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GLOBAL HEALTH MATTERS

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WHO science chief evaluates COVID-19 response

Despite huge global investments in COVID-19 research over the past two years, there was a disappointing lack of coordination and response from existing clinical trials networks, WHO Chief Scientist Dr. Soumya Swaminathan noted during a recent meeting of ESSENCE on Health Research. She encouraged the group of funders to reflect on the lessons learned and have a very open and frank discussion about the changes that need to be made.
"I know that it's not easy for any research agency to suddenly do things which are out of the ordinary and to start funding things which may not otherwise be within the remit," she said. "We need to think about the idea that what happens in an emergency has to be different from what happens when it's business as usual."

Photo by WHO/Christopher Black

WHO Chief Scientist Dr. Soumya Swaminathan urged the ESSENCE on Health Research members to continue to push for improved health research capacity in low- and middle-income countries.

ESSENCE is an initiative hosted by WHO that is intended to increase the impact of support provided for research capacity strengthening in low- and middle-income countries (LMICs). Partly in response to the 2013-2016 Ebola outbreak that highlighted the lack of research

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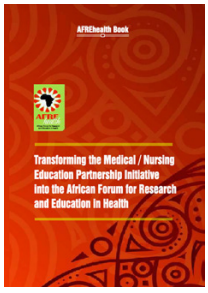
New book details MEPI/NEPI history, progress



The African Forum for Research and Education in Health (AFREhealth) has published a free, downloadable book documenting progress made through the Medical Education Partnership Initiative (MEPI) and its counterpart devoted to nursing, NEPI. MEPI was funded by NIH and the President's Emergency Plan for AIDS Relief (PEPFAR). An NIH Common Fund program, it was led by Fogarty.

Under MEPI, about $130 million was invested to build a network of more than 30 African institutions to strengthen medical education, build research capacity and improve faculty retention. MEPI and NEPI were combined in 2018 to form a new $22 million program, the Health-Professional Education Partnership Initiative (HEPI).

The 146-page book is titled "Transforming Medical & Nursing Education Partnership Initiative into African Forum for Research and Education in Health: The Journey So Far" and is available in English, French and Portuguese. The publication is intended to provide a historical perspective, descriptions of lessons learned and a vision for the future.

AFREhealth is an interdisciplinary health professional organization that seeks to work with health ministries, training institutions and other stakeholders to improve health care in Africa through research, education and capacity building. It was launched in 2016 by the joint leadership of MEPI/NEPI and receives Fogarty funding.

The book is available at https://afrehealth.org/resource/books.

FOCUS

NIH marks two major milestones in cancer research

- NCI grantee addresses inequities in prostate and breast cancer
- Center for Global Health program brings cancer researchers to NIH
- Economic studies of tobacco farming aim to bring policy change

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WHO science chief evaluates COVID-19 response

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capacity in West Africa, ESSENCE formed a working group to improve coordination and collaboration among funders of health research capacity strengthening, using data and metrics to increase effectiveness and equity. ESSENCE also developed a review mechanism of investments with the overall goal of increased research on national health priorities, as well as improved pandemic preparedness. The ultimate goal is to reduce the number of countries with very limited research capacity.

Swaminathan recalled the WHO scientific gathering in February 2020 that was tasked with creating a roadmap for the development of COVID-19 diagnostics, vaccines and therapeutics. The resulting "R&D Blueprint" included epidemiological research, infection prevention and control research, and social and behavioral research. "But then what happened was that one did not see collaboration and coordination across research funders that perhaps could have helped to set up large multi-country studies using common protocols and common frameworks to measure and report on these elements," said the former Fogarty fellow. Inequities persisted with 97% of research support from the world's top dozen funders remaining in high-income countries.

Disappointed, the WHO responded by establishing an international collaboration to identify life-saving treatments for COVID-19. The Solidarity trial immediately revealed hidden problems. Some of the 50-plus country-participants cleared ethics and regulatory hurdles within a week. Other nations took six months. "I think every organization has lessons that they can learn and improvements they can make around the research ecosystem," said Swaminathan.

Vaccine and drug research was overplayed, and social and behavioral science research was neglected, observed the WHO chief. "Everyone paid the price for not having social and behavioral considerations come into policymaking early enough." Swaminathan also questioned the need for "300 trials of hydroxychloroquine, most not able to answer the primary question of whether the drug has any beneficial effects." Instead of this "waste of resources," a coordinated approach might have led some hydroxychloroquine investigators to shift their focus to another potential repurposed drug. Another problem: Most vaccine studies focused on the modern mRNA and DNA inoculations, without enough attention paid to the routine vaccines primarily used in LMICs. Lacking too were large trials of non-pharmaceutical interventions—studies of mask-wearing, for example.

