

Fogarty Scholar

investigates neonatal

jaundice in Ghana . . . p. 4

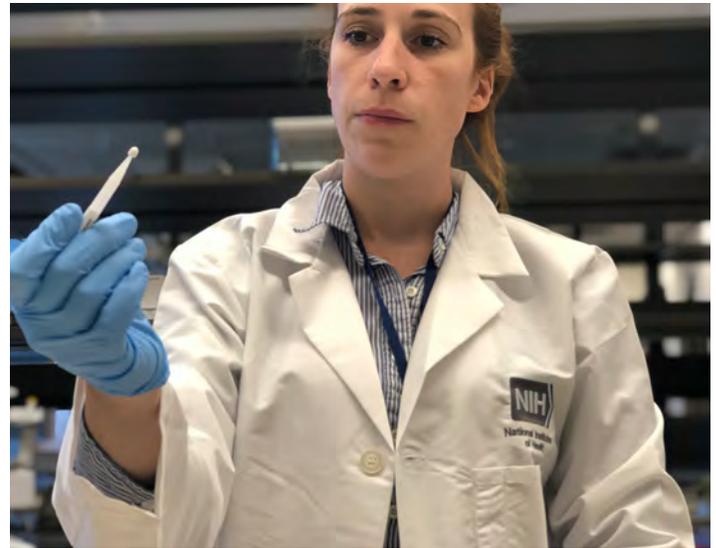


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NIH, Fogarty collaborate on COVID-19 rapid response

While many research projects have been stopped or delayed, NIH scientists are working flat out on all aspects of the novel coronavirus, including developing diagnostics, studying potential treatments and producing an effective vaccine. NIH leadership has established 10 cross-cutting work groups to focus and coordinate efforts. Fogarty staff are participating in a number of them to ensure the global health perspective is represented.

To fast-track progress, NIH has announced a public-private partnership that will develop an international strategy for a coordinated research response. The planned program—Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV)—will develop a collaborative framework for prioritizing vaccine and drug candidates, streamlining clinical trials, coordinating regulatory processes and/or leveraging assets among all partners to rapidly respond to the COVID-19 and future pandemics.



Courtesy of NIH's NIDIB

NIH scientists are working on a wide range of COVID-19 activities, including a study to determine the presence of COVID-19 antibodies in a sampling of the U.S. population.

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\$6.6M awarded to train infectious disease researchers

Fogarty is continuing to build research capacity in low-resource settings where it is needed most, with new awards that are expected to invest a total of \$6.6 million over five years. The Global Infectious Disease Research Training (GID) grants will provide research training through five projects located in Bolivia, Ethiopia, Kenya and Peru.

Scientists with the Harvard School of Public Health will focus on training in pediatric infectious diseases and nutrition research in Ethiopia. In Kenya, a team led by Washington State University scientists will deliver integrated training for physicians and veterinarians in zoonotic pathogen emergence and transmission.

Through a South-South partnership, an award to Johns

Hopkins University will build on past work in Peru, extending research training to neighboring Bolivia to address local priorities such as Chagas disease, cysticercosis and tuberculosis. Also in Peru, health ministry personnel will receive advanced training through a renewal award to Universidad Peruana Cayetano Heredia, supporting early detection and effective responses to threats including Zika virus, yellow fever and dengue. To help address malaria in sub-Saharan Africa, sites in Kenya and Ethiopia will provide training in molecular biology, genomics and bioinformatics through a grant to University of California, Irvine.

NIH's National Institute of Allergy and Infectious Diseases is joining with Fogarty to fund the awards.

FOCUS



Research needed to improve access to pain medicines in LMICs

- Barriers mean only 1% of world's opioids go to poorest countries
- Scientists use mobile health app to mitigate pain in Nepal
- Pain relief options are limited in low-resource settings

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NIH, Fogarty collaborate on COVID-19 rapid response

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“We need to bring the full power of the biomedical research enterprise to bear on this crisis,” said NIH Director Dr. Francis S. Collins. “Now is the time to come together with unassailable objectivity to swiftly advance the development of the most promising vaccine and therapeutic candidates that can help end the COVID-19 global pandemic.”

Coordinated by the Foundation for the NIH, ACTIV government and industry partners will provide infrastructure, subject matter expertise and/or funding to identify, prioritize and facilitate the entry of some of the most promising candidates into clinical trials. Industry partners also will make available certain prioritized compounds, some of which have already cleared various phases of development, and associated data to support research related to COVID-19.



Novel Coronavirus SARS-CoV-2

NIH has posted treatment guidelines for COVID-19 on its website. Developed by a panel of NIH leaders, physicians, statisticians and other experts, the guidelines provide clinical data on therapies, ongoing clinical trials and known interactions with other drugs. Recommendations also include best practices for managing patients at different stages of infection. The information will be updated as new data are published.

