



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

Fogarty awards \$13M to train HIV researchers in LMICs



Photo by Richard Lord for Fogarty

To help developing countries address the issues that are emerging as their HIV epidemics evolve, Fogarty and NIH partners are investing up to \$13 million over five years to support new awards in HIV research training. Fifteen grants in a dozen countries will be funded. Training topics include AIDS-related cancers; cardio-metabolic complications of HIV and its treatments; and prevention and control strategies.

Funding comes through Fogarty's HIV Research Training Program, designed to build capacity in a specific area at an institution in a low- or middle-income country (LMIC). It's Fogarty's latest effort in nearly 30 years of support for HIV research training.

"Partnerships between U.S. scientists and colleagues in LMICs have produced significant advances in HIV/AIDS," says Fogarty Director Dr. Roger I. Glass. "We must continue to support research training so that developing countries can participate in global efforts to bring an end to HIV/AIDS in a generation."

Fogarty awards \$13 million for 15 new HIV/AIDS research training projects.

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New grants will help develop expertise in research ethics

When health research is conducted in low- and middle-income countries (LMICs), there are unique ethical considerations, given that many study participants are poor, have limited access to health care or may have low levels of literacy. Do they understand the trial and the risks involved? What care is being provided during and after the study? Will the research benefit the community hosting it? To equip more scientists with the expertise needed to handle those types of questions, Fogarty recently awarded four grants totaling up to \$5.3 million for five years of support.

training program supports new or ongoing projects in Latin America, the Middle East, North Africa and sub-Saharan Africa. Graduate-level courses and other opportunities will train people who may conduct clinical research; serve on ethics review committees; develop ethics education programs at their institutions; guide ethics policies; or conduct and publish original research on ethical issues.

"As clinical research and trials increase in LMICs, the need for skilled local experts to independently assess and address thorny ethical issues will remain key," says

This latest round of funding from Fogarty's research ethics

. . . continued on p. 2

FOCUS



Studying methods to prevent mother-to-child transmission of HIV

- Offering HIV testing and services at home or in church settings
- Training volunteers to counsel on breastfeeding and infant health
- Using systems engineering approaches to improve clinic workflow

Read more on pages 6 – 9

Fogarty awards \$13M to train HIV researchers in LMICs . . . *continued from p. 1*

The bulk of the funding supports 5-year programs. Three projects focus on the relationship between HIV/AIDS and other diseases. In Zambia, the University of Nebraska, Lincoln will partner with the country's only major cancer treatment center and the University of Zambia for training in HIV-related cancer biology and genomics. In Rwanda, clinical investigators will address HIV, antiretroviral therapies and cardio-metabolic complications, such as hypertension and diabetes. A nongovernmental organization in Rwanda, the Regional Alliance for Sustainable Development, received the grant and will collaborate with U.S. investigators from Washington University School of Medicine. Scientists in Mali will advance their study of HIV and mycobacterial infections, such as tuberculosis, in a program led by Northwestern University.

In Zimbabwe, training will focus on clinical pharmacology research related to antiretroviral therapies, under a grant to the State University of New York at Buffalo. To further strengthen laboratory-based research capacity in Uganda, Case Western Reserve University will train scientists in basic microbiology and immunology for research in HIV/AIDS and related diseases.

Other awards will target gaps in HIV prevention and care. In Nigeria, where more than 3 million people live with

HIV, researchers will receive training from the University of Maryland, Baltimore to address barriers to lowering transmission. In Kazakhstan, where high rates of injection drug use contribute to HIV, the State University of New York, Downstate Medical Center will provide training in implementation science research. And, in Vietnam, the University of California, Los Angeles program will stress methodologies to design, guide and evaluate HIV prevention and control practices among key populations in the HIV epidemic.

Smaller, 3-year training grants will help improve the research infrastructure at LMIC institutions in Kenya, Zimbabwe and Zambia. The programs will provide training in research administration and grants management; information and communications technologies needed for current research; and in-country research ethics committees.

Two-year planning grants awarded to institutions in Botswana, Uganda, India and Georgia will help them develop concepts for their own research training programs and prepare to apply for further funding. Two of the grants focus on biostatistics, which is a critical area to support research.

RESOURCE

Website: <http://bit.ly/2016HIVawards>

New grants will help develop expertise in research ethics . . . *continued from p. 1*

Fogarty Director Dr. Roger I. Glass. "Fogarty, along with its many partners at NIH, is committed to being part of this continuing and essential process."

Harvard Medical School was awarded a new grant to build capacity in Rwanda. Investigators will train three cohorts of researchers, educators and senior experts in ethics who will be prepared to assume leadership roles and guide policies.

Fogarty is awarding \$5.3 million in grants to develop research bioethics expertise in low- and middle-income countries.