Undoubtedly the pandemic also led to scientific gains, such as advances made in data exchange. "Genomic sequence data sharing helped us track the evolution of the virus," Swaminathan noted. Many principal investigators also pooled their data so that the WHO could create "living" guidelines based on available information. "As new research comes out, recommendations are updated. It is timely and saves a lot of effort once it's on a digital platform," she said. Disseminating this model to countries will help health ministries update other guidelines, such as those for antenatal care or malaria.

> "We need to think about the idea that what happens in an emergency has to be different from what happens when it's business as usual."
>
> – DR. SOUMYA SWAMINATHAN, WHO CHIEF SCIENTIST

Swaminathan called for even more open and timely sharing of data, accompanied by the sharing of benefits across higher-and lower-resource nations in the form of publications or access to health products and technologies. "I think researchers in general want to collaborate," she observed. "I think they're driven by scientific curiosity." She encouraged ESSENCE to build on this progress and ensure global representation is included in these platforms.

The meeting also included a presentation of a Fogarty analysis of health research capacity, conducted by Janelle Cruz. She noted that seven LMICs rank among the top 20 nations with the highest health research capacity. In order of strength, they are China, India, Brazil, Mexico, Thailand, Russian Federation and Turkey. Cruz's takeaway from her review of 180 nations: "Demography is not destiny—good research capacity is present in some smaller, less wealthy and less developed countries. Others can follow." Next steps include studying high-capacity outliers to determine best practices, while addressing barriers and assessing priorities in countries with low research capacity.

RESOURCES

https://bit.ly/WHO_COVID_response

Researchers transform maternity care in Ghana

Women often report both physical and psychological abuse while delivering babies in low- and middle-income country (LMIC) health care facilities. Mistreatment may include being examined without consent, discriminated against based on social status, denied a choice of birthing position, detained for non-payment or being subjected to unconsented procedures. "Abuse has become part and parcel of the practice," said Dr. Veronica Dzomeku, who is using an Emerging Global Leader Award to try to transform the culture of disrespectful maternity care in Ghana. The Fogarty program provides an intensive, mentored research experience that is intended to lead to an independently funded research career.

Dzomeku's five-year award is supporting her work developing and testing a midwife training program to change the culture of disrespect and abuse in childbirth care in a 1,200-bed hospital in Kumasi. A senior lecturer at the Kwame Nkrumah University of Science and Technology, Dzomeku began by quantifying and characterizing healthcare facility disrespect and abuse. A midwife, for example, may hit or scream at a woman who is not pushing enough. "Our studies show the midwives have life-saving intentions. So it is not as if they intend to abuse clients—it's the only way they know how to ensure compliance and save the lives of mother and baby," Dzomeku explained.

Ghana's maternal mortality rate has been cut by half since 1990, in large part due to an increase in facility-based deliveries. This success rate could easily stagnate—or reverse—if disrespectful and abusive maternal care continues and results in more home births, Dzomeku said. "Times have changed. What used to be accepted as normal no longer is," she added. The negative impacts of disrespect are both direct and indirect. Abuse during labor and delivery may directly result in the death of mother or baby, while some women who hear about mistreatment choose to deliver at home, indirectly placing lives at risk if complications occur.

Dzomeku's intervention consists of a four-day Respectful Maternity Care training program with modules encouraging respect and dignity during childbirth, appropriate communication, focused antenatal care and alternative birthing positions. The program embraces interactive teaching and learning methods such as role-play, discussion, brainstorming, demonstrations and case studies. Importantly, the antenatal care module brings mothers in the same trimester together for group sessions, which not only helps overscheduled midwives but also benefits mothers by providing an opportunity to learn from their peers.

A Fogarty-funded project is studying ways to provide women with more respectful care during childbirth in Ghana.

Photo by Emmanuel Attramah/PMI

Following the training, Dzomeku's team conducted detailed interviews with 14 midwives. The participants reported their newly acquired knowledge had positively improved their relationship with childbearing women, helped them communicate more effectively and recognize the autonomy of their patients during delivery. Some of the midwives also noted that the hospital's policies and built environment pose barriers to improving some aspects of care. For instance, they were not able to support alternative birthing positions or ensure privacy for multiple childbearing women in the open labor ward. The midwives recommended that logistics be improved and that all staff be provided with the training.

"We've also developed a tool for measuring postpartum experiences," noted Dzomeku. "Women have reported increased satisfaction with the care they received from our trained midwives."

The project's first trainees, referred to as "ambassadors of respectful maternity care," have now begun to train others. "When midwives who are not yet trained have challenges, they ask for an ambassador to be called in," explained Dzomeku. Since the issue is widespread, Dzomeku plans to scale up use of the intervention first within Ghana and then beyond its borders.

Mothers are not alone in reaping rewards. Trained midwives said the program provided them with valuable tools. "The training has helped me in managing my clients very well," one study participant said. "Now, I regret the abuse. Now I give them answers. I do not hit them. I talk to them. The training workshop has changed me forever."

