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

Moscow talks further US-Russia scientific collaboration

By Steve Goldstein

Moscow was the setting for two significant global health events this spring. The first was a planning meeting for the U.S.-Russia Scientific Forum, followed by the First Global Ministerial Conference on Healthy Lifestyles and Noncommunicable Disease Control.

The Scientific Forum will promote and facilitate broader research collaboration in the biomedical and behavioral sciences between the U.S. and Russian scientific communities, with the goal of improving public health. The focus of the joint research activities will be disease control, treatment and prevention, clinical and translational research, regulatory science and the development of new health technologies.

An agreement establishing the Forum was signed by Fogarty Director Dr. Roger I. Glass and Professor Anatoly Grigoriev, vice-president of the Russian Academy of Sciences (RAS). The first session of the ongoing Forum is scheduled for Nov. 16-18 in Moscow.



Photo by Dr. Susan Shurin/NHIBI

An agreement establishing the forum was signed in Moscow by Fogarty Director Dr. Roger I. Glass and Vice-President of the Russian Academy of Sciences Anatoly Grigoriev.

"We are excited to develop a joint research agenda based on common interests that will stimulate U.S.-Russian scientific collaborations and generate discoveries to

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GHI administrative supplements available

Fogarty, along with three other NIH institutes, is soliciting applications for one-year administrative supplements to active NIH international research or research training grants in support of the Global Health Initiative and other health interventions focused on the health of women and girls and/or their role in the improvement of health.

These supplements are intended to be used for planning for future grant applications either to other NIH institutes or other government agencies—particularly those engaged in the GHI—or to outside international research funding entities.

Fogarty expects to award about \$1 million during fiscal year 2011, plus additional funding from the other institutes and centers participating. Requests must not exceed \$40,000 in direct costs.

The proposed research should advance the health of women and girls, be host-country driven, sufficiently oriented toward implementation science and encompass as many of the GHI principles as possible.

Notice link: <http://1.usa.gov/mltxP>

FOCUS



Trauma and injury burden young, poor

- Preventing agricultural injuries in China
- Guatemala tries to overcome a legacy of violence
- Slowing the road accident toll in Ghana

Read more on pages 10 - 13

Mexican flu study by Fogarty supports social distancing

Periods of mandatory school closures and other social distancing measures reduced influenza transmission by about one-third in Mexico during the spring 2009 pandemic. The research was carried out by Fogarty scientists and published in *PLoS Medicine*.

Social distancing interventions can be implemented during unusual infectious diseases outbreaks and include school closings, shuttering of movie theaters and restaurants, and the cancellation of large public gatherings. Mexico implemented a nationwide mandatory school closure policy during an 18-day period in late April and early May 2009. The study was led by Gerardo Chowell, Ph.D., a Fogarty investigator and faculty member at Arizona State University, Tempe. His team provides the first comprehensive epidemiological description of the age, geographical and severity patterns of the 2009 pandemic in Mexico.

The authors applied mathematical modeling to influenza surveillance data compiled by a large private health system, the Mexican Institute for Social Security, which covers 40 percent of the population.

A three-wave pandemic profile was identified throughout Mexico during 2009. The initial wave occurred in spring in the Mexico City area. A second wave was noted in summer in the southeastern region, with a third wave following in the fall.

The hardest hit were the very young, not the elderly who are typically at high risk for influenza. There were a few cases reported among seniors during the pandemic period, but the most severe influenza-related infections were seen in those 5 to 14 years old and infants.

"We believe this study has implications for improving preparedness plans in future pandemics," said Chowell. Noting that, in a previous influenza pandemic in the 19th century, the majority of deaths occurred two years after the initial wave, he emphasized that "we must remain vigilant and continue to monitor the circulation and health burden of the pandemic A/H1N1 and co-circulating influenza viruses in the coming years."

Full study: <http://bit.ly/ieYgiG>

Smoking ban in China follows Fogarty-supported work

Photo by Curt Carnemark/World Bank



The world's largest consumer of cigarettes has banned smoking in enclosed public places, marking a significant victory for two Fogarty grantees who designed intervention programs.

China's ban, which went into effect May 1, includes hotels, restaurants, theaters and waiting rooms at railway stations and airports, among other enclosed places. The regulation also bars cigarette vending machines in public places.

The owners of public locations are also required to display conspicuous non-smoking signs and carry out promotional activities to warn people about the dangers of smoking.

According to WHO statistics, one of every three cigarettes consumed worldwide is smoked in China and a staggering 3,000 Chinese die every day from smoking related causes. China has more than 300 million smokers and more than 700 million people are routinely exposed to secondhand smoke.

Fogarty grantees Dr. Jonathan Samet and Dr. Teh-wei

Hu have pursued methods of curbing smoking in China. Dr. Samet, director of the Johns Hopkins Institute for Global Tobacco Control, used support from Fogarty to collaborate with the Chinese Academy of Medicine to design an intervention program to reduce environmental tobacco smoke exposure at home.

Samet's Fogarty-supported work in China first centered around interventions and capacity building, and the grants built upon long relationships he had formed with skilled Chinese researchers.

"I think it's a good step forward and let's hope it's put into force; that's what's critical," Samet said. "It will be very interesting to see what happens in the rural areas."

In another Fogarty-supported study, Dr. Hu and his colleagues from the University of California, Berkeley, and other UC campuses examined the economic costs of smoking, the impact of a tobacco tax and the cost effectiveness of tobacco control interventions. Their work demonstrating the results of a tobacco tax enabled Chinese health officials to endorse national policy changes regarding tobacco sales.

Project profile: <http://www.fic.nih.gov/News/Examples/Pages/tobacco-china.aspx>

Cookstove workshop targets research gaps

A large majority of the world's households use solid fuel for cooking. Inefficient cookstoves and the air pollution they produce have been linked to low birth weight, pneumonia, lung cancer, blindness and cataracts, cardiovascular disease and other chronic ailments. What is less known is that women and girls who search for fuel risk violence and death from human predators.

A two-day workshop organized by NIH, entitled "Health Burden of Indoor Air Pollution on Women and Children in Developing Countries," brought together research and policy experts to hammer out research priorities to reduce the health risks of cookstoves to women and children. Merely building a better cookstove is not sufficient; real progress must account for available fuels, the cooking needs of the families and ease of repair so that the device is used and not stuffed with flowers and placed outside the dwelling.