Dartmouth College will continue working with Muhimbili University of Health and Allied Sciences (MUHAS) to build capacity in Tanzania and throughout East Africa. Because of training done under a previous grant, there's now enough in-country expertise to move all educational activities to MUHAS, where a master's program in bioethics will be expanded and a bioethics institute will be created to serve as a national and regional resource.

The Latin American University of Social Sciences (FLACSO) in Argentina will work with new trainees as well as former ones by establishing a new mentoring program with collaborating centers in Mexico and Brazil.

The University of Maryland, Baltimore will use new funding to focus on three countries where many former trainees are located. Blended diploma programs in research ethics will be developed at Al Neelain University in Khartoum, Sudan; online continuing medical education courses will be developed for the Egyptian Network of Research Ethics Committees; and participants at two universities in Morocco will be trained in research ethics.

RESOURCE

Website: <http://bit.ly/2016EthicsGrants>



Fogarty training helps build mHealth research capacity

Researchers from 19 countries and nearly as many disciplines recently gathered at the NIH to discuss a common interest—how best to use mobile technologies to improve health in the developing world.

“We really have precious little data that documents having an app on a phone is going to make someone exercise more, or improve compliance with HIV treatment, or improve prevention of diabetes,” Fogarty Director Dr. Roger I. Glass said as he welcomed the group to a training institute that offered best practices in mobile health (mHealth) research. Fogarty’s Center for Global Health Studies hosted the session to spur more investigations on the effectiveness of smartphones, sensors and other mobile devices and to build capacity in low- and middle-income countries. The training was a complement to Fogarty’s mHealth research grant program.

The 4-day event brought together nearly 50 faculty members and trainees—including behavioral and social scientists, physicians, nurses, computer scientists and engineers. The diversity was intended to help participants recognize the variety of experts needed for robust mHealth research, and to begin cultivating those connections.

“Bring the behaviorist in early,” advised Dr. Donna Spruijt-Metz of the University of Southern California. “Smartphones are allowing us to think about behavior dynamically—in real time and in context,” she noted. Understanding behavior will help determine which actions to influence, which interventions to use, and when and where to deliver them because, as she emphasized, “Context is king.”

Trainees were encouraged to look at the whole health system, and identify gaps in the infrastructure, before starting a project. “If you don’t have the resources, the phone is just a gadget,” said Dr. Magaly Blas, a former Fogarty fellow and current grantee who holds academic positions in Peru and the U.S.

Several presenters stressed the importance of understanding the community’s culture and involving stakeholders, such as the end user and government and local leaders, when introducing mHealth into a population. “This does not mean they will throw away their challenges to what you are doing—whether cultural, religious or spiritual,” explained Olasupo Oyedepo, who directs a digital health project in Nigeria. “It will, more importantly, help you understand what their issues are, and until you understand those issues, you will not be able to find a middle ground.”

Photo by Dr. Magaly Blas



Fogarty hosted a training institute to share best practices on mHealth research projects, including this one in rural Peru that uses technology to connect pregnant women with doctors.

While mHealth interventions can democratize health care and help reach broader populations, they must be deployed thoughtfully. “We do want to be careful not to exacerbate existing inequalities or create new ones by releasing high-value technologies into communities without thinking how that might affect local realities and power dynamics,” cautioned Dr. Rachel Hall-Clifford of Agnes Scott College in Georgia. Faculty also reminded trainees to ensure information is transmitted securely and conforms with a country’s data standards so it can be integrated into electronic health records.

When working with wearable devices, involving the user in the design process is important. “Not only are you going to design a better system, but the people who participate are going to be a lot more motivated to use it,” explained Dr. Maribeth Gandy of Georgia Tech.

Researchers also learned different ways to design randomized trials to test their hypotheses. During her talk on experimental designs, Dr. Inbal Nahum-Shani of the University of Michigan noted that she learned a lot and is still collaborating with researchers she met during an NIH mHealth training several years ago. She said the Fogarty event took the exchange of ideas even further because of the diversity of trainees. “They bring in unique knowledge that is associated not only with their discipline but also with their country and culture,” she said. “Such exchange of knowledge has tremendous potential for generating new and exciting ideas that will advance the science of mHealth.”

Indeed, organizers said several trainees noted they plan to apply for mHealth grants with collaborators they met at the institute, and others talked about replicating the training at home.

RESOURCES

Websites: <http://bit.ly/mHealthInfo>

PETER MASON, M.SC., PH.D., FRC PATH

Dr. Peter Mason recently retired after 21 years as Director General of the Biomedical Research and Training Institute (BRTI), an independent institution he cofounded in Zimbabwe in 1995 to develop research skills in southern Africa. In 2005, Fogarty awarded BRTI the first of two, 5-year International Clinical, Operational and Health Services Research and Training Award (ICOHRTA) program grants. BRTI used this funding to develop a Zimbabwean postgraduate training program in HIV/AIDS and tuberculosis research.



How has Fogarty built research capacity in Zimbabwe?