The National Institute of Allergy and Infectious Diseases (NIAID), which is leading the NIH response to COVID-19, has also developed a vaccine candidate, opened a number of clinical trials to study possible therapeutics

and published timely research findings. The Institute is supporting a randomized controlled trial of remdesivir in hospitalized adults diagnosed with COVID-19, and is exploring other broad-spectrum antiviral compounds. NIAID plans to evaluate possible treatments, such as the HIV medication Kaletra—also known as lopinavir and ritonavir—as well as interferon-beta. In addition, NIAID is investigating several antibody-based therapeutics, which prevent the virus from infecting and entering cells. NIAID also collaborated with biotech firm Moderna, Inc., to develop a vaccine against COVID-19. Phase I clinical trials are underway.

“We need to bring the full power of the biomedical research enterprise to bear on this crisis. Now is the time to come together with unassailable objectivity to swiftly advance the development of the most promising vaccine and therapeutic candidates that can help end the COVID-19 global pandemic.”

— DR. FRANCIS S. COLLINS, NIH DIRECTOR

An NIAID study has validated decontamination methods for re-use of N95 respirators, which are designed for single-use and worn by healthcare providers. Finally, NIAID has begun a large-scale study to find out how many adults who have not been diagnosed with COVID-19 carry antibodies to the virus.

Fogarty staff have also swung into action. With Fogarty Fellow Angela Spencer one of 7,000 Americans stranded in Peru, program officer Kevin Bialy worked his connections at the State Department to help Spencer be repatriated. The Oregon Health and Science University Ph.D. candidate is studying elements of community-based cysticercosis control with collaborators at the Cayetano University in the remote city of Tumbes. Although disappointed her field research was cut short, Spencer said she is more committed than ever to a career in global health because, “diseases don’t stop at borders, and we can learn so much from one another.”

Fogarty also worked diplomatic relationships to ensure reagents being donated by Johns Hopkins University would be delivered on a State Department flight to Africa, where scientists needed them to conduct coronavirus studies.

When the outbreak began, Fogarty’s team of infectious disease modelers immediately began analyzing data from China, led by Dr. Cécile Viboud. In quick succession, the team published several papers on the outbreak’s spread in China and the effect of travel restrictions. In the pipeline are papers including a study of the response in South Korea, the difficulty of gathering reliable mortality figures during an outbreak and seroprevalence of antibodies among contacts of COVID-19 patients.

In Pakistan, Fogarty biosafety trainees were prepared to begin COVID-19 testing and research, having mastered topics such as control of air flow in labs, proper procedures for personal protective equipment, decontamination practices and other aspects of biosecurity. The training—led by Fogarty’s Dr. Zeba Rasmussen—began in 2014 in partnership with the Pakistan Biological Safety Association.

In typical Fogarty fashion, many of the program’s trainees have now become the trainers. As her province geared up preparations for COVID-19, program participant Dr. Hafsa Muhammad, of Khyber Medical University, began training health care workers and lab personnel, and helped its director Dr. Yasar Yousafzai set up the main Provincial Public Health Reference lab to provide testing. “Indeed everything we learned in our PBSA/Fogarty training is now being used practically in the COVID-19 outbreak,” she said.

COVID-19 makes more urgent the need for quality control on the global supply of diagnostics, medicines and vaccines, according to Dr. Joel Breman, Fogarty senior



Fogarty has supported biosafety training in Pakistan since 2014. Lessons learned are being applied to the country’s COVID-19 response.

Photo courtesy of Javed Muhammad

“The COVID-19 pandemic threatens a global surge in substandard and falsified medical products, not just for those directly related to COVID-19.”

– DR. JOEL BREMAN, FOGARTY SENIOR SCIENTIST EMERITUS

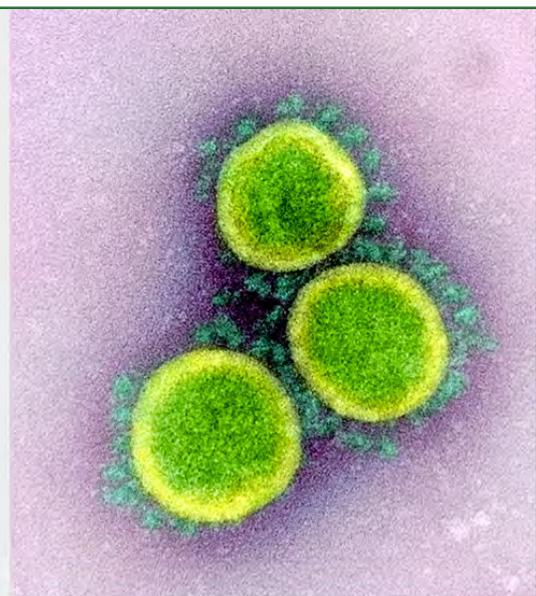
scientist emeritus and co-author of an article published in *The Lancet Global Health*. “The COVID-19 pandemic threatens a global surge in substandard and falsified medical products, not just for those directly related to COVID-19,” the article stated. “Many products essential for COVID-19 treatment and prevention are at risk—including face masks, hand sanitizer and diagnostic tests—and false claims have been made for prevention and treatment.”



