



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

## Survey of African medical schools identifies needs

The critical shortage of physicians in sub-Saharan Africa is the result of the low number of graduates—and high rate of their immigration to other countries—combined with faculty shortages and inadequate financial support, according to a survey of the region's medical schools.

The two-year comprehensive study examined the challenges, innovations and emerging trends in African medical education and was led by Drs. Fitzhugh Mullan, Seble Frehywot and colleagues at George Washington University, in collaboration with an advisory committee of the region's leading academics. The study's findings and recommendations were recently published in *The Lancet*.

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Photo by David Roehkind

*The Sub-Saharan African Medical School Study details the challenges, innovations and emerging trends in the region's medical education.*

## USAID devotes \$12m to bolster higher ed in Africa

USAID is devoting about \$12 million to bolster higher education in Africa through capacity building partnerships designed to nurture local expertise in critical development issues such as health, food security and natural resource management. The initiative will pair 11 African universities with U.S. partners.

The program is intended to maximize the resources of U.S. institutions while placing African universities in the lead to capitalize on their on-the-ground knowledge, proximity to the challenges, and build their own capacity to better address these challenges.

"The citizens, academics, and civic and educational institutions of developing countries must be integrated into the way we partner to address development challenges," said USAID Deputy Assistant Administrator for Africa Franklin Moore. "In this way, we can ensure that projects are sustainable, reflect decades of lessons learned, are maximally effective and targeted, and help to build in-country capacity to solve development challenges.

The partnerships have detailed five-year strategic plans with a 10-year vision to address national and regional development priorities in sub-Saharan Africa through higher education human and institutional capacity development. Funded by USAID through a grant to Higher Education for Development, the partnerships are the result of the Africa-U.S. Higher Education Initiative, a collaborative effort started in 2007 to advocate for increased engagement in African higher education capacity development.

Several of the projects will focus on infectious diseases and five of the African institutions are also involved in the Medical Education Partnership Awards, being jointly administered by Fogarty and the Health Resources and Services Administration. They include Addis Ababa University in Ethiopia; University of Nairobi in Kenya; University of Capetown in South Africa; Makerere University in Uganda; and University of Malawi.

For more information, visit <http://bit.ly/gtQ1GX>.

### FOCUS



### MOBILE HEALTH

- mHealth innovations advance research
- Cell phones help Turkish smokers quit
- New handheld device transforms microscopy

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# Scientists track deadly bird flu around globe

Bird flu remains a serious threat to both wildlife and humans, killing at least 18 people this year alone. A multidisciplinary program supported by Fogarty and the National Science Foundation is contributing to the ongoing global tracking of the virulent H5N1 strain of human influenza, which kills about 60 percent of those it infects.

Dr. Xiao Xiangming, a remote sensing expert and professor of botany and microbiology at the University of Oklahoma, heads the international surveillance project, funded under Fogarty's Ecology of Infectious Diseases initiative.

Since 2006, Xiangming and his colleagues have been developing an early warning system for detecting "hot spots" and "hot times" for the regions that are prone to risk. Xiangming's team uses a combination of epidemiology, ornithology, agriculture and environmental remote sensing. They also employ a wide range of tools including geographic information systems, GPS technologies, epidemiological models and internet technology to track the virus's spread.

The project has yielded useful information about the involvement of wild birds and their connection to the spread of H5N1. Using GPS data on migration paths and genomic analysis of the disease strains, the researchers were able to examine the relationships between the wild birds and domestic fowl. "All of them are increasing the opportunities for viral transmission and persistence," Xiangming told *Science* magazine recently. The team has identified probable transmission routes based on the migration paths and is now speculating on the location of the viral reservoir.



Photo by Steve Hillebrand/U.S. Fish and Wildlife Service

Scientists are learning more about wild birds and their connection to the spread of H5N1, known as bird flu.

Widespread circulation of the avian flu virus increases the likelihood of its mutation into a form that could pass from person to person, potentially resulting in a new large-scale human flu pandemic.

Researchers such as Xiangming would like to better understand wild bird behavior, distribution and habitat use, in addition to the role of human factors like urbanization and population growth.