"This is the NIH contribution to the larger Global Alliance," explained Dr. John Balbus of the National Institute of Environmental Health Sciences (NIEHS). Balbus, along with National Institute for Child Health and Human Development Associate Director Dr. William Martin and Dr. Yvonne Njage of the Fogarty International Center, organized the workshop. "And what we're trying to do here is tee up the most critical research questions that we really have to answer in the short term, that we really have to invest the funds in now in order to ensure the success of the larger Alliance."



Pilar Nores de Garcia, the first lady of Peru, addressed the conference.

Cookstove-related deaths are estimated at two million annually—twice as many as from malaria. WHO lists indoor air pollution (IAP) from primitive household cooking fires in developing countries as the fourth leading cause of morbidity and mortality. Typically, the poor use biomass (wood, crop residues or dung) or coal as fuel to cook and heat their homes resulting in high levels of pollution. Women and children are primarily affected, as IAP is a major risk factor for development of acute pneumonia in children under five and, in adult non-smoking women, a cause of diseases as varied as blindness from cataracts to chronic obstructive pulmonary disease to lung and laryngeal cancer.

Although there have been decades of efforts to use improved stove technology to reduce IAP, the success of these efforts has been limited due to a lack of awareness of



Photo by Curt Carnemark/World Bank

The workshop recommendations will guide the research priorities to be announced by the Global Alliance for Clean Cookstoves.

the problem, limited research into the health risks and the logistical challenges of solving a problem that affects almost three billion people.

Enter the Global Alliance for Clean Cookstoves, led by the U.N. Foundation, a public-private partnership, whose mission is to save lives, improve livelihoods, empower women and combat climate change by creating a thriving global market for clean and efficient cookstoves in the developing world.

The goal is to replace 100 million cookstoves by 2020 as a way of significantly improving health among the poor. "You can't change your genes, but you can change the environment," said NIEHS Director Dr. Linda S. Birnbaum. The Alliance hopes to raise about \$250 million, with the State Department coordinating the U.S. government's participation.

NIH led the workshop to present the state of the science on the health impacts of IAP and to determine critical research gaps that, if addressed, will foster effective strategies to reduce the impact of IAP and improve health for impoverished women and children. Funding for the workshop was provided by NIH, the State Department and the Environmental Protection Administration.

The workshop outcomes will feed into the recommendations of the Health Working Group, one of nine such groups that will contribute to a list of research priorities to be announced by the Global Alliance in early summer. Nine white papers on research topics ranging from cancer to women's empowerment will be released in the coming months.

US – Russia science cooperation, NCDs highlight Moscow talks

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Photo by Yuri Kozyrev/World Bank



The U.S.-Russia Scientific Forum will develop a joint research agenda to improve health in both countries.

improve the health of people everywhere,” said Dr. Glass. “By encouraging the free flow of information we hope to share best practices in biomedical research and speed the process of discovery.”

Said Grigoriev: “We anticipate that the Forum will emerge as a medium that links together the best intellectual powers strongly committed to make life better.”

The planning meeting was facilitated by the Foundation for the National Institutes of Health (FNIH), in partnership with NIH, the Institute of Medicine and the Russian Academy of Sciences of the Russian Federation. FNIH established the Forum with a \$1.27 million gift from Eli Lilly and Company as the founding private partner.

FNIH has engaged with a wide range of American and Russian-based companies—including many leading pharmaceutical firms—interested in broader bilateral collaboration in behavioral and biomedical research.

mHealth gaining, but still limited to small projects

The vast majority of countries surveyed report some use of mobile phones to support health activities, but most of these mHealth efforts are limited in size and scope, according to a new WHO report.

Two-thirds of the 112 countries responding reported between one and three mHealth activities. The survey, “mHealth: New Horizons for Health Through Mobile Technologies,” analyzes data by 14 mHealth activity types. The four most frequently reported initiatives

WHO report on NCDs released at conference

WHO and the Russian Federation organized the Ministerial Conference in order to raise political awareness and commitment on the prevention and control of noncommunicable diseases and to strengthen international cooperation in the run-up to the U.N. summit on NCDs in September.

Diabetes, heart disease and cancer cause more deaths worldwide than all other diseases combined, according to a WHO report.

The first WHO “Global Status Report on NCDs” said that chronic diseases accounted for 63 percent of the 57 million deaths worldwide in 2008.

Diabetes, heart disease and cancer cause more deaths worldwide than all other diseases combined, according to a WHO report. This is true even in developing countries, where communicable diseases such as malaria and HIV/AIDS are now surpassed by NCDs in every region except Africa.

“The good news is that these diseases are preventable,” said WHO Director-General Margaret Chan. “People don’t have to suffer ... don’t have to die.” Her top targets are tobacco, sugar, fat and salt, followed closely by alcohol. NCDs, she said, place a huge economic burden on families and low- and middle-income countries in particular.

If no action is taken, WHO predicts that chronic diseases will rise by 15 percent worldwide in the next decade, with Africa, the Middle East and Southeast Asia to be hit the hardest.

WHO report: <http://bit.ly/fNgj8y>
U.S. Russia Forum: <http://bit.ly/meH2U1>

were health call centers, emergency toll-free telephone services, managing emergencies and disasters and mobile telemedicine.

Report: www.who.int/goe/publications

The mHealth Summit, organized by the Foundation for NIH, will be held Dec. 5-7, 2011. Abstracts and presentation proposals are due by July, 8, 2011.
Website: www.mhealthsummit.org

Q & A: Dr. Alex Dehgan

Dr. Alex Dehgan is the science and technology adviser to the USAID Administrator. A biologist by training, Dehgan has also worked on science diplomacy issues with the Muslim world at the Department of State and on biodiversity conservation issues in Afghanistan with the Wildlife Conservation Society. During a recent visit to Fogarty, he proposed a new working group to develop joint projects for collaboration between USAID and NIH. Here are some of his comments:

Photo courtesy of USAID



A trained biologist, Dehgan's career has required deep immersion in global issues.

You're the first scientific adviser at USAID in 20 years. What role does science have in development?

USAID is a technical agency. Science is necessary, not necessarily sufficient, but necessary for what we do. We use science as a way of understanding problems that we face or to achieve the solutions to the problems that we face, so part of my mission has been restoring science to its rightful place. The basic strategy is threefold: a catalyst to incur change within the agency, a cheerleader for those doing good things for science and a customer service agency, to help people solve problems, being of benefit to people.