Coronavirus Disease 2019 (COVID-19)

News, funding & resources for **#GlobalHealth** researchers:
fic.nih.gov/coronavirus

Latest research info from NIH:
nih.gov/coronavirus



PROFILE

Fogarty Scholar studies neonatal jaundice in Ghana

By Susan Scutti

Dr. Nuzley Abedini understood from her own research that medical students from Ghana who train in the U.S. find patient-centered care unusual. When she herself trained in Ghana as a Fogarty Scholar, Abedini experienced the difference in medical cultures firsthand: “Patient-focused communication is not a common practice there.”

Then a third-year University of Michigan medical student, Abedini hoped to gain field knowledge of a country that she’d studied from a distance. Primarily, though, she wished to improve her research skills by conducting mixed-method research of infant jaundice.

Globally, neonatal jaundice—a complication of prematurity, birth-related injuries and other illnesses—is a large problem. “In sub-Saharan Africa, infant jaundice is one of the top five leading causes of infant mortality and the leading cause of neurological problems in infants,” explained Abedini. This is due, in part, to a high rate of an enzyme deficiency, which is thought to be an evolutionary phenomenon to protect against malaria.

To estimate the prevalence of infant jaundice in Ghana, Abedini first conducted a review by examining nearly 1,000 admissions at a district hospital in Kumasi over a 16-month period. Jaundice was the second most prevalent diagnosis of babies in the neonatal ICU—30% had the condition. Next, Abedini designed a questionnaire for mothers with jaundiced babies as a method for understanding risk factors. For example, in Ghana, moms believe camphor—which is in mothballs—helps keep a baby clean while protecting the child’s health. Abedini suspected the practice of placing camphor inside infant clothing might be contributing to high rates of jaundice. Yet, her survey showed that less than 10% of the mothers used camphor in their baby’s clothing.

One in five of the 235 total respondents had no knowledge of infant jaundice, while three in four were misinformed. “Even though their babies had jaundice, they didn’t know what it was,” said Abedini. And a quarter of mothers with jaundiced babies waited more than 24 hours to bring their children to the hospital.



Nuzley Abedini, M.D.

Fogarty Scholar:	2012
US Institution:	University of Michigan
Foreign Institution:	Kwame Nkrumah University of Science and Technology
Research area:	Neonatal jaundice in Ghana

As part of her fellowship, Abedini received on-the-job biostatistics training. Analyzing the data she’d collected, she identified a significant “upstream” problem. “Moms did not recognize the signs of jaundice: a baby with yellow skin and eyes, a baby not feeding well, a baby who is lethargic or floppy or running a fever.” This suggested to Abedini that before researchers tried to devise solutions to diminish jaundice in Ghana, they needed to address maternal education first. As a result of her work, subsequent studies began to focus on communicating health instructions to moms.

Before arriving in Africa, Abedini had wondered, “How do you ensure your work does not unintentionally cause harm?” Her Ghana mentors taught her that the consent process—exceedingly difficult when working with a range of languages and literacy levels—prevents researchers from taking advantage of those who may not be able to advocate for themselves. Collaborative work in Ghana taught Abedini that conducting research in a developing country comes with challenges that cannot be anticipated without firsthand experience. She was encouraged that the tools developed for her study have been disseminated for use in other countries.

Seeing the degree of suffering in Africa led Abedini to change her focus to global palliative care research. She is now a palliative care clinical fellow at the University of California, San Francisco and will soon complete her clinical training. She continues to rely on her Fogarty mentors as she builds collaborations with global organizations and chairs a working group of the Consortium of Universities for Global Health.

Her Fogarty fellowship was a life-changing experience, Abedini said. “What I learned through Fogarty informs everything I do today.”

LLOYD MULENGA, MBCHB, MSC, MMED, PHD

As a physician-scientist-policymaker, Dr. Lloyd Mulenga is an unusual hybrid who leads infectious disease activities at the University of Zambia, in the university's teaching hospital and lab, as well as within his country's health ministry. To prepare for these positions, Mulenga earned three advanced degrees with support from Fogarty research training programs. In addition to conducting research that has resulted in nearly 50 publications, he has also engaged in science diplomacy, delivering a plenary presentation on the state of HIV in Africa at the U.N., and participating in a WHO review of the agency's HIV treatment guidelines.



How has Fogarty training fostered your career?

First, I did a master's in infectious diseases, which gave me a great understanding of not just HIV/AIDS but infectious diseases generally. It gave me a broader view of public health and managing disease outbreaks. My next master's was in internal medicine and was much more clinically focused. That allowed me to progress from data analysis to learning how to design and implement clinical trials. From my time in the U.S., I gained a new perspective on training and that it works best when you learn by doing and actually engaging in research.

Added together, my training has prepared me to be an independent researcher, as well as a policymaker comfortable in collaborating with people from different institutions, such as the WHO, UN, Global Fund and others. I have reached where I am today because of Fogarty and I'm grateful for all the support.

How do you manage your different roles?

It's difficult to balance. I spend 40% of my time conducting research, another 40% providing service in the hospital and working in the health ministry, and the other 20% teaching. But the three are interlinked and a lot of synergies exist. Most of the resources come through the ministry so it's important that I have a voice there. I try to look at problems and see if science can be applied to solve them. And then if a trial or study is approved and funded by the ministry, I take it to the hospital to implement it, and use it to recruit trainees from among my students and mentees. So, my career spans research, training and care—and all three aspects have been encouraged.