Without Fogarty, postgraduate clinical training in Zimbabwe would have collapsed. When we started the ICOHRTA in 2005, Zimbabwe had billion-percent inflation and no access to foreign currency to bring anything into the country, including materials you need to do science. Doctors, nurses, lecturers, teachers were going abroad. People couldn't afford to go to hospital, so the wards in many teaching hospitals were empty and clinical teaching was affected.

ICOHRTA allowed us to pay postgraduate students U.S. dollar stipends to complete projects in AIDS, TB and opportunistic infections, and to pay their university fees and contribute to their internet charges—which in Zimbabwe are among the most expensive in Africa. In 10 years, we've supported 54 postgraduate students conducting research in areas including the interactions between antiretrovirals and traditional herbs, prevention of mother-to-child transmission of HIV, and TB diagnosis in HIV patients, to name a few. Thirty-three of the students published at least one paper by the time the program ended in 2015. It's thanks to Fogarty that we were able to keep them going.

Has the program slowed "brain drain"?

The great majority of our ICOHRTA fellows still work in Zimbabwe, and the great majority of those who left now work elsewhere in southern Africa. One example is Claver Bhunu. He completed his Ph.D.—in mathematical modeling in TB—as an ICOHRTA fellow and was awarded a postdoctoral fellowship at Cambridge University in England. We thought we'd never see him again. But he came back to Zimbabwe and became the head of the department at the university in Harare. He now has a nucleus of modelers in his department, producing a lot of research and papers.

How did your training programs develop?

We started BRTI because we saw the need for an organization run by people with a deeper commitment to developing local research skills than visiting scientists, some of whom would come in, collect specimens, leave—and that was the last we heard of them.

It used to be that postgraduate students were expected to get on with their research and learn how to do it by doing it. But we recognized that to become good researchers, they needed academic training in research methods, design, statistics and presentations and writing papers. So we designed short, 3- to 5-day courses to teach those skills.

We also sent researchers overseas for short periods to train in a laboratory. Initially we sent them to the U.S. or Europe, but as the program went on, we decided to send them to labs in Africa, which do not have the same amenities as a U.S. or European lab—things like good electricity and water supply, someone who calibrates your instruments on a regular basis, the ability to have supplies delivered in a couple of days. Our thinking was if you're going to do research in Africa, it's better to learn to do it the way it's done in Africa.

What training materials were developed?

All our short courses are put onto CDs, which we encourage people to take back to their institutions to share with others. Our teachers use interactive methods—case studies, role play, videos—and we have produced some videos ourselves, especially in ethics, which is a big part of our training. We've developed an ethics handbook and ethics training program. Also, we've created programs on point-of-care testing for HIV and TB, and held many forums, including a symposium on breastfeeding and HIV when the prevention of mother-to-child transmission program was starting in Zimbabwe. Several interactive research programs came about as a result of our bringing international researchers to Zimbabwe for discussions with local researchers.

Through our programs, we've allowed international researchers to see that, although Zimbabwe gets some bad press, it is actually an extremely good place to do research. We have a lot of people and a lot of problems, and those are the two things you need to do good research.

RESOURCES

Websites: <http://bit.ly/BRTIlinks>

PROFILE

Fogarty Dental Fellow sees Mexican children with HIV

By Cathy Kristiansen

When dentist Dr. Lilliam Pinzón looked into the mouth of a 5-year-old child, she saw 15 of his teeth had cavities. As with all her patients in Tijuana, Mexico, the boy had HIV and was enrolled in her study testing which of two dental filling compounds was more appropriate for underserved children.

“The patients, especially because they’re HIV-positive, have not been treated at an early age, so they have a lot of decay,” Pinzón recalls. “Even if they have money, when they’re HIV-positive, health professionals don’t want to see them.”

Pinzón was in Mexico for her fellowship with Fogarty’s Global Health Program for Fellows and Scholars, which provides a yearlong mentored clinical research experience abroad for postdoctoral fellows and pre-doctoral scholars. NIH’s National Institute of Dental and Craniofacial Research supported Pinzón’s fellowship.

Her patients are enrolled in a study to compare a traditional metal-based amalgam filling compound with a newer glass ionomer material that bonds to teeth and releases fluoride over time, to see which is more cost-effective and better suited to children with HIV.

“Fluoride stimulates re-mineralization of the tissue and stops the number of bacteria in the mouth, acting as both a preventive and curative treatment,” Pinzón explained. “This is very good specifically for the HIV population, because the virus can cause dry mouth, so they have less saliva to protect their teeth against cavities.”

Glass ionomer cavity treatment is applied using hand-held instruments, rather than noisy drills, making it more economical and less traumatic for patients, she said. The treatment is administered under local anesthesia and doesn’t require water or electricity. But the technique is not routinely taught at dental schools in Mexico. To overcome that obstacle, Pinzón has used part of her grant to train Mexican dentists.

Pinzón’s study also included a 60-question survey to look for cavity risk factors, such as poor diet and hygiene.