Can science further global health diplomacy?

We're trying to make opportunities to leverage scientific expertise to benefit people overseas. The challenges we face are the same challenges faced by the developing countries. If we want to affect national security we have to use all the tools of our greatness. We need to harness our creativity, not only to bring out the best in Americans but the best in the developing world. There are great benefits to investment in global health because they are investments in development. They help strengthen fragile and failing

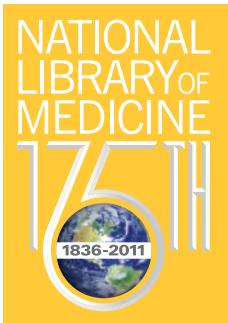
states. They promote economic advancement by reducing the burden of disease. Also, we're aiming to build scientific capacity for people in developing countries so they may solve their own problems. This serves a diplomatic function but also a development function. And development is the foundation upon which you can build better political relations. It all starts with science.

What benefits could there be from international research collaboration?

Only partnerships are able to take on one of the biggest health challenges we have. The cost of disease affects all countries; it doesn't respect political boundaries. And in an increasingly interconnected world, it affects us at home as much as it affects developing countries abroad. Improving the health of those in Madagascar can also help improve the health of people in Oklahoma. We must leverage the great ideas from developing countries to find new solutions. Fundamentally, we must connect the unconnected. How do we bring the tools of better health to people whether they're in a hospital or a hut.

What are your goals at USAID?

Through President Obama's Global Health Initiative we're trying to work more productively with our sister agencies. We are in discussions with NIH and CDC about how we can work better together to bring research to the field. One example is the Helping Babies Breathe program with USAID, the National Institute of Child Health and Human Development and other partners. But we're also trying to develop partnerships with the Agriculture Department and the Environmental Protection Administration because the problems of global health involve climate change and nutrition. We also want to leverage the great resources in academia. I've told the USAID Administrator, "I've seen the future of development and we're not in it." So we need to take advantage of the innovations coming out of universities. We need tools to help fight disease, no matter where it is, and to empower people around the world to join that fight.



National Library of Medicine puts 175 years in the books

"We must develop a communications system so that the miraculous triumphs of modern science can be taken from the laboratory and transmitted to all in need." — Senator Lister Hill, 1965

It predates the birth of Freud and is the largest repository of its kind: The National Library of Medicine (NLM) marks its 175th anniversary this year. It was founded in 1836 as the library of the U.S. Army Surgeon General and now, as part of NIH, is the world's largest library of the health sciences and collects, organizes and makes available biomedical science information to scientists, health professionals and the public. Its electronic resources are used by millions of people around the world.

Facts about the NLM:

- The Library has more than 17 million items in its collection, 150 languages are represented and there are more than 50 miles of bookshelves underground. NLM has a rich collection of rare and historic items. The oldest item in the Library's collection is an 11th century Arabic manuscript.
- NLM has more than 230 databases and online resources that are free, easy to access and available to anyone with Internet access. A growing number of the library's resources are available on mobile devices.
- NLM has made it easy to find and search biomedical literature. Index Medicus, a groundbreaking index of medical journal articles first published in 1879, evolved into MEDLINE, the first marriage of online search technology and nationwide telecommunications, in 1971. In its current form, PubMed/MEDLINE is the most frequently consulted scientific/medical database in the world.
- NLM established librarian training programs and the National Network of Libraries of Medicine in the late 1960s to equalize access to the biomedical literature across the United States—regardless of geographic location, socioeconomic status, or level of access to computers and telecommunications.
- NLM is home to the National Center for Biotechnology Information (NCBI), established in 1988 as a national resource for molecular biology information. Today, NCBI is an indispensable international repository and software tool developer for genetic sequences and other scientific data, and a pioneer and leader in linking data and published research results to promote new scientific discoveries.

- NLM began intensive development of Web health information services for the general public in 1998 with the release of MedlinePlus.gov. Now available in English and Spanish, MedlinePlus is one of many NLM consumer health information products also available on mobile devices such as smartphones.
- NLM released ClinicalTrials.gov in 2000. It is now the world's largest source of information about clinical trials recruiting for patients and healthy volunteers, and also provides summary results of some trials long before they appear in the published literature.
- NLM began providing toxicology and environmental health data for use in emergency response and disaster management in the mid-1960s. Today, it produces information services to help health professionals, disaster information specialists, and the general public cope with emergencies and disasters.
- NLM's international partnerships strengthen and expand global access to the world's health literature. Targeting another area of opportunity, NLM played a critical role in the Multilateral Initiative on Malaria, leading the effort to enhance Internet connectivity and access to medical literature for malaria researchers at 27 sites in 14 African countries.

Special programs and resources at NLM

NLM is marking the occasion with a number of special programs in support of its mission. Among these are symposiums on the future of clinical trials, training for journalists in the use of NLM resources and research and presentations on various grant mechanisms.

For details on NLM's history, its programs and services and its anniversary year calendar, visit the anniversary website at www.nlm.nih.gov/175

Links for library users and researchers:

National Library of Medicine Homepage — www.nlm.nih.gov/
 PubMed — www.ncbi.nlm.nih.gov/pubmed
 ClinicalTrials — www.clinicaltrials.gov
 MedlinePlus — www.medlineplus.gov
 MedlinePlus en español — www.medlineplus.gov/espanol



African journals partnership moves forward

An NIH effort to improve the quality of African medical journals and enable global distribution of their research publications is having an impact. Known as the African Medical Journal Editors Partnership Project, it's a joint venture of the National Library of Medicine and Fogarty, and is administered by the Council of Science Editors. Its main goal is to strengthen African medical journals to the point they can gain acceptance to MEDLINE, NLM's powerful bibliographic database that contains over 18 million references to journal articles in life sciences, used by researchers worldwide.

Three participating journals—*The African Journal of Health Sciences*, the *Malawi Medical Journal* and *Mali Medicale*—have been accepted to MEDLINE and the *Ghana Medical Journal* is expected to follow soon. Two more recent additions to the program—the *Medical Journal of Zambia* and the *Ethiopian Journal of Health Sciences*—are benefitting from lessons learned.

"My hope is that the older journals would be actively mentoring the newer ones," said Julia Royall, the initiative's co-founder and NLM's chief of international programs. "The question is how to make the best use of the journals that have gained experience and knowledge and also encourage their own self-sustainability."