How are policymaking and research linked?

Many of the health problems we have require action from policymakers. As researchers, if we don't engage with decision makers, we won't be able to solve the

problems. Our research provides data that we can use to make the case for policy change. That's what my training taught me, that I am supposed to advocate for evidence-based interventions or practices. For instance, for one of my master's theses, I designed a clinical trial to see if a less expensive drug, dolutegravir (DTG), could be used effectively and safely to treat people living with HIV. The results of my successful trial helped lead to the change in the WHO guidelines, which now recommend DTG as the preferred HIV treatment option.

"Our future depends on young doctors who value research and see it as an important part of their work. I'd like to help build a new crop of physician-scientist-policymakers who become as inspired as I did during my training."

What do you hope for the future?

My focus is to produce a generation of young scientists who can take on our most pressing health problems through impactful research. Our future depends on young doctors who value research and see it as an important part of their work. I'd like to help build a new crop of physician-scientist-policymakers who become as inspired as I did during my training.

Even though we've made progress in improving health in Zambia and have many fewer deaths from HIV/AIDS now, we still have a long way to go. There are still groups we are struggling to reach with testing and care. We need to continue to invest in research, training and service. They must go hand-and-hand together in order for us to succeed.

RESOURCES

<https://bit.ly/LloydMulenga>

Research needed to improve access to pain medicines

His young Malawian patient had a rare lymphoma causing a painful tumor to grow in his nasal passage, explained Dr. Satish Gopal, a former Fogarty grantee. “We treated him over several years,” said Gopal, who tried to manage his patient’s pain symptoms, but effective drugs remained out of reach. “With his third relapse he was clearly having such severe pain that he chose to end his life in his 20s,” recalled Gopal. “If he lived elsewhere, he may have been cured and lived another 50 years.”

Now director of global health at the NIH’s National Cancer Institute, Gopal said that patient’s desperation is something that still troubles him.

The global burden of suffering from untreated pain is enormous, with low- and middle-income countries (LMICs) bearing as much as 80% of the burden, according to The Lancet Commission on Global Access to Palliative Care and Pain Relief. Although morphine is relatively inexpensive, less than 1% of the global supply makes it to LMICs, which is “a medical, public health, and moral failing and a travesty of justice,” according to the Commission’s findings.

“It’s one of the most unequal distributions of any health good that we’ve ever seen in our many decades of work,” said Dr. Felicia Knaul, a health economist at the University of Miami, who chaired the Commission.

To help quantify the burden, she and her colleagues

measured the serious health-related suffering caused by 20 health conditions in all, such as birth trauma, tuberculosis, chronic heart disease, HIV, poisoning and dementia. They identified the physical and psychological symptoms of suffering, and estimated the number of people living with the health conditions to produce estimates of the total burden.

They also examined the significant obstacles to providing effective pain relief in LMICs. Evidence must be compiled and presented to policymakers to justify the cost, however nominal, they said. Trained professionals are needed to appropriately manage opioid medications. There are regulatory barriers and concerns of the potential for abuse, as seen in some high-income countries. That’s a mistaken conclusion, said Knaul. “It’s the idea that because there’s serious obesity in the U.S., people in developing countries should go hungry.”

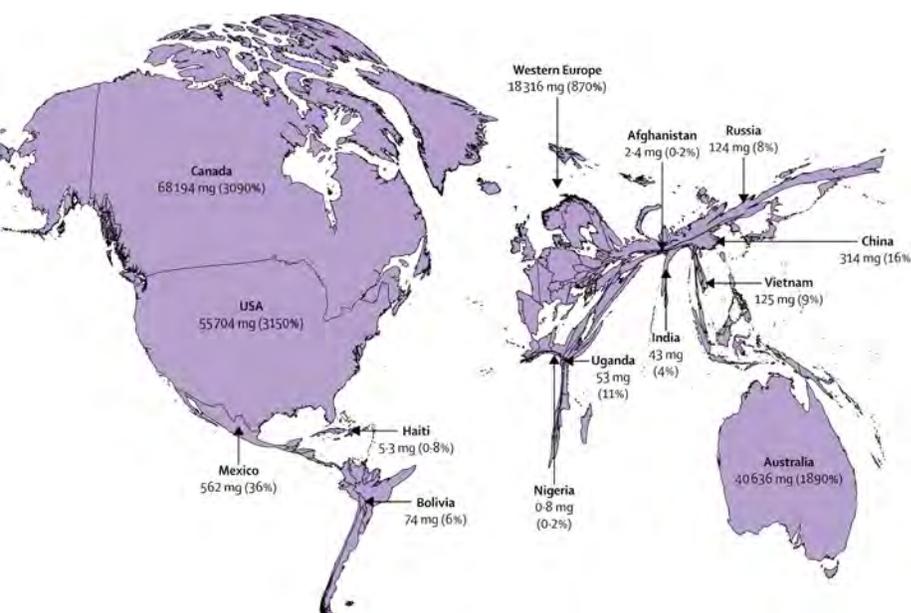
Meanwhile, research to address COVID-19 palliative care and pain relief in LMICs has already taken a back seat to other pandemic concerns. “We need to educate and advocate for the importance of palliative care in the COVID-19 response,” said Dr. Stephen Connor, director of Worldwide Hospice Palliative Care Alliance. COVID-19 patients in LMICs will be dying “horribly” from acute respiratory distress syndrome that could be made manageable, said Connor.