Lilliam Pinzón, D.D.S., M.P.H.

Fogarty Fellow:	2014 – 2015
Fellowship at:	Universidad Autonoma de Baja California-Tijuana
U.S. partner:	University of California, San Francisco
Research topic:	Evaluate dental restorations in underserved HIV+ children

The study showed stigma also contributed by discouraging patients from seeking free health services. Others relapsed into a drug habit or abandoned antiretrovirals because of short-term side effects. “They are not a very stable population in terms of their treatment and lifestyle,” she said. Also, there is a lack of knowledge of HIV/AIDS among the infected population and health professionals in Mexico. In many cases, patients—and medical students—conflate HIV and AIDS. “The patients think they’re going to die and what’s the point of taking medicine?” Pinzón said.

To increase dental professionals’ understanding of infected patients, Pinzón collaborated with mentor and Fogarty grantee Dr. Joseph Zunt to obtain funding for a workshop in Mexico to train junior faculty and for a public symposium for faculty, students, staff and others connected to the HIV community.

Pinzón says she decided to become a dentist by age seven. After completing dental school in Colombia, she pursued a postdoctoral fellowship at the University of California, San Francisco (UCSF). Pinzón, who now has academic posts at UCSF and at the University of Utah, said she developed many skills during her fellowship, in addition to learning about study design, methodology, data analysis and other research techniques.

She said working with HIV-positive patients opened her eyes to their suffering and increased her determination to help. “It made me more sensitive to their needs, what they face every day,” she said. “Even though they have an infection, they are still people and deserve respect. I think I can make a difference in their lives and give them a little bit of love, not just dental treatment.”

Using implementation science to reduce HIV transmission

While the knowledge exists to prevent mother-to-child transmission of HIV, as many as 150,000 new infections occur in newborns every year, mostly in developing countries. A team of scientists and program managers, led by the NIH, has been studying a variety of implementation science approaches to preventing mother-to-child transmission (PMTCT) and has published the results in a 16-article supplement to the *Journal of Acquired Immune Deficiency Syndromes*.

“We have the tools at this moment to further decrease the incidence of new infections, but we need to apply these tools more effectively to reach the undiagnosed and untreated mothers,” Fogarty Director, Dr. Roger I. Glass, and U.S. Global AIDS Coordinator, Dr. Deborah L. Birx, wrote in a foreword to the supplement.

The open-access articles are focused on ways that implementation science—the emerging field in which scientists study how to integrate research findings and other evidence-based practices into routine care and services—can support efforts to eliminate pediatric HIV.

PMTCT involves a cascade of factors that are inherently complex, crossing multiple biological phases for women and their infants, and requires deployment of numerous services within the health sector, the authors noted. Some

A study showed that involving men in prenatal care improves outcomes for mothers and infants, and increases the likelihood that the male partners will be tested for HIV.

studies used systems engineering approaches to examine treatment workflow, identify bottlenecks and gaps, task shifting and other issues. Facility-level problems were considered, including drug shortages, overburdened staff, lack of service integration, insufficient mentoring, and poor patient-provider interactions. The scientists also identified domestic violence, abandonment and stigma as key barriers.

The authors reported on the effectiveness of a variety of interventions:

- Collaborating with churches to invite pregnant women to “baby showers,” which included HIV testing and gifts, was nearly twice as effective for screening and recruiting for treatment those who tested positive for HIV, than were invitations to clinic visits providing the same benefits.
- Offering HIV testing and counseling for breastfeeding, family planning and other issues in the homes of study participants made it twice as likely the male partners—who often report feeling uncomfortable making clinic visits but are key to reducing HIV transmission—would be tested.
- Training lay volunteers or “feeding buddies,” to provide information about breastfeeding, infant health and HIV treatment protocols that may diminish the damaging impact of stigma on HIV-positive mothers and allow them to safely feed their children and adhere to WHO guidelines, which recommend exclusive breastfeeding, antiretroviral therapy and early infant testing.
- Providing cash incentives for prenatal clinic visits appeared to help keep women in care, but did not boost adherence to antiretroviral therapy.
- Initiating drug therapy during pregnancy caused rapid declines in viral load, but more than 95 percent of women studied reported at least one side effect before delivery, which may lower adherence.
- Deploying a point-of-care test for infant diagnosis of HIV using a portable, battery-operated device may result in more timely initiation of drug



therapy, decreasing the number of children who may be diagnosed with HIV weeks or months after birth, lost to-follow-up and never receive care.

- Administering pre-exposure prophylaxis (PrEP) for HIV prevention among pregnant and breastfeeding women in sub-Saharan Africa is likely cost-effective, economic modeling indicates.

Researchers and policymakers from the U.S. and Africa who contributed to the supplement articles were part of the PMTCT Implementation Science Alliance, created and supported by the NIH and the President’s Emergency Plan for AIDS Relief (PEPFAR), to investigate the role implementation science can play in enhancing the quality and effectiveness of PMTCT efforts. Research projects described in the supplement were funded by NIH grants from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, National Institute of Allergy and Infectious Diseases, National Institute of Mental Health and the Office of Research on Women’s Health.