NLM and Fogarty also plan to share best practices with the Medical Education Partnership Initiative participants, which are working to improve medical education in sub-Saharan Africa with U.S. government support. One of MEPI's goals is to increase the number of African scientists who are senior authors on research publications.

"Getting MEPI research into these African journals would be exciting," Royall said. "I'm also hoping to build bridges with our growing network of medical librarians in Africa." Fogarty's MEPI program officer, Dr. Letitia Robinson, will help support the journal partnership program as co-founder Dr. Karen Hofman retires to South Africa this summer.

The project's overall goal is to encourage wider dissemination of African health and medical research that is currently published in African journals but is not widely available to clinicians who could benefit from it.

From initial site visits, which assessed equipment and staffing needs, the effort has included the training of writers and editors, technical production issues and sustainable funding schemes. Through collaboration with partner journals in the U.S. and U.K. (see box) and the

Council of Science Editors, the African publications have improved considerably.

At the recent annual meeting at NIH, the African editors joined with project staff, the CSE and their partner journals to assess progress and need, discuss ways to improve visibility and plans to stage workshops to augment editorial and publishing skills. Open access was a hot topic and James K. Tumwine, editor of *African Health Sciences* in Uganda, was a passionate advocate: "When you make your journal open, you reap a big harvest. Put everything in there! In the future, they'll be quoting those articles. Open access equals success."

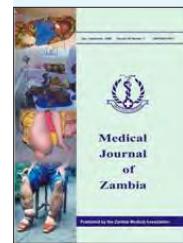
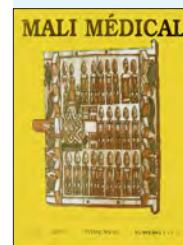
The journal capacity building effort grew out of an earlier project, the Multilateral Initiative on Malaria, intended to enhance Internet connectivity and access to medical literature for malaria researchers in Africa.

Royall marvels at how far electronic communication and the dissemination of medical research have come. Her fervent desire is that the AJPP becomes a turnkey project, one that NLM and Fogarty can hand off and know that its future is secure.

AJPP website: www.ajpp-online.org
 International resources: <http://www.nlm.nih.gov/services/international.html>

Medical Journal Partnerships

- *African Health Sciences and BMJ*
- *Ghana Medical Journal and The Lancet*
- *Malawi Medical Journal and JAMA*
- *Mali Medical and Environmental Health Perspectives*
- *Ethiopian Journal of Health Sciences and the Annals of Internal Medicine*
- *Medical Journal of Zambia and the New England Journal of Medicine*



Multiplying the impact of reproductive research

By Steve Goldstein

Dr. Elizabeth A. Bukusi is not the first child of a Kenyan parent to stand at a Capitol Hill podium with the seal of the U.S. Senate. But it's doubtful that even former Sen. Barack Obama had an audience more rapt as she recounted the story of a Kenyan girl named Atieno who died during childbirth of a postpartum hemorrhage. She was 15.

"Does research make a difference? I think it might," she said. "And it should be able to make a difference for someone like Atieno and a child she might bear." In order for women like Atieno to have a choice, there must be support for scientific research and capacity building. "I'm a Fogarty scholar and part of my training was in the U.S.," she told the group, "and because of that I need to give back to people in my country who have not been able to get such training."

For Bukusi, advances in global health research mean something tangible: saving lives. In her work in Nyanza in western Kenya, where she is the chief research officer and deputy director of research and training at the Kenya Medical Research Institute (KEMRI), she sees the need for better drugs, vaccines and diagnostic tools every day—especially with 30 percent of all pregnant women testing HIV positive.

"There is hope," Bukusi said. In her region—at the heart of the epidemic—she is responsible for a program funded by the President's Emergency Plan for AIDS Relief that's providing care for about 100,000 people. "Women can come to the clinic, they can get treatment and they can prevent their children from getting HIV," she said. "The challenge is building capacity and expanding care."

One of Bukusi's favorite phrases is "multiplier effect," and she is its best exemplar. The daughter of an accountant, she trained to be a pediatrician, but when the "flame of HIV" began burning in her country in the late 1980s, she switched to reproductive health. At the University of Nairobi, she earned degrees in obstetrics and gynecology.

Thanks to Fogarty's AIDS International Training and Research Program (AITRP), Bukusi completed her Ph.D. at the University of Washington, where she'd also received her MPH. During her groundbreaking dissertation study on the male factor in bacterial vaginosis, she and UW professor Dr. King Holmes successfully applied for a Fogarty International Research Collaboration Award (FIRCA) grant to support her work.



Photo courtesy of KEMRI

Fogarty grantee Dr. Elizabeth Bukusi leads team building exercises to instill a sense of mission among research trainees in Kenya.

In the early 1990s, Bukusi met an American AITRP scholar named Craig Cohen who had studied and worked in Kenya and they began a research partnership that's lasted 18 years. With Cohen, she co-directs a Fogarty-funded infectious disease training program to build capacity in East Africa. Last year, she and Cohen, now an ob-gyn professor at the University of California, San Francisco, received a Fogarty grant to restructure the ethical review process at KEMRI.

"I was concerned that research regulation wasn't being done as well as it should, causing bottlenecks that created delays," she explained. The work supported by the grant led to her appointment as deputy director.

Bukusi, who was in Washington, D.C. to appear at a conference sponsored by the Global Health Technologies Coalition, travels widely to speak about reproductive health issues in sub-Saharan Africa and her goal of making a difference in the lives of women.

So when Bukusi speaks to young medical students, she thinks of Atieno and the difference that research and capacity building may have made. Research is the key to the multiplier effect, she exhorts her students. "It may be a long time before you have an impact," she tells them, "but when it happens you will touch the lives of millions of people who may never know you by name, but you will have changed their lives dramatically."

A RAPIDD start to a model career

By Steve Goldstein

Math modelers don't usually get their feet wet or their boots muddy or spend time in the lab poring over virus samples. Dr. Juliet R. C. Pulliam of Fogarty's RAPIDD program is the outlier. So when there was an outbreak of Nipah encephalitis in Bangladesh while Pulliam was visiting earlier this year, she headed into the field. As she's fond of telling her students: "The real world is much messier than just dealing with equations!"

The real world is what the Research and Policy for Infectious Disease Dynamics program—RAPIDD—is all about. Managed by Fogarty's Division of International Epidemiology and Population Studies and the Department of Homeland Security, which provides funding, RAPIDD is designed to improve standards in infectious disease modeling to better inform policy decisions.