Beyond the pandemic, policymakers in LMICs need to increase their morphine requests. South Africa, India,

Singapore, Bangladesh and a few other countries currently host scientists conducting palliative care and pain management research that might move the dial, according to Connor.

Knaul believes that convincing governments to prioritize pain management requires a strong set of metrics and “a different kind of research to help rethink the priorities for health.” When using standards like mortality or quality-adjusted life years (QALY) to assess priorities, pain relief will be at the bottom of the list because it typically does not prevent death or make people less sick. The Lancet Commission proposes a new measurement known as “suffering-intensity-adjusted life-years” (SALY) that uses patient reports to quantify averted pain.

Only 1% of the world’s opioids reach those suffering from pain in low- and middle-income countries where the burden is greatest.



This proposed research is “closely linked to advancing value-based care, which seeks to incorporate what patients and their families value,” explained Dr. Afsan Bhadelia, co-lead author on the Commission’s report.

Countries were urged to invest in an essential package of medicines, equipment and human resources to improve pain management for their populations. The Commission also suggested LMICs implement guidelines for opioid use, build awareness of health suffering and better integrate alleviation of pain into national health plans.

Capacity building should also be a priority, Knaul said. “One of the major recommendations was that no physician, no nurse, no social worker, no religious leader should graduate without having at least one course in palliative care and pain relief.” Fogarty training grants might be used to educate global public health students to use some of the measures and techniques developed by the Commission, said Knaul. “We’re also trying to

figure out ways to monitor country performance and see changes over time.” In Uganda, for instance, the health ministry has been importing and manufacturing morphine since 1993 and providing national access since 2004—a model being replicated in a number of other African countries.

Traditional medicine is also relied on for pain relief in many LMICs, especially among rural populations that find it easier to access than medications that require visits to urban clinics. Gopal said that in a study of cancer patients in Malawi, many reported using herbal remedies, dietary modification, spiritual rituals and other practices.

He said he hopes research can be done to rigorously describe the burden of pain in each context—studies that catalog locally implementable interventions and assess their effects. “This is the foundational work that needs to be done with the appropriate level of rigor to move pain control forward.”

Scientists use mobile health to mitigate pain in Nepal

In Nepal, palliative care services may not be widely available, causing many to suffer unmitigated pain. “During my first trip there in 2004, I was very naïve and I saw for the first time what cancer unchecked looks like,” said Dr. Virginia LeBaron of the University of Virginia. “We worked in hospitals there where the only available pain medicines were Tylenol and Motrin.”

Since then, Nepal has made significant improvements in the availability of essential pain medicines, such as opioids, and developed evidence-based pain management guidelines that are tailored to the local context. But because the guidelines currently exist only on paper, implementation has been inconsistent and there is no way to track how they are being used, LeBaron said. She hopes to change that by developing a digital platform that will provide decision-making support for health providers treating patients experiencing cancer pain, supported by a two-year Fogarty mobile health grant.

LeBaron is collaborating with local partners, including the Nepalese Association of Palliative Care (NAPCare), which developed the guidelines. The team began by designing and conducting a survey at four cancer sites in Nepal. Participating nurses, physicians and pharmacists answered questions about their attitudes and knowledge of managing cancer pain, awareness of

the NAPCare guidelines, the features they would like in the app and related issues. The responses will help researchers understand potential barriers to cancer pain management and help inform the app’s design.

Analysis of the data is still in progress, yet early results indicate that opioids are more consistently available than previously thought. Smartphone use is ubiquitous and health providers are willing to use a mobile app, however some are restricted from using cellphones at work. They should be empowered, said LeBaron, who began her career as an oncology nurse. “Nurses are inherently trained to think holistically about a person and are highly attuned to human suffering and their role in mitigating that.” The current version of the app focuses on healthcare providers but LeBaron hopes to evolve the app’s design to be patient-facing as well, so families can participate in pain management decisions.



Screen shot of pain treatment app.

Skills learned on the Fogarty project will equip the Nepal team members to initiate and conduct their own independent research projects, LeBaron believes. Meanwhile, her overall app-building model has applicability far beyond Nepal. “Working closely with clinical partners in LMICs, implementing guidelines that consider the cultural and resource context, and using local surveys to gather feedback are all strategies that can be used in similar settings to improve the delivery of palliative care and cancer pain management,” she said.