The NIH-PEPFAR Alliance was led by Fogarty’s Center for Global Health Studies. In addition to the funders, other participants in the Alliance include the Office of AIDS Research at NIH, along with outside agencies including the Centers for Disease Control and Prevention, the Elizabeth Glaser Pediatric AIDS Foundation, South Africa’s Anova Health Institute, the United States Agency for International Development and the WHO.

The Alliance was “a kind of ‘living laboratory,’ providing an exciting opportunity to explore how enabling tools can help to effectively build, strengthen and nurture interactions between researchers, program implementers and policy makers, and whether this kind of model can catalyze positive results for implementation science and global health,” Fogarty’s Dr. Rachel Sturke and colleagues wrote in an article introducing the studies.

Despite enormous successes in PMTCT, important challenges remain, the Alliance members noted. They have identified priority areas for future study, including how to link HIV-positive infants into early treatment, improve models for retention and adherence of children receiving antiretrovirals, and prioritize locally driven research questions and processes that engage end users throughout.

“Continuing to find innovative ways to foster collaboration of implementation science researchers with decision makers and program implementers will be critical to speed the translation of effective PMTCT interventions in the local context and health system programs,” the authors conclude.

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SOME BARRIERS IN PREVENTING MOTHER-TO-CHILD TRANSMISSION

- 1 Lack of reproductive health information and services for adolescents
- 2 Poor integration of family planning into health care services
- 3 Lack of effective and efficient early infant diagnostic services
- 4 Low uptake of prenatal, delivery and post-natal care services
- 5 Poor understanding of factors that impact retention of mother-infant pairs in care
- 6 Too few studies of community-based services to improve retention in care
- 7 Inequitable distribution of health care workers in rural vs. urban areas
- 8 Poor male partner involvement, too few studies on how to engage men
- 9 Inadequate integration of PMTCT services in maternal and child health care
- 10 Lack of coordination between government, implementers and researchers
- 11 Gaps in local health financing for PMTCT implementation and research
- 12 Underutilization of traditional birth attendants and private hospitals



An expectant mother in Nigeria is tested for HIV while attending a “baby shower,” at a church, where free HIV tests and prenatal care are offered.

Although the incidence of pediatric HIV has dropped dramatically in many parts of sub-Saharan Africa, there are some places where it remains common. In 2015, PEPFAR supported testing for almost 15 million pregnant women, with 850,000 of them found to be HIV-positive and 831,000 started on ART. Yet, several hundred thousand babies continue to be born with HIV each year and scientists are studying implementation science approaches to further reduce that number.

Providing care outside the clinic

By reaching pregnant women in their homes or churches, researchers discovered they can increase the number who are screened for HIV and begin treatment, as well as lower the number of infants who become infected. In a Nigerian community where 90 percent of the population attends church, researchers enlisted the help of congregation leaders to hold monthly “baby showers,” where women and their partners were offered free HIV screenings, counseling and gifts. Half of the 3,002 pregnant women in the study were assigned to attend the baby showers, while the other half were encouraged to seek prenatal care at clinics, where similar benefits were provided at no cost. Ninety-two percent of the women who went to the church baby showers were screened for HIV, compared to 55 percent

of women in the control group, the researchers found. Women who attended the baby showers were also six times more likely than the control group to start ART if they were found to be HIV-positive.

Engaging male partners in the process

Increasing the rate at which men are tested for HIV and involved in prenatal care was a priority for one group of researchers working in Kenya. Only 4.5 percent of men with pregnant partners were screened for HIV in 2013, versus 88 percent of expectant mothers. Couples in this study were assigned either to receive a home visit—during which they were tested for HIV and given advice on childbirth, the postnatal period and prevention of HIV transmission—or invited to attend a clinic where they would be tested together for HIV. The researchers found men in the home visit group were more than twice as likely to be screened for HIV as men who were invited to the clinic, and women in the home visit group were twice as likely to know their partner’s HIV status as those in the clinic group.

A separate study by the same researchers looked at the cost-effectiveness of home-based HIV testing. The researchers projected that if 60 percent of male partners were screened for HIV at home, nearly 7,000 infections and 2,600 deaths would be averted. They found home visits to be cost-effective, and said they could be made even more affordable by task shifting responsibilities from medical staff to community health workers.

Using mentors to promote retention

In a study in South Africa, new mothers were encouraged to choose a “feeding buddy”—someone trained in all aspects of breastfeeding, infant health and the importance of taking ART. The researchers hypothesized that women with a feeding buddy would be more likely to still be breastfeeding at six months than those without. They found that feeding buddies played an unexpected but important role—as confidantes to women who felt stigmatized because of their HIV status. Feeding buddies improved women’s ability to accept and cope with their HIV status, and reduced feelings of social isolation, which meant a woman would be less likely to drop out of care.