*Science*, 15 Oct. 2010, p. 313

# Elderly South Africans particularly vulnerable to flu

Elderly South Africans have an elevated risk of death from seasonal influenza, a recent study shows. In comparing flu-related deaths that occurred from 1998-2005 in South Africa with those in the U.S.—taking into account such factors as differences in population age structure and baseline mortality—researchers discovered the mean percentage of winter death attributable to flu was 16 percent in South Africa versus 6 percent in the U.S.

When all respiratory causes, cerebrovascular disease and diabetes were considered, the death rates were four to eight times greater in South Africa compared with the U.S. and the percentage increase in winter deaths caused by flu was two to four times higher.

The research team, led by Dr. Cheryl Cohen of South Africa's National Health Laboratory Service, was supported

by Fogarty and the Department of Homeland Security. Published in the *Clinical Infectious Diseases* journal, this is the first nationally representative study from Africa to estimate the seasonal flu death rate.

"These data support increased efforts for control of seasonal influenza in elderly individuals in South Africa and other low- and middle-income countries, where the excess seasonal mortality burden could be greater than previously thought," according to the authors.

The model presented in the research, they say, could be applied to any near-real-time data available from South Africa to estimate the disease burden in each wave of a pandemic as it would progress.

*Clinical Infectious Diseases*, 15 Dec. 2010, pgs. 1362-9

# Haiti recovery efforts should include prisons

The humane detention of prisoners, including provision of medical care, is crucial to Haiti's recovery from the devastating 2010 earthquake, according to Dr. Jean Pape, Fogarty grantee and director of GHESKIO. In a recent issue of *Annals of Internal Medicine*, Pape and a group of physicians working on a prison health care program issued a call to action, emphasizing that the just treatment of inmates is essential to Haiti's reconstruction.

"Internationally, resources typically fail to reach prisoners,

Photo courtesy of Health Through Walls



The just treatment of prisoners in Haiti is central to the nation's recovery, argue health experts.

in part because of the diminished value placed on prisoners' lives, yet failure to meet the needs of prisoners has public health consequences," said Pape and his co-authors. "Distributing health resources according to a system based on disparate value of human life disrupts and defeats control of infectious diseases."

Thousands of prisoners in Port-au-Prince who'd been receiving much-needed medical care fled when the massive quake struck Haiti in January 2010. Six male inmates were killed and the nation's largest penitentiary,

the Prison Civile, was badly damaged. The surviving men escaped, though many had been receiving care for a wide range of serious conditions. The treatment was being provided under a new program funded by the nonprofit organization Health Through Walls and USAID. The primary intervention focused on the Prison Civile, with the hope that it would eventually serve as a model for the nation's other prisons.

The facility, about 100 years old and designed for 800 occupants, housed more than 4,200 inmates when the disaster hit. The prison had a long history of deaths resulting from malnutrition and preventable infectious diseases. Most prisoners lived under brutal conditions, packed together in small rooms. The intervention program had just begun to make inroads in addressing their health care needs when the quake hit.

Pape and his colleagues are urging the international community to address this issue when planning relief efforts. "Recovery for postearthquake Haiti, as any nation rebuilding following natural disaster or conflict, requires respect for rule of law," they argue. "This includes humane detention and the delivery of justice and adequate health care for prisoners."



Haiti's largest penitentiary, the Prison Civile, was badly damaged in the January 2010 quake.

Photo courtesy of BBC World Service

*Annals of Internal Medicine*, 21 Sept. 2010, pgs. 407-10

# Maternal health challenges can be overcome

Although there are significant obstacles to improving maternal health in low- and middle-income countries, they can be overcome, according to Argentinian researcher Dr. Fernando Althabe. A prominent obstetrician and perinatal care expert, Althabe recently visited NIH to deliver the annual Lawton Chiles International Lecture on Maternal and Child Health in the Americas, which is co-sponsored by Fogarty and the National Institute of Child Health and Human Development.

Althabe described the challenges he has faced over the years while working to improve maternal health care in hospitals and clinics in South America. Though he encountered resistance to change—such as physicians' attitudes and beliefs—Althabe said he also learned

valuable lessons. "There are no magic bullets," he said. "Interventions should be tailored to overcome specific barriers."