Mathematical modeling is widely misunderstood as a predictive tool. "The aim of modeling is not to precisely predict but to compare strategies, clarify assumptions and identify gaps in knowledge," said Fogarty senior scientist Dr. Ellis McKenzie, one of the founders and managers of RAPIDD. "So, if you're someone responsible for combating an outbreak it's a way of making more rational decisions about how the disease is going to act."

As Pulliam noted, modeling is used in every branch of science. But it is particularly important for infectious diseases because a lot of the available data are observational, and it's not practical to do experiments. "Models are a way of asking important questions without doing those experiments," she explained.

Pulliam is highly skilled in this discipline. Finishing up her three-year stint as a RAPIDD program fellow, she was in Bangladesh working with collaborators at the International Center for Diarrheal Disease Research when the Nipah outbreak occurred. Pulliam headed into the field and took stock of the toll: 28 cases—all of them fatal—with many tied to consumption of raw sap from date palm trees. As in previous outbreaks, the sap was likely contaminated by virus-carrying bats—the large flying fox—who use the sap as a food source.

What to do with the data? "One of the major questions is how transmissible the virus is and what are the conditions where we have to worry about it, other than just where infected bats are present," said Pulliam. She and her fellow researchers will analyze the data to estimate the basic

reproduction number of the virus, which is a quantity that is useful in determining how transmissible the virus is. To date, the value for Nipah transmission among people has been below one, so outbreaks are self-limiting.

Mathematical models can be used to assess which factors could increase the value above one—indicating the potential to produce large epidemics—and how likely this is under different scenarios.

Pulliam, who has a Ph.D. in ecology and evolutionary biology from Princeton University, has always been fascinated by viruses that jump species and has written several papers on the topic. McKenzie said she was an ideal candidate for the RAPIDD program. "She's able to go back and forth between theoretical work and doing the muddy boots work. You find people really good at one part but not at several aspects," he said.



Dr. Pulliam's research in Malaysia confirmed that virus-carrying bats were contaminating sap from date palm trees.

In the fall, Pulliam will leave Fogarty for a faculty position at the University of Florida in their new Emerging Pathogens Institute. Recently, Pulliam traveled to South Africa to instruct young African mathematicians in modeling of infectious diseases. She hopes it will give them a tool to address some of the challenges on the continent.

"There's a huge amount of passion in these students," she said. "They've experienced a lot of infectious diseases in their lives and now they realize they can use math to understand infectious disease spread."

Related publication: <http://bit.ly/kdXcZm>



FOCUS

Taking injury prevention to the next level

By Steve Goldstein

The world is, in a word, traumatized. Injuries, mainly from motor vehicles and weapons, are rapidly becoming the number one global health threat to children, young adults and developing nations. More than 830,000 children die each year from road crashes, drowning, burns, falls and poisoning. In any given year, about one out of every three people will be injured severely enough to seek medical care. Injuries affect people from all walks of life but are very disproportionately experienced by the poor, creating one of the greatest sources of global health inequity.



Traffic and weapons-related injuries are becoming the leading global health threat to children and young adults—mainly in developing countries.

Injuries are the largest contributor to disability in low- and middle-income countries (LMICs). People who die from injuries are, on average, more than 30 years younger than people who die from other leading causes. Injury is the leading cause of death from one to 44 years of age and the third leading cause of death overall in LMICs.

WHO reports that more than 90 percent of the world's injury deaths occur in LMICs and injury deaths per capita are three times higher in low- as opposed to high-income countries.

War fills newspaper headlines, but for every death due to war, there are three deaths due to homicide and five due to suicide, according to WHO. Worldwide homicides totaled nearly 500,000 in 2004, while one million suicides are reported annually.

Road accidents are the ninth leading cause of death in

the world and rank as the top cause of death for people ages 15 to 29. About 1.3 million people are killed annually and between 20 and 50 million people experience non-life threatening traffic-related injuries—mostly in developing countries. Road traffic deaths are predicted to increase by 83 percent in LMICs by 2020.

Yet these injuries are highly unappreciated as a global health threat. "There's a sense of fatalism among people that injuries are accidents and bad luck, after all, and what can be done to prevent them?" explained trauma expert Dr. Charles Mock. Because injuries so heavily affect individuals in their most productive years, the economic impact is substantial and further disadvantages LMICs. Yet injury is a highly preventable health threat. Injury prevention programs have been aptly equated with vaccines in terms of the protection they offer.

Fogarty's International Collaborative Trauma and Injury Research Training Program (TRAUMA) awards grants to conduct research training on the diagnosis, prevention and/or treatment related to injury and trauma in LMICs. It's the only program at NIH that provides support for trauma research and training in a global setting.

"The most important thing is to demonstrate that injury control works," said Dr. Mark Rosenberg, who helped found CDC's National Center for Injury Prevention and Control. "This is what can cause a paradigm shift."

Trauma and injuries are the number one cause of death among U.S. citizens abroad every year. There's a major need to improve trauma care and prevention in developing countries, which will reduce morbidity and mortality for Americans as well as others. U.S. universities collaborate with those in LMICs to enhance capacity in trauma prevention and care research with support from other institutes and centers at NIH.

"Trauma diminishes our quality of life," said UCLA's Dr. Gail Wyatt, a Fogarty grantee who has a trauma research program in South Africa. But the tide may be changing as research programs show gains.

"There is better understanding that injury is preventable and treatable and you can rehabilitate injured people to become productive citizens again," said grantee Dr. Beth Ebel, who leads a program in China.

Seeds of progress in Chinese agriculture

The bucolic nature of farming masks a harsh byproduct: farmers get hurt, sometimes very badly. In China, 700 million farms are worked mainly by the youngest and oldest residents of rural communities, as the 20- to 40-year-olds have migrated to urban areas seeking higher wage employment. Injuries ranging from back pain to deep cuts, contusions, broken and even lost limbs have become epidemic among the so-called "left behind" population—especially as heavy machinery replaces hand tools.



Injuries have mushroomed among Chinese farm workers with the advent of heavy equipment and the departure of able-bodied workers to the cities.

A 2004 epidemiologic study of 200,000 farm families in rural China yielded an annual estimate of more than 590,000 injury deaths and close to 3.5 million permanently disabled individuals. The problem is heightened because trauma care systems are not as advanced in China as in other developing nations.