RESOURCES

https://bit.ly/MaternityCareGhana

PROFILE

Former Fogarty Fellow now leads WHO disease elimination program

By Mariah Felipe

One of the participants in Fogarty's inaugural cohort of Scholars and Fellows in 2004 didn't have a well-formed career plan, but serendipity and preparation have led to his success. "I never had a good sense of where I wanted to go," said Dr. Jose Hagan. "I just saw the opportunities that were immediately in front of me and appreciated where they might take me next."

Hagan's global health career path has led him to the CDC. Currently, he is on detail to the WHO's Europe office, where he is team lead for control and elimination of vaccine-preventable diseases. He credits his Fogarty experience for clarifying his interest in global health. "The fellowship was a very influential part of my early career," he said. "Once I realized the impact an academic partnership with a host country could have on real public health outcomes, I started on an academic research career in global infectious diseases."

His initial Fogarty research project was part of a clinical trial by the Botswana-Harvard AIDS Institute Partnership to find ways to prevent mother-to-child transmission of HIV. They found that adding single-dose nevirapine on top of short-course zidovudine was much more likely to lead to undetectable HIV viral load in breastmilk. During his fellowship, Hagan gained knowledge of the fundamentals of lab virology, was exposed to an array of basic epidemiology and public health concepts, and completed some online coursework. But he said the most important benefits occurred in the margins. "I learned so much from networking and just from being exposed to global academic health as a career track."

In 2011, he traveled to Brazil on a second Fogarty fellowship, this time benefitting from the research partnership between Yale University and the Oswaldo Cruz Foundation (FIOCRUZ), Brazil's leading public health biomedical research institution. There he immersed himself in infectious disease epidemiology and had the opportunity to mentor trainees and Fogarty Scholars as a junior research faculty member.

Jose Hagan, M.D., M.S.

Fogarty Fellow: 2004-2005; 2011-2013

US Institutions: Harvard School of Public Health; Yale School of Public Health

Foreign Institutions: Botswana's Ministry of Health; FIOCRUZ

Research areas: Infectious and vaccine-preventable diseases

Since then, Hagan has served in many different roles. He joined the CDC's Epidemic Intelligence Service at the height of an Ebola epidemic in West Africa. He soon found himself deployed to a remote corner of Liberia, where he helped lead the investigation of an Ebola cluster in a small village there. "The Ebola epidemic was tragic—but as a young epidemiologist, it was such a formative experience to be in the field and on the front lines of that crisis," he recalled. "I was just in the right place at the right time."

In Hagan's current position, he has helped countries in Europe respond to COVID-19, which has taxed its institutions and created barriers for public health, including routine immunization. "The pandemic has also helped seed a minefield of vaccine misinformation," Hagan observed. "Together, these factors have made it harder to reach children on the margins who may be chronically left out from the benefit of vaccines."

Looking back at the nearly two decades of the Fogarty fellowship program, Hagan said its impact has been significant. "It's led to a new generation of NIH-funded global health researchers. For others—like myself—it provided a foundation in global public health that took us on other paths to leadership."

Hagan encouraged those considering a global health career to remain flexible. "Be open!" he said. "There's a universe of possible ways a person's career can go. My first Fogarty fellowship was based on basic HIV lab research, but I did not become an HIV virologist, instead I took away core skills, exposure to mentors and learned how clinical trials are done. So, be open to what you can learn from the opportunities you have and watch for what that next step will be because something always leads to something else."

RESOURCES

https://bit.ly/Jose_Hagan

Q&A

SHANNON N. ZENK, PHD, MPH, RN, FAAN

Dr. Shannon N. Zenk was named director of NIH's National Institute of Nursing Research (NINR) in 2020. In that role, she oversees an annual budget of nearly $170 million, the large majority of which supports extramural research. Previously, she was a professor at the University of Illinois Chicago (UIC) College of Nursing and a fellow at the UIC Institute for Health Research and Policy. Zenk was inducted into the International Nurse Researchers Hall of Fame in 2019 and elected as a member of the National Academy of Medicine in 2021.

How did you begin your research career?

I really became interested in communities—and how resources and risks are distributed across communities and the implications for people's health—while practicing as a nurse. One of my first jobs was as a home health care nurse case manager. I helped patients with pain management, taught them to manage chronic conditions and provided wound care. As I spent time in different communities, I was struck by the tremendous differences in the environments of my patients, both in terms of privilege and poverty. I found it difficult to talk to some about healthy eating when what they really needed was stable housing, a safe environment and access to healthy, affordable foods nearby. In response, I went back to school to learn more.

How did you progress on the research track?

I started my research in Detroit, then moved to Chicago, then nationwide. In our first study, we found that low-income and black communities have less access to healthy foods. For example, we showed that supermarkets with the broadest selection of healthy foods in the Detroit area were located over a mile further away from Black high poverty communities than White high poverty communities. This was one of the earliest studies on food deserts in the United States.