With some Fogarty support, Althabe and his colleagues focused on implementing evidence-based approaches to procedures such as episiotomies and cesarean sections.

Dr. Althabe currently heads a Fogarty-funded master's program in clinical effectiveness for maternal health professionals and is overseeing two Fogarty fellows working in public hospitals in Argentina. He is also the director of the Department of Mother and Child Research at the Institute for Clinical Effectiveness and Health Policy in Buenos Aires.



## African medical schools . . .

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“Although national and international interest with respect to strategic investment in medical education in sub-Saharan Africa has been growing, little is known about the status of medical schools or trends within medical education across the continent,” according to the study. Any attempts to improve health in these countries “should consider options to increase both the productivity of medical schools and the retention of their graduates within their countries,” the authors suggest.

Based on responses from more than 100 of the region’s 168 medical schools, the survey team noted faculty and curricular issues were the most commonly identified as key to improving the quality of graduates, while infrastructure concerns were the most often cited barriers to increasing the quantity. Inadequate funding was mentioned in connection to both.

Nearly every medical school visited for the study suffered some degree of faculty shortage, with low salaries, limited career options, heavy teaching loads, and lack of support staff and equipment reported as the main barriers to faculty retention. Geographical distribution of physicians was also identified as a common concern, particularly in rural areas. Though the survey showed this is less of an issue for countries that require graduates complete compulsory service.

The study found infrastructure deficiencies are “ubiquitous and restricting.” Daily power outages, insufficient number of computers, low bandwidth internet access and inadequate student housing were among the resource issues reported.

Lack of coordination among government agencies is another common problem, the survey found. “In many countries, coordinated planning for budgets, priorities and outcomes between ministries of health and education is poor, which contributes to inappropriate curricula and the graduation of doctors who cannot find employment in the country.”

While respondents say the presence of an active research portfolio aids staff recruitment and retention, the study found less than 10 percent of the region’s medical faculty are involved in sponsored research. This was particularly a problem at newer, smaller schools with younger faculty who lack the training and mentorship to successfully compete for research grants.

On a positive note, the authors discovered “impressive curricular innovations” at many schools, including

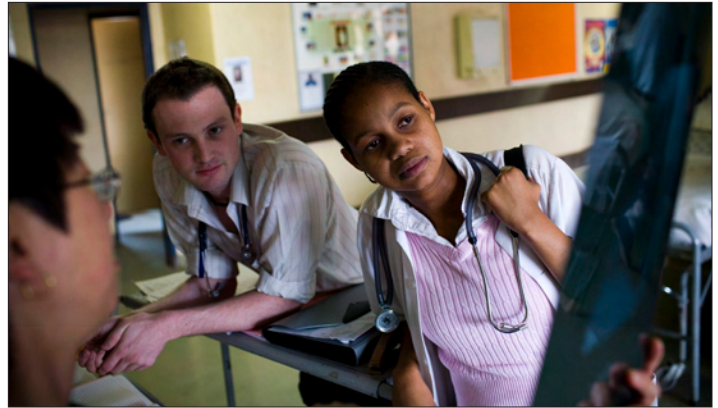


Photo by David Reckling

Some survey respondents report maintaining an active research portfolio aids staff recruitment and retention at African medical schools.

community-based education, problem-based learning and multidisciplinary team-based learning.

The study and its recommendations (see chart) are intended to provide a catalyst for further innovations and investment in medical education in sub-Saharan Africa. “This action, in turn, should help produce a more robust workforce with the aim of improved health in Africa.” The Medical Education Partnership, managed by Fogarty and the Health Resources and Services Administration will address many of these issues, as described recently in *Science*.