Meanwhile, lay counsellors called *mama mshauri* (mother mentors) are being used in Kenya to try to retain women in care. *Mama mshauri* are community workers who are trained to provide services to women, including PMTCT health education, and voice and text message appointment reminders.

Studying drug therapy during pregnancy

Because rates of HIV acquisition may double during pregnancy and breastfeeding among women in sub-Saharan Africa, scientists studied whether pre-exposure

prophylaxis (PrEP) with antiretrovirals would be a cost-effective approach. If the mother becomes infected during pregnancy or breastfeeding, the risk of infant infection is almost 23 percent, studies have shown. Using this data, the researchers determined PrEP could be “a promising addition” to combination PMTCT programs. Meanwhile, scientists in South Africa were concerned that women’s adherence to therapy was “suboptimal.” They analyzed data that showed more than 95 percent of women initiating drug therapy during pregnancy reported at least one side effect before delivery. While no single side effect was associated with missed doses, “the total number of side effects experienced was a strong predictor of non-adherence,” the study’s authors observed.

“We have the tools at this moment to further decrease incidence of new infections, but we need to apply these tools more effectively to reach the undiagnosed and untreated mothers.”

– FOGARTY DIRECTOR DR. ROGER I. GLASS
– U.S. GLOBAL AIDS COORDINATOR DR. DEBORAH L. BIRX

In Mozambique, which offers lifelong ART under the Option B+ program, researchers have found high rates—more than 90 percent—of HIV testing and ART initiation, but 90-day retention rates of only 5 to 30 percent. When the researchers analyzed work- and patient-flow at six clinics, they identified several potential causes of the high dropout rate, including long wait times, short consultations and poor counseling. Among the fixes they suggested were shifting part of nurses’ workloads, which had increased significantly under Option B+, to community health workers, and following up with patients via home visits and text messages.

Speeding infant diagnosis

Since half of untreated HIV-infected infants die before their second birthday, a research team in Zambia is testing a new point-of-care diagnostic that produces immediate results to improve the early entry of HIV-positive infants into care. Unlike screening in adults, diagnosis in infants requires specialized lab equipment and highly trained personnel. That means many infants remain without a diagnosis for weeks or months, so treatment is delayed or never begins. The testing platform is portable, battery operated and designed to withstand heavy use—ideal for resource-poor settings.

Testing cash incentives

To improve retention rates in the Democratic Republic of Congo, researchers paid one group of women a small sum each time they attended a prenatal clinic and agreed to take the prescribed care, while another group received no compensation for clinic attendance. Six weeks after the birth of their babies, 80 percent of HIV-infected women

who received the cash incentives were still coming to the clinic, versus nearly 73 percent of women who did not receive money. But while the payments appeared to help keep women in care, they did not boost ART adherence. Thirty percent of women in both groups did not faithfully take their antiretrovirals—possibly because doing so was not a condition for being paid for each clinic visit.

Task shifting to maximize resources

To assess the impact task-shifting has on patients and medical professionals, mothers and medical staff in northern Nigeria were asked to rate their satisfaction with PMTCT services delivered either at comprehensive care clinics or clinics offering specialized PMTCT care, where some tasks were delegated to midwives. Mothers who attended the clinic offering specialized care were more satisfied than women assigned to the comprehensive clinics. Providers in both settings were motivated and happy with their compensation and training, but less satisfied with task-shifting.

Using novel tools to analyze approaches

When researchers applied systems engineering theories and tools—including work processes, optimization methods, risk management, and logistics—to analyze PMTCT programs in Côte d’Ivoire, Kenya and Mozambique, they identified human resources shortages, lack of mentoring and stigma as some of the main barriers to successful implementation. Using the Consolidated Framework for Implementation Research (CFIR)—a method used to assess potential barriers and facilitators in a system—the researchers highlighted key differences between high- and low-performing care facilities, including that high-performers tend to communicate better, which allows them to be more efficient when implementing changes.

Concept mapping—a visual system for organizing and representing knowledge, and depicting the relationship between concepts—was used by another research group to identify the main areas that influence PMTCT implementation in sub-Saharan Africa. Two components—government commitment and data measurement and collection—consistently ranked highly in the exercise, suggesting that they are key to successful PMTCT program implementation. The study concluded the findings could be used “to inform strategies to optimize PMTCT implementation and services in the field.”

RESOURCES

Full supplement articles www.bit.ly/NIHPMTCT

OPINION

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

Partnerships are essential to Fogarty's success



If you want to go fast, go alone. If you want to go far, go together.

This African proverb neatly sums up Fogarty's philosophy. Our programs are founded on the notion that partnerships are essential and that, together, we can accomplish much more than we can alone.