We also evaluated the impact of community investments and policy changes on the environment and health behaviors. An example of this was research into the 2009 Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) food package revision. This update dramatically expanded the inclusion of healthy foods such as fruits and vegetables in the package. This cost-neutral policy change benefited maternal and child health and was associated with improvements in the community food environment. Studies like these can help us accumulate evidence for more promising approaches to improve health outcomes in communities of color.

How have you been involved globally?

I personally have had a long-standing interest in global health. My first experience was in an undergraduate program where I spent a month in northern Nigeria learning about economic development. Along with several nurses and other nursing students on the trip, I visited hospitals and clinics to understand more about health and health care in the country. I also had the privilege of spending several weeks working with the nursing faculty at the University of Rwanda, helping their team develop research ideas. In addition, I had the pleasure of participating in Rwanda's first international conference in nursing and midwifery.

What is the role of nursing science?

Nurses know people and nursing science is centered on people. Of all health professionals, nurses spend the most time with people in a wide variety of clinical and community settings. Because of nurses' holistic perspective, we see firsthand—and COVID-19 has demonstrated how—advancing health and health equity will require developing prevention and treatment strategies that are responsive to the realities of people's lives and living conditions. I believe this holistic perspective is nursing science's most important contribution to research and health and, because of this, nurses have an important role to play in advancing health equity, too. At NINR, we want to maximize the impact of nursing science by tackling the world's most pressing health challenges and discovering solutions in the clinical and community settings where nurses practice. We want our research to reach populations that experience an undue burden of disease and illness and have been historically underrepresented, and we want to advance health equity. Global health and health equity are issues that have always been near to my heart since my early career as a home health nurse. I'm looking forward to collaborating with Fogarty and its funded scientists to support research and training that will help eliminate the pressing health problems around the world.

RESOURCES

https://bit.ly/Shannon_Zenk

NIH marks two major milestones in cancer research

Two significant anniversaries are being marked by the NIH's National Cancer Institute (NCI)—50 years since passage of the National Cancer Act (NCA) and 10 years since its Center for Global Health was established.

"The NCA advanced NIH's mission to improve the public's health through scientific discovery," said NCI director Dr. Ned Sharpless. "The programs and advances enabled by the legislation accelerated improvements in cancer prevention, early detection and treatment over the decades that have dramatically reduced the burden of cancer in our country and far beyond."

President Richard Nixon signed the act into law on Dec. 23, 1971, providing NCI with expanded authorities and responsibilities. In 2011, NCI created the Center for Global Health (CGH) to incorporate cancer control into broader global health programs, foster relevant research within NCI and around the world, and cultivate global cancer partnerships.

Cancer causes an enormous burden in low- and middle-income countries (LMICs), where 65% of the approximately 10 million annual global deaths occur, according to WHO data. By 2040, cancer is expected to claim 16 million lives each year, with an increasing percentage of those occurring in LMICs. The COVID-19 pandemic is worsening the situation because of the shutdowns of hospitals and clinics have delayed screening and treatment.

The cancer research community not only has a moral responsibility to address cancer as a global health problem, there's much to gain scientifically by doing so, observed CGH Director Dr. Satish Gopal. "I believe that studying cancer in the United States alone diminishes the universe of potential scientific discovery. Equitable global collaborations can help improve cancer control efforts worldwide, while generating new cancer knowledge that can benefit people everywhere." NCI's resources, expertise and international reputation provide unique opportunities for it to catalyze and accelerate global cancer research and control in ways that would simply not be possible without its participation in these larger international endeavors, he added.

CGH recently developed a new strategic plan, which is oriented around the core values of impact, equity and collaboration. "These values animate everything that we do," Gopal said. "We're really thinking about equity in all our daily work."

The Center focuses on four main goals. First, it supports innovative, impactful research that addresses key scientific issues in global cancer control and/or leverages unique scientific opportunities afforded by global collaboration. Second, it funds global cancer research training, particularly in LMICs, that enables global scientific collaboration. Third, it promotes the integration of current scientific knowledge into global cancer control. And finally, it represents NCI and promotes its engagement with key partners in global cancer control.

CGH collaborates regularly with the WHO, the International Cancer Control Partnership, the Global Alliance for Chronic Diseases and many other organizations including NCI-designated cancer centers, which have experienced marked growth of global oncology activities in recent years. Each year, CGH hosts the Annual Symposium on Global Cancer Research that is a satellite to the Consortium of Universities for Global Health annual meeting.

The Center is an active participant in NCI-wide efforts to improve equity and inclusion in its intramural and extramural programs, including those managed by CGH. "They are not duplicative or the same, but there are certainly important scientific and philosophical synergies between this larger effort and our global health activities," Gopal observed.

With the inequities in the global cancer burden continuing to climb, he said there is an urgent need for action. "A dedicated effort to reduce cancer morbidity and mortality must become an urgent post-pandemic priority."

