. The body of influenza research suggests medical claims data should be harvested to generate timely, local data on acute infections, according to the researchers.

“Hybrid tools that combine traditional surveillance and big data sets may provide a way forward, serving to complement, rather than replace, existing methods.”

Engaging the public to track the flu

A European surveillance system that began collecting crowdsourced data on influenza-like illnesses as part of a research project is now considered an adjunct to existing surveillance activities. Called Influenzanet, the system uses standardized online surveys to gather information from volunteers who self-report their symptoms on a weekly basis. Data are analyzed in real time and national and regional results are posted on the website. Established in 2009, the tool is now being used by a number of European countries and is being expanded to collect information on Zika, salmonella and other diseases.



Source: www.influenzanet.eu/en, a system that monitors flu in Europe.

In their review, authors note the standardization of the technological and epidemiological framework makes it easier for countries to join Influenzanet and allows for coherent surveillance. The timeliness of the reporting and the inclusion of people who may not go to the doctor for treatment of the flu are other strengths. Downsides include the potential for misreporting and the lack of validation by a physician or lab test. But the authors point out Influenzanet estimates of illness incidence compare well with data from traditional surveillance methods.

Aggregating antibiotic resistance data

Noting that antibiotic resistance is a growing concern around the world, U.S. and Canadian scientists developed an online platform to monitor it at the regional level. ResistanceOpen aggregates publicly available, online data from community health care institutions as well as regional, national and international bodies and displays the information on a navigable map. An analysis of the resource found that the online information compared favorably with traditional reporting systems in the U.S. and Canada.

The scientists who developed ResistanceOpen aim to expand the database and say the platform could help fill the gap in antimicrobial resistance surveillance in many low- and middle-income countries. ResistanceOpen is an extension of HealthMap, a project that collects and analyzes disparate online data sources to track infectious

disease outbreaks around the world. HealthMap has been supported by private and public partners including the NIH, CDC and USAID.

Detecting adverse drug reactions

In addition to improving infectious disease surveillance, nontraditional data streams from the internet and social media have the potential to supplement traditional systems for reporting adverse drug reactions (ADRs). While consumers rarely use official ADR reporting systems, they do search the web for information about medications and share word of possible adverse reactions on social media sites and online health forums.

Mining and analyzing internet search logs and social media posts may detect ADR signals more quickly than traditional physician-based reporting systems, but there are challenges. One of the many ethical questions surrounding the use of these nontraditional sources is whether privately held data should be accessible for public health research.

Comparing epidemic and weather forecasting

In a comparison of the relatively new field of epidemic forecasting to the better-established one of weather forecasting, the authors note the former is much more difficult given that there is less observational data for disease, and because human behavior has the potential to rapidly alter the course of an epidemic.

Internet data streams, such as search queries and social media posts, may aid epidemic forecasting by providing information in near real time and at a more local level. But internet data, the authors say, are less reliable than information collected from weather stations and the availability can vary because of limited internet access in many developing countries.

Harnessing spatial big data

To determine where an outbreak originated or where future ones may occur, for example, epidemiologists need spatial data. Medical insurance claims, social media posts and mobile phones have the potential to fill geographical information gaps. But, the authors point out, there are technical, practical and ethical issues that must be addressed. They note possible solutions to protect privacy, such as masking individual-level information by aggregating collected data to larger spatial resolutions.

Connecting mobility to infectious diseases

With appropriate safeguards to ensure anonymity, call data records from mobile phones may provide researchers “an unprecedented opportunity” to determine how travel affects disease transmission. Studies of malaria and rubella in Kenya showed how call data improved the understanding of the spatial transmission of those



A woman uses a smart phone in India.