A recent study, "Global Health Programs and Partnerships: Evidence of Mutual Benefit and Equity," underlines the importance of working together. The report, based on a survey of the Consortium of Universities for Global Health member institutions indicated broad agreement that partnerships are beneficial and that most work well. However, some respondents noted issues of inequities in collaborations involving high- and low-income partners in terms of decision making, partly due to the one-sided nature of the funding.

It's important that we take this into consideration, to ensure that the research we are supporting is directed by local priorities and will offer benefits to the community in which it is conducted. That's one reason when we were planning our Medical Education Partnership Initiative (MEPI), we deliberately structured the program so the awards went directly to the African institutions, with high-income country partners playing a key, but supporting role. We wanted to make sure the African investigators had the flexibility to direct resources to address local needs—whether it was to increase Internet bandwidth, transition from paper textbooks to electronic ones, expand curricula to include chronic diseases, establish rural training sites, or other priorities. We also made it a requirement that they collaborate with ministries of health, education and finance—to ensure they had local buy-in and that their efforts were in alignment with national priorities.

At Fogarty, we view partnerships as a long-term endeavor built upon trust and common goals. We understand that creating the human capacity required to design, conduct and analyze robust high-impact research takes time and sustained support. In 1988, we began awarding grants to help cultivate scientific expertise in developing countries

that were being ravaged by the HIV/AIDS epidemic. Nearly three decades later, we can see the results—a generation of well-trained scientists who are producing solutions to help bring an end to AIDS. From proving people living with HIV in low-resource settings can follow complex antiretroviral protocols, to determining the benefits of circumcision, to investigating microbicides—our grantees and trainees are at the cutting edge of science and are providing the evidence base for well-informed decisions.

It's gratifying to see the impact over time, when institutions such as Cayetano Heredia University in Peru, or Makerere University in Uganda, begin with one Fogarty grant that multiplies over the decades into portfolios that now include 40 or more NIH grants, and have resulted in a cadre of well-trained scientists who are able to successfully compete for funding through the NIH peer review process.

It was interesting to note that the partnership survey showed 40 percent of respondents cite developing South-South collaborations as their highest priority. That's certainly something we have been pursuing. As our initial grantee institutions mature, they are increasingly able to reach out to other regions or countries to leverage training resources and expand capacity in underserved areas. For instance, grantees in Brazil are collaborating with scientists in Mozambique, to share lessons learned and curricula developed in their common language, Portuguese. In similar fashion, we see faculty exchange happening among the members of the MEPI network, so that all can benefit from the programmatic strengths of each institution. And with the NIH Human Health and Heredity in Africa (H3Africa) initiative, we are developing research skills and establishing biorepositories so that African scientists can help determine the genetic basis for cancer, diabetes, heart disease and other ailments—discoveries that will improve the health of people everywhere. This not only begins to address issues of health equity but also may yield clues that will advance our efforts to develop truly "personalized" medicine, so that we can customize approaches to prevent and treat disease.

Partnerships have been essential to the success of all of these projects, and hundreds more besides. And for that, we are grateful to all of you who have accompanied us on this journey and we count on your support as we negotiate the road ahead.



NIH names National Library of Medicine director

NIH has appointed Dr. Patricia Flatley Brennan as the next director of the National Library of Medicine. Brennan, a pioneer in the development of information systems for patients, has been a professor of nursing and industrial engineering at the University of Wisconsin-Madison. She is expected to start in August and will be the first woman and first nurse to lead the library in its 180-year history.



Goodenow to lead NIH Office of AIDS Research

Dr. Maureen Goodenow has been named Associate Director for AIDS Research at NIH and Director of the Office of AIDS Research. Goodenow comes from the University of Florida, Gainesville where she has been a professor of pathology, immunology and laboratory medicine. She's also worked within the U.S. Department of State, where she oversaw combination prevention trials funded by the President's Emergency Plan for AIDS Relief (PEPFAR), served as a science advisor and was a Jefferson Science Fellow. Goodenow has served on numerous NIH advisory committees and advised Fogarty on programs in India and Kazakhstan.



NIAAA Director Koob receives France's top honor

Dr. George Koob, director of NIH's National Institute on Alcohol Abuse and Alcoholism, has received France's highest distinction, a Legion of Honor award. Koob was recognized for his outstanding contribution to the development of scientific collaborations between the U.S. and France and was honored with the insignia of Knight of the Legion of Honor.



Johnson returns to Fogarty leadership team

Dr. Michael Johnson has returned to Fogarty as Director of the Division of International Relations. Johnson had been on detail in Geneva since 2011, where he worked with the Global Fund, a partnership to fight AIDS, tuberculosis and malaria. Johnson joined Fogarty in 2007 as Deputy Director and oversaw the launch of the Medical Education Partnership Initiative (MEPI).



Science selects former NIH leader as editor-in-chief

Dr. Jeremy Berg, a former director of NIH's National Institute of General Medical Sciences, is the new editor-in-chief of the *Science* family of journals. Berg, a chemist by training, has most recently been a science administrator at the University of Pittsburgh.