Slowly, change is coming to the country once known as the Middle Kingdom. Beginning in 2007, Fogarty's TRAUMA program funded the USA-China Agricultural Research Training Project to provide training to Chinese researchers on issues critical for reducing agricultural injuries and to expand collaborative activities between Chinese injury control research centers and researchers.

More than 80 mid-level and senior researchers have been trained since the program began. Additionally, the project has hosted seven Chinese researchers at the collaborating U.S. institutions: the Colorado Injury Control Research Center and the Center for Injury Research and Policy at Nationwide Children's Hospital in Ohio.

The Fogarty trainees have published studies on various risk factors of agricultural injuries related to alcohol

consumption, sleep patterns, number of pesticide applications and others. They have also investigated other trauma topics including adolescent drowning deaths and child pedestrian injuries. One study of hospital admissions among children found that four percent were pedestrians hit by cars—a number that is rising.

Dr. Loran Stallones, director of the Colorado center, said a number of researchers trained through the program have gone back to China and created injury research programs in their own institutions. "As we were doing the training, it became clear that while people were interested in agricultural injury, they were also interested in pursuing the broader subject of injury training," Stallones said.

One trainee, Xujun Zhang, founded a new injury center called the Southeast University Injury Prevention Institute in Nanjing. Stallones and her fellow principal investigator, Dr. Huiyun Xiang of Nationwide Children's Hospital, are both helping to develop the new center. Stallones also said an annual injury conference has been established in China, which will assist networking and growth of sustainable research programs.

"The opportunity to do this kind of work is only available through Fogarty," Stallones said. "When you really want to partner with an international entity, it's very difficult to do through any other source."

As part of their capacity building, the project has also offered training sessions in human research ethics and trainees have set up their own institutional review board. The project has also facilitated the publication of Chinese scholarship into English-language journals so the authors are recognized as active researchers.

Long-term goals include reduction in the number of injuries and better planning for the changing training needs as agriculture evolves from small plots and hand tools to larger-scale, mechanized production. Another goal is to create a network of researchers who are constantly in touch with each other and apprised of the latest publications in agricultural injury prevention.

A trainee from Tongji, Dr. Junxin Shi, said the project "plants numerous research seeds in China. It also builds a friendship bridge between China and the U.S.A." From these seeds, it is expected a large network of injury research will grow.

Developing injury research in Guatemala

In 2008, Houston heart surgeon Dr. Rafael Espada became vice president of his native Guatemala. One of his first acts was to create a national commission on trauma, to focus on injury prevention—which he believed was a major problem facing his country.

Among the organizations invited to be part of the commission was the University of Pennsylvania, which has almost a century-long relationship with Guatemala, mainly through archaeology and anthropology. The commission's charge was injury prevention, particularly on the reduction of the impact of violence, and the creation of a hospital trauma program.

That relationship led to the development of a research proposal. Earlier this year, Fogarty awarded \$900,000 to Penn over five years as part of an effort to address the increasing toll of trauma in the developing world. Funding from the International Collaborative Trauma and Injury Research Training Program—along with matching funds from the Guatemalan government and Penn—will support innovative training focused on treating violence and injury in Guatemala.

Despite a very large burden of injury and violence—some of it lingering from a 36-year civil war that ended in 1996—the country has a major shortage of scientists equipped to conduct rigorous and collaborative research in trauma and injury in Guatemala.

"Guatemala is only one country removed from the U.S. border," said principal investigator Dr. Charles Branas, a Penn professor of epidemiology. "Central America has been highly overlooked in terms of its burden of injury. Guatemala City is one of the most violent places on earth. Roads in Guatemala are just developed enough so people can drive at high speeds, with no corresponding development of safety measures."

Working in collaboration with Francisco Marroquin University and the University of San Carlos in Guatemala, Branas and his colleagues will offer courses in injury epidemiology, protocol design, research ethics and others to build capacity in academic research and policy expertise in trauma and injury. Branas said that Espada is supporting their goal of influencing important public health policies for Guatemala.

As Branas has stated, "Injury prevention programs have been aptly equated with vaccines in terms of the protection they offer."



Photo courtesy of Dr. Charles Branas

Fogarty's trauma program is supporting an effort to combat violence in Guatemala, along with traffic injuries and alcohol-related trauma.

Another goal is to get research published in international scientific journals. "A handful of Guatemalan-led scientific publications in places like *The Lancet* would be a great accomplishment," said Branas.

The overall goal is to reduce the burden of injury in Guatemala. Branas said one model is Sweden's "Vision Zero" program, which attempts to reduce permanent disability or death resulting from road injury to as close to zero as possible by increasing safety and improving trauma care.

The program envisions the training of 11 independent investigators at Penn, who then will return to Guatemala to complete their master's degrees. Over the course of three years, some 30 associate investigators will be trained at the two universities by Penn faculty.

Branas said the capacity building goals of his program "are merely an extension of Fogarty's mission." He added that it was significant for the trainees that the U.S. government is involved. "Having the NIH be part of this is very important to them," Branas explained.

Fogarty Trauma Program Renewal Awards

International Collaborative Trauma and Injury Research Training (Pakistan), Johns Hopkins

The UCLA South African Trauma Research Training Program
University of California, Los Angeles

International Collaborative Trauma and Injury Research and Training Program (Serbia, Bosnia-Herzegovina, Romania)
University of Iowa

Injury Prevention Training in Egypt and the Middle East
University of Maryland

Strengthening Injury Control Research in Ghana and West Africa, University of Washington

Note: All awards made in Spring 2011 for five years of funding

Driving Ghana to a safer future

James Damsere-Derry began his research career sitting on the side of Ghana's busiest highway, pointing a radar gun at passing traffic. He found that well over 90 percent of drivers were speeding and simply ignoring the 30 mph speed limits in small towns and villages close to the Accra-Kumasi road.

As economic conditions improved in Ghana, so had its roads—triggering faster driving speeds through settlements. Crossing the roadway accounted for more than 70 percent of all pedestrian deaths—a toll augmented by hawkers selling wares along roadways.

Today, thanks to a grant from Fogarty's Trauma and Injury Research Program that enabled Damsere-Derry to train at the University of Washington, he is working at the Building and Roads Research Institute (BRRI) in Ghana where, as a leading proponent and researcher of speed control, he has helped increase public awareness and overseen the installation of speed calming measures along the heavily traveled highway.



Fogarty's trauma program trainees have documented Ghana's road injury issues leading to seat belt laws and other measures.