Resources: https://bit.ly/GlobalCancerResearch

NCI grantee addresses inequities in prostate cancer

By Mariah Felipe

Although advances in prostate cancer treatment have improved global survival rates overall, that has not been the case for Black men of African and Caribbean descent. In the U.S., this population has the highest incidence of prostate cancer and death rates that are 2.5 times higher than among Caucasians.

While working on her Ph.D. studying natural products that might work against various cancers, Jamaican scientist Dr. Simone Badal made a startling discovery—all of the cell lines used in her research were from White people of European ancestry. When she consulted the literature, she discovered that most cell lines are of European ancestry.

"It got me thinking, would these components be just as effective if I had used Black cell lines?" said Badal, who is a senior lecturer at the University of the West Indies, Mona. When she went to look for cell lines from Black people of Caribbean ancestry, there were none. "That's when I knew we needed to develop our own cell lines." She then decided to focus on two cancers of concern, prostate and breast.

In Jamaica, many men are averse to undergoing digital rectal exams to screen for prostate cancer, which contributes to the high mortality rate, Badal said. "I do believe genetics plays a significant role as well, because research also shows that if you have two patients, one Black and one White, with similar types and stages of prostate cancer, the White patient is more likely to respond better to the treatment."

Badal worked with urologists to gather tissue samples from consenting patients with prostate cancer to try to develop prostate cancer cell lines. Her team used several different protocols but for the first few years, none of the cells survived. Eventually, Badal and her team developed a novel methodology that was successful. "I chose to develop cell lines because they are tools that can be used to screen anticancer lead molecules, as well as provide a basis for the molecular drivers of cancer," Badal noted.

To continue developing new cell lines, and then using them to test both natural products and existing cancer therapies, Badal successfully applied for a Fogarty Emerging Leader Award. Jointly funded with the National Cancer Institute, the grant has also enabled her to complete advanced training in genomics and bioinformatics—both key to furthering her research.

Badal hopes the attention her novel cell lines have received will add to the growing focus on health disparities research. "As investigators, when we are developing our research, it should be a requirement that cell lines from all different races are represented, especially in drug discovery. That's an important subject, and while I haven't seen much discussion in that regard, I do see positive changes in this broader health disparities arena."

Badal envisions transforming her lab at the University of the West Indies into a cutting-edge research facility, capable of conducting all the sophisticated imaging, genomics analyses and other processes that are required. In addition to saving lives, she hopes her studies on the anti-cancer properties of Jamaica's indigenous natural products will boost her country's pharmaceutical industry, which could drive economic growth. Her Ph.D. research identified several promising substances, such as one derived from the plant *Castella macrophylla,* which was more potent than the chemotherapy drug Tamoxifen.

Badal and her team are also working to produce breast cancer cell lines for Black women of African and Caribbean ancestry. There is a personal element to the work that inspires her—Badal lost a close friend to breast cancer and her husband's mother died of the same disease.

"As scientists, we cannot lose our resolve," said Badal. "We have to use our personal experiences, and use the left and right sides of our brains and just push on."

Jamaican scientist Dr. Simone Badal is using an NIH grant to develop prostate cancer cell lines from Black men of Caribbean ancestry, after finding there were none in existing banks.

Photo courtesy of the University of the West Indies

NCI program trains foreign scientists in NIH labs

To advance cancer research and cultivate global partnerships, the NIH's National Cancer Institute (NCI) has been providing training to foreign scientists in its Bethesda labs since 2010. The Short-Term Scientist Exchange Program (STSEP)—managed by NCI's Center for Global Health—has provided intramural training to 15 scientists from eight different countries. Participants must have a Ph.D. or M.D. and a minimum of one year of postdoctoral experience in cancer research. The training period can be up to six months, although the mentorships often continue for years, noted program officer Dr. Vidya Vedham. "This initiative also provides benefits for NCI intramural researchers, by providing an opportunity to partner with cancer researchers across the globe and expanding the field," she said.

Targeting cervical cancer in Cameroon

In Cameroon, few women are screened or treated for cervical cancer. Cameroonian gynecologist-obstetrician Dr. Joel Fokom Domgue reached out to NCI because he wanted to improve his knowledge of the human papillomavirus (HPV), which causes cervical cancer. NCI's Dr. Mark Schiffman, who has done pioneering work in the field of HPV epidemiology and cervical cancer prevention, agreed to mentor Domgue through STSEP.

Supported by Cameroon's Ministry of Health and the University Teaching Hospital of Yaounde, Domgue worked to adapt technologies for the African context. His accomplishments include a validation study of a lower-cost HPV testing device published in *The Journal of Clinical Microbiology*. STSEP helped Domgue improve his knowledge of HPV epidemiology and genetics, screening assays and vaccines. He also developed study design, statistical analysis and project management skills. Domgue said it was a "rewarding experience" that helped him advance in his career. Through the relationship, Cameroon also became a participating site for a multi-country NCI project focused on improving the accuracy of visual screening for cervical cancer.