*The Lancet*, 11 Nov. 2010, online  
*Science*, 3 Dec. 2010, pgs. 1324-5

### PROPOSED RECOMMENDATIONS

To Strengthen  
Medical Education in Sub-Saharan Africa:

1. Launch campaigns to develop the capacity of medical school faculties; including recruitment, training, and retention
2. Increase investment in medical education infrastructure
3. Build structures to promote inter-ministerial collaboration for medical education
4. Fund research and research training at medical schools
5. Promote community orientated education based on principles of primary health care
6. Establish national and regional postgraduate medical education programs to promote training, excellence and retention
7. Establish national or regional bodies that are responsible for accreditation and quality assurance of medical education
8. Increase donor investment in medical education aligned with national health needs
9. Recognize and review the growing role of private institutions in medical education
10. Revitalize the African Medical Schools Association

# Artesunate suppositories are economical, effective

Giving emergency artesunate suppositories to children with suspected severe malaria before referring them for treatment is a cost-effective intervention that can substantially improve the management of childhood malaria in remote African settings, according to a Fogarty-supported study published recently in *The Lancet*.

The research team, led by Dr. Yesim Tozan of Boston University, studied a hypothetical cohort of 1,000 newborn babies through five years of age in high malaria transmission settings. The team assessed the costs and cost-effectiveness of artesunate treatment, followed by referral to a health facility, under a variety of intervention uptake and referral compliance scenarios.

The researchers estimated that the full uptake of artesunate treatment and full compliance with referral advice would avert 37 child deaths and 967 disability-adjusted life-years (DALYs)—a measure which combines years of life lost because of premature death, with years of life lived with disability—over five years. Across all scenarios, the study reported that the intervention could avert each DALY at a cost of \$77 to \$1,173.

“Compared with the interventions that target key childhood illnesses in sub-Saharan Africa, pre-referral artesunate treatment is among the most cost-effective, especially if the intervention uptake is moderate or higher,” the researchers concluded.



Photo by WHO/S. Holliman

*Artemisinin therapies for malaria are made with extracts from *A. annua* plants, used in traditional Chinese medicine for over 2,000 years.*

WHO guidelines recommend the intervention but its use remains low, in part because of questions about cost.

“This study shows that rectal artesunate is highly cost-effective for saving lives of severely ill patients with malaria living not only at the end of the road, but where there is no road,” said Dr. Joel G. Breman, Fogarty scientist and a co-author on the study. “There is now full justification to provide community health workers with life-saving rectal artesunate suppositories and training on their use.

*The Lancet*, 4 Dec. 2010, pgs. 1910-5

## Increased focus on implementation needed

More attention should be devoted to strengthening health systems in low- and middle-income countries, according to global health experts who gathered recently in Montreux, Switzerland. The three-day meeting, sponsored by the WHO, focused on health systems research and universal health coverage.

There is growing awareness among healthcare providers and policymakers regarding the need to increase capacity of developing world health systems and apply evidence throughout the policy process. Meeting participants also discussed how monitoring of health coverage policies in middle-income countries can help to better target vulnerable populations and make corrections mid-course.

Implementation research plays an important role in helping global health funding organizations realize their goals, Dr. Linda Kupfer, acting director of Fogarty’s policy division, told the group. She also made the case for a more uniform

nomenclature of implementation science. Kupfer and a study team contributed a chapter on the topic to a WHO publication released at the meeting.

Having a standard definition would make it easier for organizations to promote the advancement of the science and to allocate resources to this sector of health research, they believe. “Donors are considering a wide range of options to fund research and research capacity strengthening that will no doubt contribute to make their health development investments more effective and sustainable.”

The paper, titled “Implementation Research for the Control of Infectious Diseases of Poverty,” advocates for research capacity building to be linked to larger global health programs and initiatives, giving it more prominence and scaling up the field worldwide.

For more information, visit: [www.hsr-symposium.org/](http://www.hsr-symposium.org/)

# Mobile health innovations advance research

Innovations in mobile communications continue to drive advances in medical research and health care as private corporations, governments and foundations make substantial investments in the nascent technologies. More than 2,000 scientists, physicians, health researchers, software engineers, policymakers and telecommunications executives convened recently at a three-day mobile health—or “mHealth”—summit in Washington, D.C., to exchange views, share findings and discuss the future of the dynamic new tools and applications.