Pain relief options are limited in low-resource settings

Supply chain problems and poor quality or counterfeit drug manufacturing—in combination with restrictions on opioids—limit access to pain medications in low- and middle-income countries (LMICs). In particular, rural regions often have minimal, inadequate or no drugs available. A variety of traditional remedies are also used.

pressure. This combination of ease of use and high level of safety means ketamine can be used to reduce pain during surgical procedures in LMICs, disaster situations and conflict zones. For several decades, there have been reports of illicit use of ketamine on a relatively small global scale.

Photo courtesy of the CDC



Morphine



Opioid analgesics are listed among the WHO essential medicines. Opiates are made from the raw materials of opium, poppy straw and concentrate of poppy straw. Since the earliest human civilization,

opium has been known to relieve pain. Morphine, a powerful opium derivative first synthesized in the early 19th century, comes in the form of a bitter-tasting pill or solution. Another form of liquid morphine can be injected into the muscle. In many LMICs, there is limited availability of oral morphine and too few staff trained in palliative care.

Tramadol



Tramadol, synthesized in 1962, is available globally in tablet, capsule or injectable solution. Tramadol produces dual-analgesic effects. It both

activates opioid receptors in the brain, which relieves pain, while also blocking serotonin and noradrenaline absorption in the brain thus affecting mood. Tramadol is used worldwide and is included as an analgesic in the WHO guidelines for cancer pain relief. Tramadol is generally considered a medicinal drug with a low potential for dependence relative to morphine, yet the UN warned of an increase in trafficking and consumption of tramadol at the end of 2017.

Traditional remedies

Traditional health care encompasses a wide variety of pain-relief remedies. The WHO reports that acupuncture is the most common traditional practice, closely followed by herbal medicines and indigenous traditional medicine. Other popular forms include homeopathy, therapeutic massage, hypnotherapy, hands-on healing and hydrotherapy. More than 100 countries embrace Chinese traditional medicine, with some people using it exclusively and others as a complement to allopathic medicine, according to the WHO.

Aspirin and Paracetamol



In low-resource settings, aspirin and paracetamol are among the most widely available medicines. The WHO recommends aspirin (acetylsalicylic acid) and paracetamol (acetaminophen)

for the relief of mild-to-moderate pain. Aspirin is believed to be the most commonly used analgesic medication worldwide with 40,000 metric tons consumed each year.

Ketamine



Since 1985, the WHO has included ketamine on its essential medicine list to relieve pain and provide anesthesia for both children and adults. Discovered in 1962, this dissociative

anesthetic is either injected into a muscle or given intravenously—administering the drug, then, does not require reliable electricity, oxygen, highly trained staff or monitoring systems. In comparison to other anesthetics, ketamine does not depress breathing or lower blood

Photo courtesy of the U.S. Food and Drug Administration

Photo courtesy of the U.S. Food and Drug Administration

Courtesy of Ambrose Heron, Creative Commons

Photo courtesy of the U.S. Drug Enforcement Agency



For pain relief, two techniques, acupuncture and tai chi, as well as herbal remedies are often used within this tradition dating back thousands of years. Practitioners of acupuncture stimulate specific points on the body by inserting thin needles through the skin. Research suggests this ancient technique promotes the release of the body's natural painkillers and affects areas in the brain involved in processing pain. Past studies reveal that acupuncture can ease certain chronic types of

pain, such as low-back pain, neck pain, osteoarthritis/knee pain and carpal tunnel syndrome. Other research shows it may reduce the frequency of tension headaches and prevent migraine headaches. However, some scientific studies suggest that real and sham acupuncture are equally effective, indicating a placebo effect, according to the National Center for Complementary and Integrative Health. Tai chi and yoga combine certain postures, gentle movements, mental focus, breathing and relaxation. Research suggests that practicing tai chi may reduce pain from knee osteoarthritis and help people cope with fibromyalgia and back pain.

Betel nut



The betel nut, which is cultivated from the tall, slender Areca palm tree, has been used in the Pacific islands for as many as 2,000 years. An estimated 600 million people take some form of the betel nut to achieve

stress reduction, a feeling of well-being and heightened awareness, according to the WHO. A staple of traditional Ayurvedic medicine, the nut is offered to patients as relief for a range of ailments, though evidence of health benefits is limited at best. However, a 2015 study suggested that a treatment made of a betel nut extract conferred significant pain reduction in a rat model of migraine headaches.

Cannabis

About 147 million people consume cannabis, which originated in Central Asia and is now cultivated across the globe, according to the WHO. Cannabis refers to the dried leaves, flowers, stems and seeds from the *Cannabis*

sativa or *Cannabis indica* plant, which contains the mind-altering chemical THC and similar compounds. For thousands of years cannabis has been used for medicinal purposes, including as an analgesic. Evidence suggests long-term cannabis users risk impairment of cognitive functioning and dependence, while those who smoke it may also damage their airways, inflame their lungs and weaken their defense against pulmonary infections. The NIH's National Cancer Institute states that pain relief is

a potential benefit of medicinal cannabis, while various studies suggest patients using cannabis require less frequent and lower doses of opioids. Currently, scientists supported by the NIH are looking at cannabis use to alleviate HIV- and sickle cell disease-related pain.