UW's Dr. Charles Mock, who along with co-principal investigator Dr. Beth Ebel, has directed the grant, said that seven years of capacity building has paid great dividends for the West African nation.

"In most of Africa and the developing world generally there is an explosion of disability from road traffic crashes as an ongoing injury problem," said Mock. "We've placed key people at institutions like BRRI and the National Road Safety Commission, and one of our graduates is working on surveillance of injuries at the Komfo Anokye teaching hospital at Kwame Nkrumah University of Science and Technology."

The program offers long-term training of one to three years at UW for two trainees per year and shorter attachments of several weeks geared to specific skills for larger groups. They also offer week-long courses on injury control in Ghana. The latter program included a one-day workshop on road safety and trauma care attended by 25 members of the Ghanaian parliament.

"These lawmakers were very prominent people," said Mock, "and the workshop seems to have increased the political will and understanding of road safety and trauma care issues."

New laws mandate seat belt use after a survey by Damsere-Derry and others revealed fewer than one in five drivers used belts and only five percent of front-right passengers did. Other new requirements include driving tests for licenses and helmets for motorcyclists.

At a recent international conference, Ebel was gratified to hear Ghana described as a model country for its ability to gather data to show how injury is affecting people in the developing world. "We now have decent data to guide policy and that's really exciting," Ebel explained. "Road injury is not well counted and Ghana now has one of the best information systems. That's how we know the burden of injury is about four percent of GDP in Ghana."

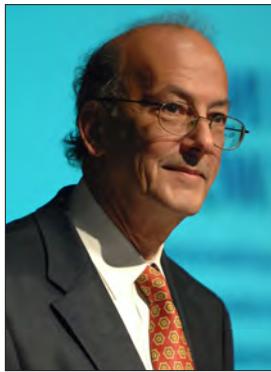
Ebel and Mock have also been working on data collection to impress upon trainees the importance of tracking the causes of injury. "Before we started working here, the leading diagnosis of an injury fatality was 'brought in dead,'" Ebel recalled.

Mock, who has 30 years of experience of working with Ghana, said that Fogarty's trauma program "was the first major investment in injury control research ... it really helped put injury and injury research on the map globally, the emphasis is where it ought to be on institutional capacity building and research for policy and practice changes, but the problem is so big it warrants more in the way of investment."

Damsere-Derry's work and that of others in important Ghanaian institutions, as well as their publications in scientific journals, have led to heightened awareness of the road injury problem and its economic consequences, the importance of good data collection and improvements in trauma care. "There's a much better understanding that road injury is preventable and treatable," said Ebel.

Back in the U.S.S.R. Russia

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



In 1971, when I was at the Harvard School of Public Health completing my M.P.H., Dave Rall, the director of the National Institute of Environmental Health Sciences asked me to help out on a project that resulted from an agreement between President Richard Nixon and then-Soviet leader Leonid Brezhnev. Rall had heard I'd taken Russian in college, though I was far from fluent. Still, when the opportunity arose for a seven-month stint in the U.S.S.R., I readily agreed and traveled to Moscow to work at the Sysin Institute of General and Municipal Hygiene, researching standards for environmental pollutants, while residing in a classic Soviet building called the Hotel Peking.

It was a fascinating time: it was the middle of the Cold War with very few Americans in the country. The atmosphere for collaboration was not good, but I met some wonderful people.

During my latest visit in April, I took note that the Hotel Peking is still there, but much has changed. Moscow is really a beautiful, developed and exciting city. The Russian Academy of Sciences has a brand new building that's state of the art. The renovation of all the little churches around the city is striking and those onion-shaped domes add a unique quality. Even Domodedovo airport has been made new again.

The other thing that's new is the spirit of cooperation and collaboration. Twenty years after *perestroika*, Russia is now investing anew in research. The difficulties with the economic transition after the Soviet Union was dissolved caused many scientists to leave and many of their institutions were decimated. Now they're beginning again to invest in research and training in a big way, so it provides an opportune moment to rekindle relations and take advantage of their scientific brainpower to work in collaboration with the Russians.

At the meeting to plan the U.S.-Russia Forum for Biomedical Research, we were hosted by the Russian

Academy of Sciences, with the Minister of Health and the head of the Academy of Medical Sciences joining in to try to encourage these three independent agencies to work together to promote scientific collaboration. And this was aided by the Foundation for NIH, which brought together a tremendous group of private companies, which all have an active interest in promoting research in their specific fields. So we had a day of meetings to organize the Forum and then a day of visits to different Russian institutions that may serve as partners for future collaboration.

Twenty years after perestroika, Russia is now investing anew in research . . . an opportune moment to rekindle relations and take advantage of their scientific brainpower to work in collaboration with the Russians.

We also attended the meeting hosted by WHO on noncommunicable diseases and healthy lifestyles. Both the U.S. and Russia share huge problems with NCDs, with smoking, obesity, addiction and alcohol as well as problems with multiple drug resistant TB. This presents other opportunities for working together. Russia has done some interesting work on new drugs and stem cell research and they're trying to begin a major initiative for drug discovery and development. So it's really an excellent time to explore new avenues of cooperation.

And Russia is no longer a 'recipient' country; they see themselves as donors. Thus, they will fund their part of the research that we do together. Their goal is collaboration, not financial support.

After the group led by Drs. Bernard Lown and Yevgeny Chazov won the Nobel Peace Prize in 1985, there was joint research in the field of cardiovascular disease with the U.S. But that hasn't been so in other fields and I think that's going to change.

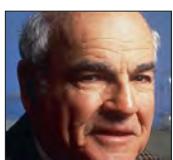
Like those rejuvenated onion domes popping up all over Moscow, the landscape of scientific collaboration between the U.S. and Russia is undergoing its own *perestroika*.

PEOPLE



Fogarty scholar Halperin dies

Dr. Anthony L. P. Halperin, a 2009-10 Fogarty International Clinical Research Scholar in Lima, Peru, died in April. After graduating the University of Pennsylvania Medical School in May, he was to begin a residency in radiology.



Nobel winner Blumberg dies at 85

Dr. Baruch Blumberg, a Nobel laureate for his work discovering the hepatitis B virus and developing a vaccine against it, died in April. Known as Barry, Blumberg spent most of his career at Philadelphia's Fox Chase Cancer Center. He served on Fogarty's Advisory Board from 1989 to 1993.