HHMI announces new president

The Howard Hughes Medical Institute has announced Dr. Erin O'Shea will become its new president, effective September 2016. O'Shea, whose expertise is in gene regulation, signal transduction and systems biology, has been the institute's chief scientific officer since 2013.

Bringing mental health out of the shadows

To draw attention to the issue of global mental health, the WHO and World Bank recently convened experts, advocates, government officials and others for a two-day meeting. The proceedings have been published in a report, "Out of the Shadows: Making Mental Health a Global Development Priority." Report: <http://bit.ly/WBshadows>

Global data commons established by NIH

The NIH has launched the Genomic Data Commons, a unified system that promotes sharing of genomic and clinical data among researchers worldwide. A National Cancer Institute project, the GDC will centralize, standardize and make data accessible from several of NCI's large-scale programs. Website: <https://gdc.nci.nih.gov/>

NIH expands diabetes data portal

The NIH has upgraded its Type 2 Diabetes Knowledge Portal, expanding its data and search capabilities. The resource includes aggregated data from more than 100,000 DNA samples from research supported by NIH and other institutions globally. Scientists can search for information by gene, genetic variant and region; access summaries of genetic variants; and run customized genetic analyses using versatile tools. Website: www.type2diabetesgenetics.org

Global nutrition study reviews progress

The latest edition of the independent Global Nutrition Report has been published. The study reviews the state of the world's nutrition—globally, regionally, and by country—and assesses progress in meeting targets set by the World Health Assembly. Website: <http://bit.ly/WHOnutrition>

WHO updates air pollution database

The world's highest urban air pollution levels exist in low- and middle-income countries, with readings often exceeding 5-10 times the WHO limits. These findings and others are included in the updated urban air quality database, which includes information from 3,000 cities in 103 countries. Website: <http://bit.ly/WHOair>

World Health Assembly takes action

During the recent 69th World Health Assembly, the organization approved resolutions on WHO's Framework for Engagement with Non-State Actors and the Sustainable Development Goals, among other actions. Website: <http://bit.ly/WHAAwrap>

Funding Opportunity Announcement	Details	Deadline
Global Infectious Disease Research Training Program (GID) (D71) (D43)	http://bit.ly/GID-D71 http://bit.ly/GID-D43	July 29, 2016 July 29, 2016
Fogarty Global Health Training Program (D43)	http://bit.ly/FOGGH	Aug 16, 2016
Infrastructure Development Training Programs for Critical HIV Research at LMIC Institutions (G11)	http://bit.ly/FOGg11	Aug 25, 2016
Planning Grant for Fogarty HIV Research Training Program for LMIC Institutions (D71)	http://bit.ly/FOGD71	Aug 25, 2016
Fogarty HIV Research Training Program for LMIC Institutions (D43)	http://bit.ly/FOGHIV	Aug 25, 2016
Mobile Health: Technology and Outcomes in LMICs (R21)	http://bit.ly/FOGmhealth	Aug 31, 2016
International Tobacco and Health Research and Capacity Building Program (RO1)	http://bit.ly/FOGTOBAC	Oct 13, 2016
Emerging Global Leader Award - Career Development (K43)	http://bit.ly/K43-2016	Dec 14, 2016
Global Brain and Nervous System Disorders Research R21 R01	http://bit.ly/Brain-R21 http://bit.ly/Brain-R01	Jan 5, 2017 Jan 5, 2017
Global Noncommunicable Diseases and Injury Research (R21)	http://bit.ly/NCD-injury	Feb 22, 2017
International Research Scientist Development Award (IRSDA) (K01)	http://bit.ly/IRSDA2017	Mar 2, 2017

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

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Fogarty trains Pakistani scientists in biorisk management

Biosafety and risk management workshops organized in cities across Pakistan by Fogarty's Division of International Epidemiology and Population Studies (DIEPS) are helping scientists and laboratory staff to learn to protect themselves and the environment from dangerous pathogens, such as tuberculosis.

At workshops held in Lahore, Islamabad, Peshawar and Gilgit since 2013, international and Pakistani experts have taught protection strategies to over 200 participants who work in laboratories, and sought to raise awareness of key concepts of biosafety and biosecurity in the workplace.

As part of this latest project—called Expanding the Scope of Biosecurity and Biosafety in Pakistan: Strengthening Biorisk Management Training and Capacity—30 clinical, veterinary, and basic science professionals received instruction at a master trainer workshop in March 2016, on developing the tools and skills needed to conduct biosafety workshops for other professionals in Pakistan.

Fogarty's main partners in the initiative are the Pakistan Biological Safety Association (PBSA), and the U.S.-based International Council for the Life Sciences and its Pakistan chapter. By involving PBSA in the implementation of all the workshops' activities, DIEPS has helped the organization build its operational capacity and enhance the training and information resources it offers to the scientific research community in Pakistan.

More training and resource development workshops are planned. Information on these activities is available at www.pakbiosafety.org.pk