Khat



The khat plant (*Catha edulis*) is cultivated in countries bordering the Red Sea, along the east coast of Africa and in west Asia. For centuries people in these regions have used khat for its stimulant effects and as part of their cultural and religious traditions, according

to the WHO. Some khat chewers believe the plant is beneficial for ailments including headaches, colds, body pains, fevers and arthritis. The leaves release chemicals, structurally related to amphetamines, that deliver a mild high. Yet there are a variety of health problems associated with khat, including hypertension, anorexia, constipation, cardiovascular disease, hepatitis and cancer. A 2017 study indicated khat extract is analgesic in mice exposed to different painful stimuli. The authors call for additional explorations of the plant's effects on pain receptors.

OPINION

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

COVID-19: working together as one to speed science



I'm normally a glass-half-full kind of person. But these are not normal times. With an unprecedented pandemic sweeping the globe, it's hard to stay optimistic.

And yet, people are coming together in beautiful ways to help each other. Scientists around the world are working furiously to better understand COVID-19,

discover its secrets and unlock a cure. Research is proceeding at hyperspeed. Publications are pouring out as scientists share their initial analyses, theories and observations on how to address this killer virus. These may be just rough drafts of science, but they are being shared globally in an unprecedented manner, with little regard for whom will get credit or profit financially.

This is truly a moment for all to appreciate the importance of global health research, for we are in this together. By sharing data and pursuing the best ideas—from wherever they come—we may find a way to slow the spread of COVID-19 infection and reduce the number of deaths it claims.

While an effective vaccine would be the ideal solution, we are all asking, what can we do now? It's frustrating when there are so many questions that we cannot answer. There are so many scientific problems to solve—things we don't yet know about this lethal virus.

We initially thought older people were most at risk. But now we see it has also stricken down the young and healthy, destroying lungs, effectively turning them into useless wet sponges. We are learning that there may be huge numbers of people with the virus who have no symptoms. There also seem to be "super spreaders" who easily infect large numbers of people. We don't yet know if those who recover from the virus have immunity and, if they do, how long that might last.

As a scientist, I am intrigued by these mysteries and have so many questions about how this virus operates. As a human being, I am devastated by the toll it is taking—the suffering, the lives cut short and the jobs that disappeared overnight.

For all of us, our personal circumstances are utterly transformed. I'm fortunate to be in isolation with my wife, who is equally engaged in battle against this virus. We have substituted frequent video conferences for the professional networking and social engagements we had taken for granted in our daily lives.

Although physically separated from colleagues and collaborators, I cannot remember a more productive work period than these last few weeks. It is gratifying to participate in the NIH response, under the able leadership of NIH Director Dr. Francis Collins. I am also full of admiration for my colleague, Dr. Tony Fauci, who as "America's doctor" has been at the frontline of the U.S. response.

In record time, NIH scientists have banded together to process funding for promising COVID-19 research projects, develop vaccine candidates, establish numerous clinical trials, analyze reams of data, publish countless papers—all in the hopes of finding the magic bullet that will neutralize this dangerous adversary.

At Fogarty, we are concerned about how to reduce the impact on the world's most vulnerable. How can we leverage our unique expertise in implementation science, bioethics, mobile health and stigma research? I am so proud of the Fogarty staff who have rallied to the cause, joining trans-NIH work groups to ensure the global perspective is considered.

Our team of epidemiologists has been working around the clock since the initial crowd-sourced data from China became available. They are also studying how South Korea responded and was able to quickly bend the curve. And they're applying what they learned in compiling flu deaths to help determine the true mortality rate of COVID-19 in the U.S. They're also providing training and support to colleagues in Africa, so they can do COVID-19 testing and genomic sequencing as the outbreak spreads across the continent.

Although these are uncertain times, we are united in our commitment to deploy science-based solutions to alleviate the suffering caused by COVID-19, especially among the world's most vulnerable citizens.

RESOURCES

fic.nih.gov/coronavirus



Gardner receives Mérieux award from NFID

The National Foundation for Infectious Diseases (NFID) has selected Dr. Pierce Gardner, of Stony Brook University, for the 2020 Dr. Charles Mérieux Award for his outstanding lifetime contributions to public health. In 2001, Gardner helped establish Fogarty's Fellows and Scholars program and remains an adviser.



WHO names Fogarty scientist to commission

Fogarty senior scientist emeritus Dr. Joel Breman has been appointed by the WHO to chair the International Commission for the Certification of Dracunculiasis Eradication, which evaluates the status of countries applying for eradication certification. Breman is also currently president of the American Society of Tropical Medicine and Hygiene.



Former NIH director of child health research dies

Dr. Duane Alexander, long-time director of NIH's *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, died in February. Alexander presided over efforts that led to the near elimination of maternal-to-child transmission of HIV in the U.S. More recently, he served as an adviser to Fogarty.



Fauci advises on coronavirus, leads NIH response

Dr. Anthony S. Fauci, director of the NIH's National Institute of Allergy and Infectious Diseases, has been advising the Trump Administration and Congress on the COVID-19 outbreak, while leading the NIH response to the virus. Fauci has been NIAID director since 1984 and has advised six Presidents on infectious diseases.