Bringing the latest cancer therapy to India

Mumbai's Tata Memorial Centre sees up to 500 new cases of pediatric acute lymphocytic leukemia (ALL) each year. When Indian pediatric oncologist Dr. Gaurav Narula discovered NCI had developed a new cell therapy for the disease, he wanted to see if he could replicate it in his country. India's standard treatment—bone marrow transplantation—was time consuming and costly. The new approach—chimeric antigen receptor (CAR) T-cell therapy—involves removing the patients' T cells and modifying them in the lab so they will attack cancer cells.

"We knew western pricing for CAR T-cell therapy would never be affordable in India. We would have to do it ourselves," said Narula. He combined forces with Dr. Rahul Purwar of the Indian Institute of Technology-Bombay who'd begun studying the new treatment.

Indian scientist Dr. Albeena Nisar used her Short-Term Scientist Exchange Program (STSEP) fellowship to collaborate with Larry Moses and others in an NCI lab at NIH.

Photo Courtesy of Dr. Gaurav Narula

Through STSEP, Narula and his team members involved in clinical care, transfusion and lab work visited NCI to learn each step of the process. They have successfully developed India's own version of CAR T-cell therapy, which they are currently evaluating through clinical trials. Equally valuable are the lasting friendships that have been formed with NCI scientists, Narula said. "They may not be easily measurable, but they are what truly, truly matter."

Advancing genetic sequencing in Mongolia

Mongolia has a higher incidence of liver cancer than anywhere else on the planet. To better understand the causes for that, Mongolian scientist Dr. Enkhjargal Bayarsaikhan spent six months at NIH conducting genomic analyses of liver cancer, working with NCI's Dr Xin Wei Wang under STSEP. They discovered most instances of liver cancer in Mongolia are the result of infections with different strains of hepatitis and published the results in *Nature Communications.*

"It was a fantastic time for me," Bayarsaikhan recalled. "I gained confidence as a researcher and became inspired to work to develop science in my country."

Today, Mongolian patients benefit from targeted therapies based on genetic analysis. Bayarsaikhan is now conducting epidemiological studies to understand how hepatitis mutations interact with chemicals, while mentoring several students who are working toward advanced degrees.

NIH grantees study economics of tobacco farming

By Mariah Felipe

Many subsistence farmers in developing countries choose to plant tobacco, with the assumption it is the most profitable crop choice. This myth perpetuated by the tobacco industry not only causes financial hardship and food insecurity for many farmers and their families, but it also increases the supply of cheap tobacco and encourages its consumption, according to a team of scientists supported in part by the National Cancer Institute.

Tobacco use is the leading preventable cause of premature death, killing about 8 million people each year. There has been a recent marked shift in the burden of tobacco to low- and middle-income countries (LMICs)—where an estimated 80% of tobacco consumption now occurs—posing an enormous health and economic burden, according to the WHO.

Photo by: Donald Makoka

NIH-funded researchers are studying the political economy of tobacco farming in countries like Malawi.

With a series of grants made through Fogarty's tobacco cessation research program, Dr. Jeffrey Drope and his collaborators have studied the economic lives of tobacco farmers in several LMICs, and the political and economic processes that frame their livelihoods. They first examined existing literature and then surveyed nationally-representative samples of farmers in Kenya, Malawi, Zambia and Indonesia to determine why they choose to grow tobacco over other crops such as peanuts, green vegetables or corn.

"No small-scale farmer profits from tobacco-growing," said Dr. Fastone Goma, a research partner at Zambia's Eden University. "If you factor in unpaid family labor, all of these farmers make huge losses. All other crops proved to be more profitable to grow in these regions."

The researchers discovered that one of the main barriers to change was the farmers' lack of credit, necessary to switch to another crop. "These farmers are very capital poor, very cash poor. They don't have extra money to buy seeds and fertilizer," said Drope, who previously was head of economic and health policy research at the American Cancer Society and now is with the University of Illinois at Chicago. Since the tobacco industry will loan farmers what they need to grow tobacco up front, it makes it an appealing prospect. Another obstacle is farmers' lack of knowledge of how to grow other crops. Many LMICs have cut their budgets for educational services, which used to provide information on how to best cultivate specific crops to enhance the yield, Drope noted.

An important component of the project has been presenting the results not only to policymakers but also to the farming communities. "They eat it up and ask tons of questions," Drope said. When the farmers understood their lack of access to capital was undermining their ability to make money, they formed cooperatives to pool resources. The farmers also learned by example, observing one who switched to growing potatoes and was able to purchase a vehicle after his first harvest, something he couldn't afford when growing tobacco.

A central aim of the work has been capacity building. In this case, Drope and his collaborators established programs in these countries and supported researchers' efforts to continue long after the study ended.