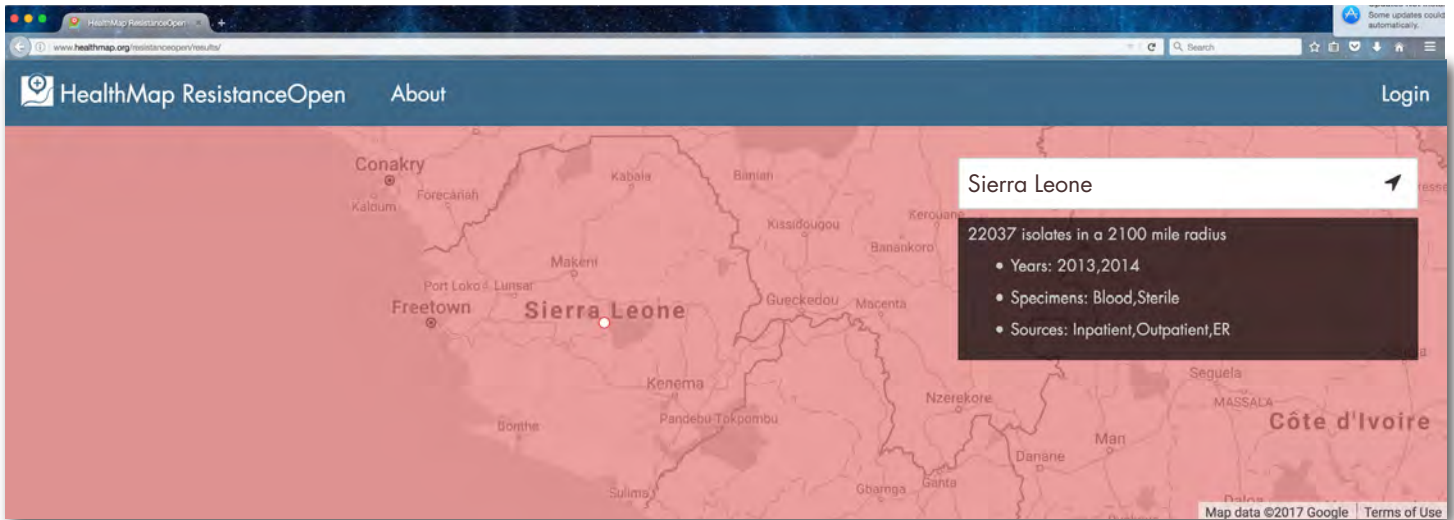
diseases. Because mobile phone data has biases—young children are not likely to be represented, for example. The authors say more research is needed to determine if mobility patterns derived from call data records are representative of general travel patterns.

“To be able to produce accurate forecasts, we need better observational data that we just don’t have in infectious diseases. There’s a magnitude of difference between what we need and what we have, so our hope is that big data will help us fill this gap.”

– DR. SHWETA BANSAL OF GEORGETOWN UNIVERSITY

Culling information from internet reports

Online news articles and health bulletins from public health agencies can also be manually dissected to model the sequence of transmission chains in an outbreak. The transmission dynamics and risk factors of the Ebola epidemic in West Africa and a Middle East Respiratory Syndrome outbreak in South Korea were elucidated by this approach. Internet findings were in line with traditional data, providing a proof of concept that this approach can be generalized and automated to a variety of online sources and generate information on disease transmission. This is particularly useful to improve situational awareness and guide public health interventions during emerging infectious disease crises,



The Resistance Open database, an online platform to monitor antimicrobial resistance, is an extension of the HealthMap project. Source: www.healthmap.org/resistanceopen

when traditional surveillance data are particularly scarce.

Managing epidemic simulation data

Researchers also describe the benefits of a novel, publicly available epidemic simulation data management system, called epiDMS, which provides storage and indexing services for large data simulation sets, as well as search functionality and data analysis to aid decision makers during health care emergencies. While the new hybrid models that combine traditional and digital disease surveillance methods show promise, the scientists agree there is still an overall scarcity of reliable surveillance information, especially compared to other fields such as climatology, where the data sets are huge.

“To be able to produce accurate forecasts, we need better observational data that we just don’t have in infectious diseases,” notes Dr. Shweta Bansal of Georgetown University, a co-editor of the supplement. “There’s a magnitude of difference between what we need and what we have, so our hope is that big data will help us fill this gap.”

Multidisciplinary initiatives such as the NIH-led Big Data to Knowledge program will be instrumental in expanding the use of big data in research, as noted in the supplement.