The meeting, presented by the Foundation for the National Institutes of Health in partnership with the mHealth Alliance and NIH, hosted 149 exhibitors and included representatives from 48 countries. It also featured a series of panel discussions and breakout sessions, as well as several prominent keynote speakers including NIH Director Dr. Francis S. Collins, Microsoft co-founder and Chairman Bill Gates, United Nations Foundation Chairman Ted Turner and U.S. Chief Technology Officer Aneesh

Photo by Brian DeKenz



adherence in HIV antiretroviral therapy and the popular MedLine Plus Mobile application developed by the National Library of Medicine. “Most NIH institutes have significant investments in m-health,” he said. “It’s time to

take advantage of the marriage of mobile technology and research.”

Much of the enthusiasm at the summit surrounded the proliferation of mobile health applications in low- and middle-income countries, which are rapidly outpacing the U.S. in the use of the new health technologies. “Middle-income countries like China, Thailand, Mexico and Brazil are where most of the innovation will happen,” said Gates. “These are the places where things will work first.”

**“It’s time to take advantage of the marriage of mobile technology and research.” – NIH Director Dr. Francis S. Collins**

OpenMRS, an electronics medical records management system that evolved from a Fogarty-funded program in Kenya, is now supported by the Rockefeller Foundation and is utilized in scores of countries. Text messaging as a health intervention has also proved to be quite effective in low-resource settings. Text messages were a valuable tool in directing victims to clinics in Haiti immediately following the quake in early 2010, and cell phones are now being used there to track the ongoing cholera epidemic.

Though many scientists and physicians who had spearheaded successful pilot programs presented at the summit, much of the discourse that took place in the panel sessions concerned challenges being faced by health workers who employ mobile health applications in the field. Interoperability and scalability issues often hinder the implementation of programs, despite them functioning successfully in the pilot stage. “It’s easy to fool yourself into thinking something works,” said Gates, commenting on the need for pilot programs to be scalable.

The lack of infrastructure and working business models

Photo courtesy of Foundation for NIH



Fogarty Director Dr. Roger I. Glass greets Bill Gates, who was a keynote speaker at the summit.

Chopra. The new field promises “a growing opportunity” both at home and abroad, Collins said, citing NIH-funded projects like a wearable chemical sensor for hydrocarbon exposure deployed in the Deepwater Horizon oil spill, a real-time monitoring system being used in Uganda to track



Photo courtesy of Foundation for NIH



NIH Director Dr. Francis S. Collins gave opening remarks at the 2010 mHealth summit.

was another recurring theme. Dr. Judith Rodin, Rockefeller Foundation president, pointed out that without these essential supporting elements, mobile health devices are merely clever gadgets or novel examples of high technology. “We need recombinant innovations, people putting things together in a new way,” she said. “Invention is not enough.” Rodin used the example of the first cell phone call—made in 1973—to illustrate this point. It would be decades before the telecommunications industry built an adequate infrastructure to support widespread use of mobile phones.

Privacy and ownership of patient data were also on the minds of many of the attendees. Many of the new mobile health programs are based on cloud computing platforms, which are internet-based and are thought to be less secure than server-based applications. Additionally, proprietary software can create problems in developing countries, where cash-strapped ministries of health are sometimes unable to maintain applications or ongoing license fees. One panelist pointed out that in some of these cases software manufacturers have confiscated large amounts of vital patient data along with their applications, potentially putting patients at risk.

Difficulty in changing human behavior was repeatedly identified as an obstacle to implementation of the new applications. “It’s not enough to just give people cell phones,” said Dr. Walter Curioso, a Fogarty grantee who has carried out several large-scale cell phone-based studies in Peru.

Other panelists surmised that older patients will be less

likely to adapt to the new devices. Similarly, overburdened physicians and health workers might also have difficulty taking on a new technical skill set. “Immunization is easy,” said Dr. Linda Wright, director of Global Network for Women’s and Children’s Health Research at National Institute of Child Health and Human Development at NIH. “What is really hard is changing human behavior and management.”

Some experts also voiced concerns about the low literacy levels of some of the populations targeted by health technologies that employ text messaging as the primary means of communication. The need for education or the use of visual messages in certain cases was proposed by a few of the attendees. “Know your customers,” said Dr. Nils Daulaire, director of the HHS Office of Global Health Affairs. “If we understand their needs, their realities and their limitations—which includes in many cases the inability to read the text on their text messages—then I think we’ll be better serving their health needs.”