Birx named to White House Coronavirus Task Force

Ambassador Deborah Birx has been detailed to serve as the White House Coronavirus Response Coordinator. A world-renowned global health administrator and physician, Birx has led the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) since 2014. PEPFAR is a funding partner of the Health Professional Education in Africa initiative, managed by Fogarty.



Fineberg appointed to infectious disease committee

The National Academies of Sciences, Engineering and Medicine has selected Dr. Harvey Fineberg to chair a standing committee of emerging infectious diseases and health threats, requested by the White House due to the COVID-19 pandemic. Fineberg is president of the Gordon and Betty Moore Foundation.



Int'l Development Finance Corp. CEO appointed

President Trump has tapped Adam Boehler to be the first CEO of the new U.S. International Development Finance Corp. The agency began operations in February and aims to help businesses expand into emerging markets, foster growth and improve lives in the developing world. DFC has an investment cap of \$60 billion.

National Academies study malaria drugs

Concerns regarding the long-term health effects of antimalarial drugs on veterans prompted the National Academies of Sciences, Engineering and Medicine to review evidence related to drugs used over the past 25 years. Particular attention was paid to research on mefloquine and tafenoquine. Full report: http://bit.ly/NAP_malaria

Scientists measure impact of mothers' grief

In some African countries more than half of all women have lost at least one child but this burden of bereavement receives little attention. A team of researchers has attempted to measure the physical and mental impact of the trauma of child loss, and estimate the public health threat it poses. Full report: http://bit.ly/Grief_Africa

Commission urges action on child health

The health and future of every child and adolescent worldwide is under threat, according to a report from a commission convened by WHO, UNICEF and *The Lancet*. The study examines ecology, climate change and exploitative marketing aimed at children. News release: http://bit.ly/failing_kids

WHO aids study of health care barriers

The WHO has published a handbook for conducting adolescent health services barriers assessments, with a focus on disadvantaged populations. The goals are to build in-country capacity to identify obstacles to health services, trigger action to address these barriers, and improve integration of adolescents into monitoring and evaluation. Handbook: <http://bit.ly/WHObarriers>

Gender gaps remain for women scientists

While women are gaining in terms of overall participation in research globally, there are still gender gaps in research funding and career longevity, according to a report released by Elsevier. Full report: <http://bit.ly/GapsPersist>

Knowledge sharing aids reproducibility

For research discoveries to be broadly accepted, the results must be shared and verified by other researchers. A panel of experts recently examined the current state of reporting of research findings and explored opportunities for harmonizing guidelines. Their analysis has been published by the National Academies of Sciences, Engineering and Medicine. Full report: <http://bit.ly/NAreproducibility>

Funding Opportunity Announcement	Details	Deadline
International Bioethics Training R25 Clinical Trial Not Allowed D43 Clinical Trial Optional	http://bit.ly/BioethicsTraining	Jun 4, 2020
Fogarty HIV Research Training for LMIC Institutions D43 Clinical Trial Optional D71 Clinical Trial Not Allowed G11 Clinical Trial Not Allowed	http://bit.ly/NIHGlobalHIV	Aug 20, 2020
Mobile Health: Technology and Outcomes in LMICs R21/R33 Clinical Trial Optional - non-AIDS applications	http://bit.ly/NIHmhealth	Sep 24, 2020
Japan Society for the Promotion of Science (JSPS) Short-term Fellowships for U.S. Postdoctoral Scientists in Japan	http://bit.ly/JSPSforUS	Oct 1, 2020
Global Infectious Disease (GID) Research Training Program D71 Clinical Trials Not Allowed	http://bit.ly/IDtraining	Oct 28, 2020
Emerging Global Leader Award K43 Independent Clinical Trial Required K43 Independent Clinical Trial Not Allowed	http://bit.ly/NIHGlobalLeader	Nov 4, 2020
Global Brain and Nervous System Disorders Research Across the Lifespan R21 Clinical Trial Optional R01 Clinical Trial Optional	http://bit.ly/NIHGlobalBrain	Nov 6, 2020
Reducing Stigma to Improve HIV/AIDS Prevention, Treatment and Care in LMICs R21 Clinical Trial Optional	http://bit.ly/NIHstigmahiv	Nov 12, 2020

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

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Book launched to help world's children deal with COVID-19



A new picture book uses a fantasy creature to help children learn to protect themselves from COVID-19 and manage the difficult emotions the pandemic can cause. The book, "My Hero is You, How kids can fight COVID-19!" is

available in nine languages with more translations in the pipeline. It was produced by a collaboration of more than 50 organizations working in the humanitarian sector, including the WHO, UN, International Federation of Red Cross and Red Crescent Societies, and Save the Children.

More than 1,700 children, parents, caregivers and teachers from around the world shared how they were coping with the COVID-19 pandemic. That input helped script writer and illustrator Helen Patuck and the project team ensure the story and its messages resonated with children from different backgrounds and continents.

RESOURCES

Downloadable books: <https://bit.ly/CovidforKids>