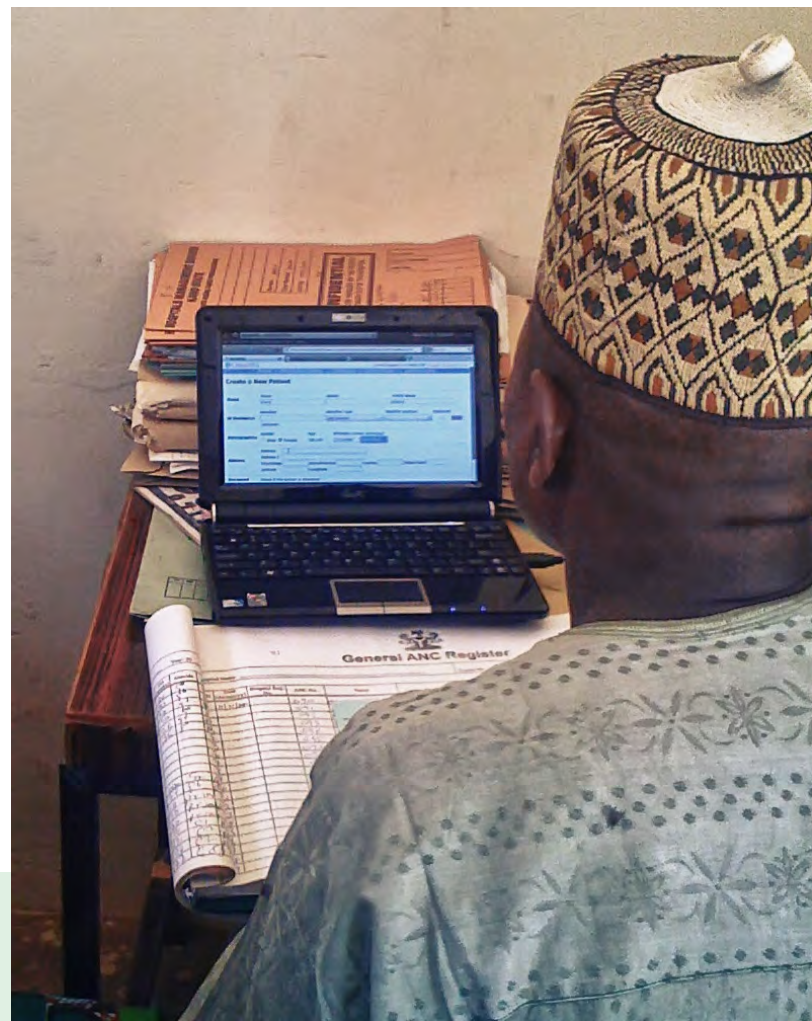
The publication’s authors include scientists affiliated with Fogarty’s Research and Policy for Infectious Disease Dynamics (RAPIDD), grantees from NIH’s National Institute of General Medical Sciences, and

researchers from nearly 20 universities throughout North America and Europe.

The supplement was produced with support from Fogarty and Georgia State, Northeastern and Georgetown universities.

A health worker in Nigeria enters data into their Electronic Medical Record System.

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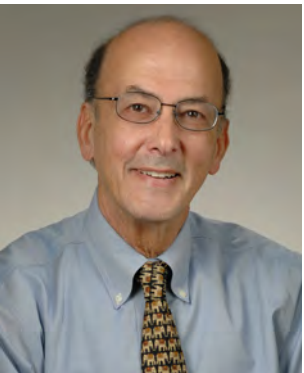
RESOURCES

Full journal: <http://bit.ly/BigDataSupp>

OPINION

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

Looking forward to 2017 with optimism



I am energized to begin the new year, with so many opportunities to advance global health on the horizon. Even after more than a decade as Fogarty director, I wake up every day eager to lead such a wonderful group of passionate and dedicated scientists and administrators. We remain committed to our mission to work towards a world in which the frontiers of health research extend around the globe, and scientific advances are

implemented to improve the health and extend longevity for all the world's people.

Of paramount importance, of course, is the safety and security of our own citizens, whether they are traveling abroad in regions with malaria or living in parts of the U.S. facing the Zika virus. I'm encouraged at recent progress in our understanding of that terrible virus that will help lead to an effective vaccine. And I'm excited at the news an experimental Ebola vaccine was found to be highly protective in a recent trial led by the WHO, conducted with numerous international collaborators. It's another example of why it's critical that we participate in the global scientific community, where we can learn from each other, remain at the forefront of science and speed discoveries.

But a vaccine alone will not protect us from another Ebola outbreak. It's critical that vulnerable countries are equipped to respond, not only with lab equipment and supplies, but also with well-trained epidemiologists, lab scientists and others. That's why I'm thrilled that Fogarty is gearing up the first phase of our program to begin to design research training programs in Sierra Leone and Liberia—two of the countries hit hardest by Ebola. By supporting U.S. scientific partners to engage in this effort, we hope to build capacity in West Africa so local researchers will have the skills to develop new diagnostic tests and treatments, evaluate vaccines and identify the most effective intervention strategies for disease outbreaks, when Ebola inevitably strikes again.

I'm also enthusiastic about the work we've been doing with our international partners to address the growing epidemic of chronic diseases. It's particularly gratifying to see that mental health research—a neglected

discipline in many parts of the world—is the subject of the latest funding call by the Global Alliance for Chronic Diseases, which previously has focused on hypertension, diabetes and lung diseases. I'm delighted that so many of my colleagues at NIH and around the world see the scientific value of building international research networks to address some of the world's most pressing problems.