### There are concerns about the low literacy levels of some populations targeted by health technologies that employ text messaging as the primary means of communication.

Despite these concerns, there was cause for optimism. “We have a robust research agenda and we’ll need new business models and behavioral changes that will work,” said Fogarty Director Dr. Roger I. Glass, who delivered closing remarks. “But the path ahead is bright, with many opportunities.”



Photo by Brian DeKenzi, courtesy of Harvard University

NIH is funding numerous mobile health programs across the globe, such as this project that uses electronic protocols to improve patient adherence.

# Cell phones help Turkish smokers quit

An innovative new smoking cessation program supported by NIH allows researchers and health workers in Turkey to use cell phones to reach smokers who would not normally seek traditional methods of quitting. The program is funded under Fogarty's International Tobacco and Health Research and Capacity Building program, which addresses the burden of tobacco consumption in low- and middle-income nations.

Smoking and lung cancer are significant public health concerns in Turkey, where more than half the men and about one quarter of the women smoke. Despite these high rates, however, the majority of Turkey's smokers report a desire to quit and more than 45 percent have attempted to do so in the past year.

Headed by Dr. Michele Ybarra of the nonprofit organization Internet Solutions for Kids, the project is based on an existing text messaging cessation program in New Zealand and will bring together a multinational team of public health, tobacco and health technology experts. The program's goal is to deliver wide-reaching interventions to adult smokers while building in-country capacity and increasing local expertise in the area of smoking cessation research.

Ybarra and a team of researchers in Ankara are using focus groups and one-on-one interviews to identify common text message vernacular and determine optimal delivery methods to create tailored, culturally relevant messages.

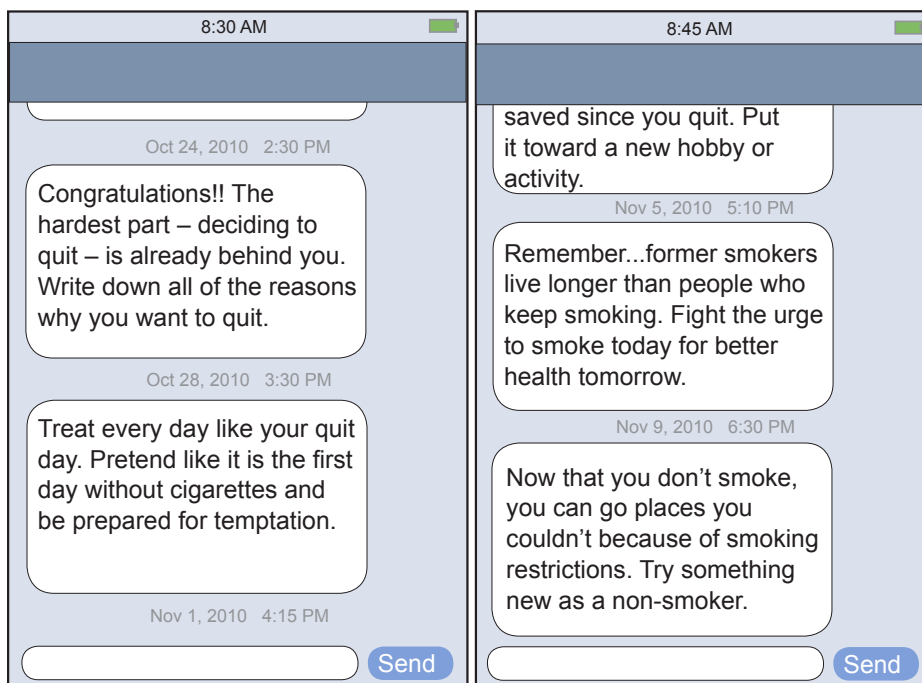


Photo by David Snyder

A new program in Turkey will use text messaging to reach out to smokers who want to quit.

"The target population is recruited through flyers, word of mouth and shopping malls," said Ybarra. "The messages are based upon cognitive behavioral therapy, or altering the individual's way of thinking and acting."