Overall, the scientists' goal is to provide research that results in policy changes. Citing previous global modeling, Drope noted that a 40% rise in prices from increased excise taxes on tobacco could save more than 20 million lives over 50 years. But when he presses policymakers on the issue, they cite fears it would result in starving farmers and a black market in tobacco. Drope hopes his team's research debunking these tobacco industry yarns will bring change. But it's challenging to argue for taxation in countries like Indonesia, with a tiered tax structure and nationally branded cigarettes, said collaborator Dr. Gumilang Sahadewo, of the Universitas Gadjah Mada. "There is an intersection between nicotine addiction and local pride in having a national product, despite the significant public health cost," he said.

Their research results are now being considered by national governments and international organizations like the WHO, which is working to help farmers switch to alternative crops, according to Dr. Peter Magati, a collaborator in Kenya and now WHO consultant. "It is all about evidence and truth. That is what science and research are," said Magati. "We will keep on researching and seeking the support to do what we do best."

OPINION

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

COVID-19 renews interest in reciprocal innovation

The COVID-19 pandemic has spotlighted how crucial it is for scientists around the globe to collaborate with each other. We have much to learn and the next great discovery can come from anywhere. At Fogarty, we have long appreciated the benefits research partnerships bring to all parties involved. Science advances made in low-resource settings often result in frugal technologies that can save health care dollars here at home. Innovative uses of communication technologies developed in low- and middle-income countries (LMICs) can be ideal for use in rural areas of the U.S. And disease outbreaks or unique populations in LMICs can be opportunities for research discoveries that improve health everywhere.

Reciprocal innovations like these were the topic of a recent meeting hosted by Indiana University (IU). The organizers defined the concept as a mutual benefit addressing a shared challenge between an LMIC and high-income country, achieved through equitable partnerships that include continuous learning and innovation.

As a diarrheal disease expert, my favorite example of this is the simple formula for oral rehydration therapy. Originally used to treat a cholera outbreak in Bangladesh in 1968, it is now the standard of care for children with diarrhea in the U.S. and globally, resulting in a 100-million-dollars-per-year industry. *The Lancet* heralded it as one of the greatest medical achievements of the 20th century.

When Costa Rica was grappling with the budgetary challenges of rolling out the human papillomavirus (HPV) vaccine to protect against cervical cancer, a study funded by NIH and the Gates Foundation was conducted that showed a single dose was as effective as the multiple doses that were then being administered in the U.S. This is a wonderful example of how we can improve care, as well as increase global access to an effective tool that will reduce suffering and save lives.

A number of significant breakthroughs in prevention of HIV/AIDS transmission were the result of global clinical trials, including stopping mother-to-child transmission, providing protection through circumcision and instituting treatment as prevention. When an HIV outbreak occurred in Indiana's Scott County, IU turned to its research partners in Kenya for advice on how to respond. Given the ubiquity of cellphones in Africa, it is an ideal place to study how best to provide diagnosis and treatment through mobile devices. One such tool developed in Uganda for HIV/AIDS treatment has been adapted for use in the U.S. in helping people overcome opioid addiction.

In Zimbabwe, where psychiatric services are extremely limited, researchers used a task-shifting approach to expand care. They trained lay health workers to deliver problem-solving therapy for anxiety, depression and other common mental disorders in a safe and comfortable setting—a discreetly located bench. Called the Friendship Bench, the concept is being adapted for use elsewhere in Africa as well as in New York City.

A task-shifting approach is also being used to improve the neurodevelopmental outcomes of children in low-resource settings in Africa and the U.S. IU researchers are studying an intervention that trains caregivers to provide cognitive stimulation and social support. Neurodevelopmental interventions are most effective if administered early, when the brain is growing rapidly and has the greatest plasticity. With nearly 250 million young children in resourced-limited settings at risk for poor development, this is incredibly valuable for families everywhere.

During COVID, we have seen an explosion in the use of telemedicine, a practice that has been pioneered by many scientists in LMICs, where it has been a vital tool for expanding health care, especially for those in rural settings. Lessons learned from those experiences can provide insights to care providers in the U.S. as they conduct more of their consultations virtually.

The increasing complexity of global health research means that multi-disciplinary, multi-national collaborations are critical. Each partner brings different ideas and perspectives to the table, making the sum greater than the total of its parts. We also have to take science where the problems are because the frontiers of science may not be at home. Developing equitable research partnerships make reciprocal innovation possible—bringing health benefits for us all.

RESOURCE

https://bit.ly/IU_reciprocal_innovation

PEOPLE

Research!America recognizes NIH leaders

Research!America will present NIH Director Dr. Francis S. Collins with the John Edward Porter Legacy Award for his outstanding commitment to sustaining the nation's world-class leadership in medical and health research. Collins, who has led the NIH since 2009, has announced he will step down at the end of 2021.