Former Fogarty acting director dies

Dr. Carl Kupfer, who directed the National Eye Institute from its inception in 1968 until 2000 and saw its budget grow from \$24 million to \$450 million, died in April. He served as acting director of Fogarty in 1988.



Dr. Hofman retires to South Africa

Dr. Karen Hofman, director of the Division of International Science Policy, Planning and Evaluation, is retiring after a decade at Fogarty to return to her native South Africa. Hofman is planning to continue her work on the Priority Cost Effective Lessons for Systems-South Africa project, part of the Disease Control Priorities Network.



Daulaire new U.S. rep at WHO

Dr. Nils Daulaire, director of the Office of Global Health Affairs at HHS since March 2010, was confirmed by the U.S. Senate to be the representative of the U.S. on the executive board of the World Health Organization. He holds the rank of ambassador.



Somerman named Dental Institute director

Dr. Martha J. Somerman, dean of the University of Washington School of Dentistry, has been named director of the National Institute of Dental and Craniofacial Research at NIH. An internationally known researcher and educator, Dr. Somerman will assume her post Aug. 29.



New post for Sosa-Estani

Dr. Sergio Sosa-Estani has been named director of Argentina's National Institute of Parasitology. He was a post-doctoral fellow with Tulane's Center for Evidence-Based Global Health, funded by Fogarty. He currently is an adjunct faculty member at Tulane School of Medicine.

Global HEALTH Briefs

Global NCD status report

A new WHO report details the worldwide burden of noncommunicable diseases, their risk factors and determinants. Using global, regional and country-specific data, the analysis documents the magnitude of the problem, projects future trends and assesses the contributing factors.

Full report: <http://bit.ly/m8SKBz>

Plan to save malaria drug

WHO has published the "Global Plan for Artemisinin Resistance Containment" to help save a drug effective in combating malaria. The strategy urges global and local actors to contain drug resistance where it exists and to prevent its spread to new areas.

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

Virus sharing pact reached

An agreement by countries to share flu virus samples was reached after nearly four years of negotiations, WHO announced. The landmark pact is expected to improve global preparedness for influenza pandemics. News release: <http://bit.ly/h3pIGA>

Cancer shift for HIV/AIDS

Cancers typically associated with AIDS progression have decreased, while cases of other types of cancer—such as lung and liver cancer—are on the rise in the AIDS population, according to scientists.

Full report: www.jnci.oxfordjournals.org

Report on capacity strengthening

A report documenting best practices in health research titled "Planning, Monitoring and Evaluation Framework for Capacity Strengthening in Health Research" has been released by ESSENCE on Health Research.

Full report: <http://bit.ly/f0VttJ>

Mobile tech for MAMA

Vital health information will be delivered to new and expectant mothers by cell phone through a new partnership called the Mobile Alliance for Maternal Action, or MAMA. Mobile health messages will be used to dispense information on pre-and post-natal care. Website: www.mobilemamaalliance.org

Funding Opportunities

Program	Contact	Receipt Date	Eligibility
Chronic, Non-Communicable Disease and Disorders Across the Lifespan: Fogarty International Research Training Award (NCD-LIFESPAN) Training Grant (D43) Planning Grant (D71) PAR-10-257	Kathleen Michels, Ph.D. Kathleen.Michels@nih.gov	Sept. 21, 2011	Applications from U.S. institutions must demonstrate collaborations with institutions in low- and middle-income countries. Foreign applications will only be accepted from LMIC institutions.
Global Infectious Disease Research Training Program (GID) Full awards (D43) Planning grants (D71) PAR-10-260 PAR-10-262	Barbara Sina, Ph.D. Barbara.Sina@nih.gov	Sept. 21, 2011	D43-U.S. institutions with a demonstrated collaboration with a researcher in low- and middle-income country and foreign institutions in LMICs may apply. Applicant institution must have active, ongoing research (18 months of funding remaining at the time of applicant submission). D71-Applicants may only be submitted by foreign institutions in LMICs and foreign applicants should apply in collaboration with U.S. institutions.
Ecology of Infectious Diseases (EID) Announcement on National Science Foundation website (NSF 10-616)	Joshua Rosenthal, Ph.D. Joshua.Rosenthal@nih.gov	Dec. 14, 2011	Proposals for research on disease systems of public health concern to developing countries are strongly encouraged, as are disease systems of agricultural concern.

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

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Fogarty launches new website

Fogarty recently launched a new version of its website with updated graphics, information organized by topic and world region, comprehensive grant lists and a Global Health at NIH portal. Please take a tour of the new site at www.fic.nih.gov and send us your feedback through the online survey.

The screenshot shows the homepage of the Fogarty International Center website. At the top, there's a navigation bar with links for "Research Topics", "World Regions", and "Contact Us". Below the header, the Fogarty logo is displayed, followed by the text "National Institutes of Health" and "Fogarty International Center".

The main content area features several sections:

- Advancing Science for Global Health**: A large heading with a sub-section titled "Partnering to Transform African Medical Education". It includes a photo of medical students and a "Learn More" button.
- Global Health Matters Newsletter March / April 2011**: A link to the newsletter.
- Funding News**: Headlines for "Women and Girls Health Adminstrative Grant Supplements", "NIH/PEPFAR Collaboration for Implementation Science and Impact Evaluation", "Intent to Reuse International Tobacco and Health Research and Capacity Building Program", and "Fogarty to Consolidate HIV Research Training Programs".
- For Researchers**: Links to "View All Fogarty Funding Opportunities" and "Apply for a Grant".
- Stay Connected**: Links to "Subscribe", "Facebook", and "Twitter".
- World Regions**: A section with a world map and a link to "Click a region below to learn more about NIH initiatives in that particular area".
- Making a Difference**: A section featuring a photo of a person in a white headwrap and a caption about "Focus on Addiction: Researching the roots of khat addiction in Yemen".
- Global Health Research at NIH**: A section with a photo of Dr. Fauci and a caption about "Many of NIH's 27 Institutes and Centers are engaged in global health activities". It includes links to "Find info by NIH IC" and "Find info by Research Topic".
- Global Health Research Topics**: A section with a photo of Sec. Clinton and a caption about "Fogarty and its NIH partners invest in a variety of research topics vital to global health". It includes a link to "View All Research Topics".

At the bottom, there's a call-to-action: "Subscribe to the e-newsletter by visiting www.fic.nih.gov/news/subscriptions.htm".