**Smoking and lung cancer are significant public health concerns in Turkey, where more than half the men and about one quarter of the women smoke. Despite these high rates, however, the majority of Turkey's smokers report a desire to quit and more than 45 percent have attempted to do so in the past year.**



Pilot studies of the project have already been carried out, with high retention rates demonstrated. Additionally, two medical fellows who have shown promise in smoking cessation research are being trained at Hacettepe University in epidemiology and biostatistics while helping to implement the program.

Cell phones are used by approximately 35 million Turks and are 1.8 times more common than landlines in Turkey.

If successful, Ybarra's team intends to scale up the effort nationally and implement a similar program in the United States.

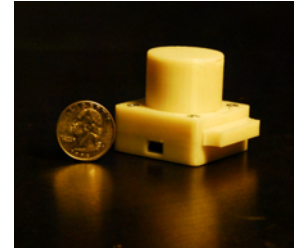


# New handheld device transforms microscopy

A recent breakthrough in mobile health is a compact, lens-free microscope that uses digital holography to capture images. Developed by a team at University of California, Los Angeles, the device installs easily on mobile phones and provides researchers a cost-effective means of gathering and analyzing blood samples in the field. Additionally, it can perform cell counts—or cytometry—with data transfer to a computer in mere seconds.



Lensfree Cellphone Microscope



Photos courtesy of Aydogan Ozcan

Lens-free microscopes can be attached to cell phones and used in low-resource settings to monitor pathogens.

It can also be used by unskilled personnel for testing of urine, blood, sputum, saliva or water by searching for unique holographic signatures of organisms. The signatures captured by the cell phones allow for reconstruction of the microscopic images through rapid digital processing. “It can literally convert our existing phones to microscopes,” said Dr. Aydogan Ozcan, who created the device. “The microscope captures images of the shadows of cells, instead of the cells themselves.”

device to use in several low-resource settings. Supported by a grant under Fogarty’s Framework Programs for Global Health Signature Innovations Initiative, Nielsen and teams of researchers will use the microscope and other telemedicine technologies to conduct disease surveillance for a study at sites in Brazil, Malawi and Mozambique. The rapid diagnosis capability offered by the microscope will be particularly helpful to researchers and health workers combating malaria, tuberculosis and other diseases in these countries.

Dr. Karin Nielsen, Ozcan’s colleague, will soon put the

# Dengue monitored with cell phones



Photo by CDC/James Gathany

Disease vectors like this *Aedes Aegypti* mosquito can now be tracked using cell phones.

The transmission of mosquito-borne diseases like malaria and dengue can now be tracked using mobile health technology and software. NIH-funded researchers

developing countries to make informed decisions. The new mobile health platform, which makes use of the existing communications infrastructure in Mexico, gives dengue researchers near real-time monitoring capacity as well as the ability to rapidly transmit findings. Mosquito control teams equipped with cell phones can visit homes where dengue cases have occurred and immediately send data back from the field or save it to a local database. The resulting information can be used for timely, effective decisions regarding disease control.

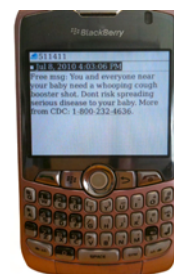
at Colorado State University and the Universidad Autónoma de Yucatán have found a way to gather data on the diseases using cell phones. Vector-borne diseases exact a heavy toll in low-and middle-income countries, slowing economic development. Additionally, the use of paper-based systems for data collection on infectious diseases often hampers the ability of health authorities in

The project, funded by the National Institute of Allergy and Infectious Diseases, will also include the development of software for cell phones that provides data entry screens designed for entering mosquito-related information. Once completed, the open-source software will be made freely available online.

# Text4baby educates new mothers

Text4baby, a public-private partnership that includes the Department of Health and Human Services, is a free mobile information service designed to promote maternal and child health. Women can text “BABY”—or “BEBE” for service in Spanish— to 511411 and receive free messages each week to help them through their pregnancy and their infant’s first year of life.

For more information: visit: [www.text4baby.org](http://www.text4baby.org)



# Approaching mhealth with humility

By Bill Gates

Computing technology has been great for health care, but primarily on the research side. Anything that facilitates new vaccines is fantastic; that is the miracle intervention in health care on a worldwide basis. Although it would be hard to measure, some combination of the internet, digital databases and collaboration tools really have changed medical research.