Fogarty Senior Scientist Emeritus Dr. Vivian Pinn will be honored with the Outstanding Achievement in Public Health Award. Pinn, the inaugural director of the NIH Office of Research on Women's Health, is credited with leading the charge to include women and minorities in clinical trials, and emphasizing the differences associated with sex and gender in formulating and executing research studies.

Henrietta Lacks posthumously recognized by WHO

The WHO has honored the late Henrietta Lacks with a Director-General's award for her contributions to medical science. During her cancer treatment in 1951, tumor samples were taken without her knowledge and commercialized as the HeLa cell line, which has enabled research advances for diseases including polio, HIV/AIDS and COVID-19.

Fogarty grantee elected to the National Academy

Ohio State University scientist Dr. Wondwossen Abebe Gebreyes has been elected to the National Academy of Medicine for his leadership in molecular epidemiology and global health. The Fogarty grantee was also recognized for his insights into One Health—how animal, agricultural and environmental systems influence public health.

NIH bioinformatics collaborator has died

Bioinformatics authority Dr. Gaston Kuzamunu Mazandu died recently in South Africa. The University of Cape Town scientist was lead developer and senior lecturer for the Sickle Africa Data Coordinating Center supported by NIH and an active member of NIH's Human Heredity and Health in Africa initiative.

Supercourse founder and researcher is mourned

Longtime NIH grantee Dr. Ronald LaPorte died recently. The University of Pittsburgh professor emeritus was a renowned diabetes researcher who went on to establish the open-access website Supercourse, a collection of public health lectures that has reached about two million scientists and students worldwide, and contains 203,050 lectures in 38 languages.

Global HEALTH Briefs

Report calls for increased global pandemic preparedness capacity

The 2021 Global Health Security Index report measured the ability of 195 countries to respond to pandemics and found all countries, across all income levels, remain dangerously unprepared to meet future health threats. The report was developed in consultation with 18 experts from 13 countries.
Website: www.ghsindex.org

Measles progress threatened by COVID

The largest increase in unvaccinated children in 20 years occurred in 2020 and is increasing the risk of measles outbreaks, according to a report jointly issued by the WHO and CDC. During 2020, more than 22 million infants missed their first doses of measles vaccine. Measles surveillance also deteriorated.
Full report: https://bit.ly/measles2020

TB deaths rise due to pandemic

The COVID-19 pandemic has reversed years of global progress in tackling tuberculosis and for the first time in over a decade, TB deaths have increased, according to a WHO study. In 2020, more people died of TB, and far fewer were diagnosed and treated than in 2019.
News release: https://bit.ly/TB_deaths_rise

Road accidents are a leading global killer

Globally, 3,500 people die every day on the roads, according to the WHO. Its new Global Plan for the Decade of Action for Road Safety lays out practical, evidence-based steps all countries and communities can take to save lives.
Website: https://bit.ly/DecadeOfRoadSafety

NIH's Eye Institute unveils strategic plan

The NIH's National Eye Institute (NEI) has released a new strategic plan for activities over the next five years to eliminate vision loss and improve quality of life through vision research. NEI said it plans to increase its international partnerships, which currently include government agencies in India, China, Brazil, Ireland, Nigeria and Japan.
Website: https://www.nei.nih.gov/about/strategic-planning

Funding Opportunity Announcement	Deadline	Details
Interventions for Stigma Reduction to Improve HIV/AIDS Prevention, Treatment and Care in LMIC Countries R01 Clinical Trial Optional	Dec 20, 2021	https://bit.ly/HIV_AIDS_StigmaReduction
International Research Scientist Development Award K01 Independent Clinical Trials Required K01 Independent Clinical Trials Not Allowed	Mar 9, 2022	https://bit.ly/IRSDAK01
Chronic, Noncommunicable Diseases and Disorders Research Training D43 Clinical Trial Optional	Jul 13, 2022	https://bit.ly/NCD_ResearchTraining
Global Infectious Diseases (GID) Research Training Program D43 Clinical Trial Optional	Aug 3, 2022	https://bit.ly/InfectiousDiseasesResearch

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

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Lancet Countdown study details growing health impacts of climate change

Photo by Dr. Karen Levy

Every region of the world is affected by climate change and its health impacts are getting worse, according to the 2021 annual report from the Lancet Countdown, an international collaboration that independently monitors the health consequences of a changing climate. "We are seeing more frequent and more intense extremes of heat harming people's health in rich and poor countries," the study said. Nearly three-quarters of countries saw an increase in human exposure to wildfires, according to the report, and the environmental suitability for transmission of diseases like dengue, malaria and cholera is increasing around the world. In all, the publication examined 44 indicators, which it concluded "expose an unabated rise in the health impacts of climate change…providing a clear imperative for accelerated action that puts the health of people and planet above all else."

RESOURCE

Full report available at: www.thelancet.com/countdown-health-climate