One of our most significant projects—known as the Medical Education Partnership Initiative (MEPI)—is another program high on my agenda, as we prepare to begin its second phase. MEPI is aimed at strengthening the quality of African health education, building scientific capacity to carry out locally relevant research and extending scientific training to rural district hospitals and clinics, where the need for personnel is greatest. Supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), the program has already helped build skills to generate evidence that can improve the effective implementation of PEPFAR programs. We're also expanding the efforts of Fogarty's Center for Global Health Studies to build bridges between scientists and PEPFAR implementers and ensure the latest discoveries are quickly put into practice. Our latest initiative focuses on HIV prevention and treatment for adolescents, who are a particularly challenging group with unique characteristics. If left unchecked, new infections in young people could jeopardize our efforts to stall the epidemic. This builds on our past collaborations with PEPFAR to study how to more effectively prevent mother-to-child HIV transmission and treat the growing incidence of chronic illnesses in those living with HIV.

As we engage in this compelling work, we are appreciative of the continued support of the American people and their recognition of the value of investing in global health. Indeed, seven in 10 surveyed agree the U.S. should participate in international efforts to improve health, according to a 2016 poll by the Kaiser Family Foundation. The fact that this sentiment is shared by many members of Congress—reflected in their long-standing bipartisan support for research funding—bodes well for our future.

As 2017 begins, I look forward with optimism. Although we face many challenges, I believe the scientific opportunities to improve global health have never been greater.



Melvin Laird, instrumental to Fogarty's creation, dies

Former Rep. Melvin Laird, who played a key role in establishing Fogarty, has died at the age of 94. In 1967, Laird proposed an international science center be established at NIH to honor his late friend, Rep. John E. Fogarty, with whom he worked to expand federal funding for research.



Collins receives public service award

For his outstanding accomplishments in the communication of science, NIH Director Dr. Francis S. Collins received the 2017 Public Service Award from the Federation of American Societies for Experimental Biology. FASEB commended Collins on his ability to convey the excitement of research to the general public.



CEO named for NIH Clinical Center

The NIH has selected Maj. Gen. James K. Gilman, M.D., retired from the U.S. Army, as the inaugural chief executive officer of the NIH Clinical Center, the nation's research hospital. Gilman, a cardiologist, most recently led the U.S. Army Medical Research and Materiel Command at Fort Detrick.



Glass recognized for contributions to social justice

Fogarty Director Dr. Roger I. Glass received Georgetown University Medical Center's highest honor, the *Cura Personalis* Award, which borrows the Latin phrase "care of the whole person." The award recognizes outstanding contributions to human health guided by compassion and service.



Fogarty HIV/AIDS program officer McDermott retires

Dr. Jeanne McDermott has retired after more than 15 years managing some of Fogarty's largest programs, which helped build HIV/AIDS research capacity in low- and middle-income countries. More than 2,000 trainees in 100 developing countries have benefitted from those programs.



Grantee Kass honored for contributions to bioethics

The Global Forum on Bioethics in Research has recognized Dr. Nancy Kass with its Global Forum Award for contributions to progress in international research ethics. Kass, a professor at Johns Hopkins University, has been running Fogarty-supported training programs in Africa since 2000.



Global Health Council names executive director

Loyce Pace is the new president and executive director of the Global Health Council, a membership organization for the global health community. Pace previously held leadership positions at the LIVESTRONG Foundation and the American Cancer Society.

Workshop details Ebola research agenda

Research is needed to answer questions about Ebola transmission, how to improve diagnosis, properly contain the ill and develop an effective vaccine, according to participants of a workshop organized by the Forum on Microbial Threats. The meeting report was published recently by the National Academy of Medicine.

Full report: <http://bit.ly/NAMEbola>

WHO says malaria control improved in Africa

Children and pregnant women in sub-Saharan Africa have greater access to effective malaria control measures than five years ago, according to the WHO's latest global malaria report. However, funding shortfalls and fragile health systems are undermining progress. News release: <http://bit.ly/WHOmalaria>

Human subject research guidelines revised

A new version of ethical guidelines for health-related research involving human subjects has been released by the Council for International Organizations of Medical Sciences. The guidelines pay particular attention to research in low- and middle-income countries. Guidelines: <http://www.cioms.ch>

CDC reviews 50 years of immunization

The CDC has published an article to mark the 50th anniversary of the agency's global leadership in immunization, describing its involvement in smallpox eradication and efforts to eliminate polio, measles and rubella.

Full article: <http://bit.ly/CDCvax>

Global goals for translational research

Translational science is a global effort, according to the new strategic plan released by the NIH's National Center for Advancing Translational Sciences. The Center pledges to incorporate an international perspective in development of core competencies, as well as to form global partnerships that leverage complementary capacities and accelerate progress.

Full plan: <https://ncats.nih.gov/strategicplan>

New NIH plan for behavioral sciences

While it's widely accepted that behavioral and social factors cause numerous premature deaths, understanding how those factors interact with biology and can be modified requires a robust and rigorous research agenda, according to the new strategic plan released by the NIH's Office of Behavioral and Social Sciences Research.

News release: <http://bit.ly/OBSSRplan>

Funding Opportunity Announcement	Details	Deadline
Global Noncommunicable Diseases and Injury Research (R21)	http://bit.ly/NCD-injury	Feb 22, 2017
Planning Grant for Emerging Epidemic Virus Research Training for West African Countries w/ Widespread Ebola Transmission (D71)	http://bit.ly/EbolaOp	Feb 22, 2017
Japan Society for the Promotion of Science U.S. Postdoctoral Fellowships in Japan	http://bit.ly/JSPSforUS	Mar 1, 2017
International Research Scientist Development Award (IRSDA) (K01)	http://bit.ly/IRSDA2017	Mar 2, 2017
International Research Ethics Education and Curriculum Development Award (R25)	http://bit.ly/Ethicsop	May 18, 2017
International Bioethics Research Training Program (D43)	http://bit.ly/EthicsTrainingop	May 18, 2017
Global Infectious Disease Research Training Program (GID) D71 D43	http://bit.ly/GIDplan http://bit.ly/GIDtrain	July 27, 2017 July 27, 2017
Infrastructure Development Training Programs for Critical HIV Research at LMIC Institutions (G11)	http://bit.ly/FOGg11	Aug 23, 2017
Planning Grant for Fogarty HIV Research Training Program for LMIC Institutions (D71)	http://bit.ly/FOGD71	Aug 23, 2017
Fogarty HIV Research Training Program for LMIC Institutions (D43)	http://bit.ly/FOGg11	Aug 23, 2017
Mobile Health: Technology and Outcomes in Low- and Middle-Income Countries (R21)	http://bit.ly/MhealthR21	Aug 31, 2017

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

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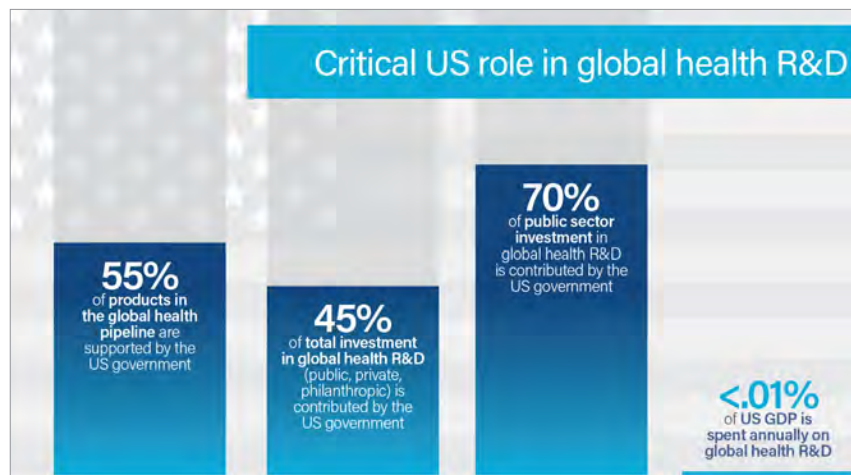
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Analysis shows return on investment for global health R&D



Research and development for new health technologies are essential to solving the world's greatest global health challenges, according to the Global Health Technologies Coalition (GHTC). A set of infographics available to download on the organization's website illustrates the impact of global health R&D investments, the funding and pipeline of products for neglected diseases, and the ongoing need for development of new technologies.

Support for R&D has a multiplier effect, the GHTC notes, not only saving and improving lives, but also reducing costs, encouraging economic growth and enhancing global security. "Investment in global health R&D drives job creation, spurs business activity and benefits academic institutions: nearly 64 cents of every U.S. dollar spent on global health R&D goes directly to U.S.-based researchers," the website reports.

RESOURCE

Website: www.ghtcoalition.org/r-d-facts