In the case of the cell phone, there's a chance to go beyond that and actually be there with the patient, there in the clinic, which might not be staffed with a fully trained doctor. There are a lot of opportunities. I think we have to approach these things with some humility, though. I think we have to hold ourselves to some pretty tough metrics to see if we're really making a difference or not. I think it's always valuable to go back to "what is the key metric you're trying to improve?" Maybe the simplest one is the number of kids who die under the age of five, which is about eight and a half million now. If you go back as far as 1960, that was 20 million, so it's a pretty dramatic reduction. About a third of it is by increase in income, which gives you better nutrition and better living conditions. The majority of it has been done through vaccines. Smallpox was killing two million per year, now it kills zero per year. Measles was killing a million and a half, now it kills about 300,000 a year.

So when we say to ourselves what can we do on this eight and a half million, that actually partitions into two parts. There's the first 30 days of life, which is about three and a half million of it, then there's 30 days to five years, which is about five million. There again, vaccines are going to be key: malarial, respiratory, diarrheal.

So how would cell phones fit in? If you knew, if you could register every birth on the cell phone, get fingerprints, get a location, then you could take these systems where you go around and make sure the immunizations happen and run them in a more effective way. Vaccine coverage in the very poorest regions, like the north of Nigeria or north of India are below 50 percent, and so you'd get a huge improvement if you could just take the vaccines we have today and get those delivered.



Photo courtesy of Foundation for NIH

*Philanthropist Bill Gates discussed opportunities and challenges of emerging technologies at the recent mHealth Summit.*

When I think about the biggest impacts, I think of patient reminders, not clear but if you could get people to take TB drugs regularly, if you could get them, even in the rich world to take medicines regularly, remind mothers to do various things, particularly in that first year of life. That's a huge one. The supply chain for all of the goods, making sure there are no counterfeits and no stock-outs and making sure people know what's available, there's a quite a bit that could be done there. Finally, online digital records where the high payoff for that is vaccination coverage, which means you have to get in at a fairly early age. Those are some of the higher payoff things.

Because it's new technology we should let 1,000 ideas blossom. But if we go back to the key metrics, can we drop the number of children who die per year in half, and get the reduction in sickness and population growth that comes with that? That is front of mind all the time.

*Bill Gates is co-chair and trustee of the Bill & Melinda Gates Foundation. He delivered an expanded version of these remarks at the 2010 mHealth Summit. Videocast available at <http://bit.ly/eb4NTS>.*



## PEOPLE

Global  
HEALTH Briefs**Black to receive Prince Mahidol Award**

Fogarty advisory board member and longtime grantee, Dr. Bob Black, has been named a winner of the Prince Mahidol Award for 2011, in recognition of his zinc supplementation studies. Black is professor and chair of the international health department at Johns Hopkins University in Baltimore, Md. The award honors Prince Mahidol, known as the father of modern medicine and public health in Thailand. Black's long-standing works on the importance of childhood nutrition significantly contribute to the wide application of zinc supplementation. The World Health Organization and UNICEF currently recommend that all childhood diarrhea cases should be treated with zinc supplement as well as oral rehydration. The program has been implemented in more than 40 countries around the world.

**Panama researchers receive recognition**

Fogarty investigator and former trainee Dr. Marcelino Gutiérrez-Guevara (shown left) and colleagues at Panama's Institute of Advanced Scientific Investigations and High Technology Services (INDICASAT) have won a \$100,000 grant from the International Development Bank (IDB) to study fungal infection resistance in frogs. INDICASAT is a partner on an International Cooperative Biodiversity Group grant, a program administered by Fogarty. Dr. Gutierrez also recently received the Panama science academy's young investigator award. In addition, his colleague, Dr. Carmenza Spadafora, has been awarded a \$100,000 grant from the IDB to develop a bioassay and mouse model for dengue.

**Fogarty's Rosenthal wins Fulbright**

Fogarty's Dr. Joshua Rosenthal, deputy director of the international research and training division, has won a Fulbright Scholar award to Argentina. Rosenthal will spend the next six months teaching and conducting policy research on global environmental health at the University of Buenos Aires.

**Smallpox scientist dies**

Former Fogarty Scholar-in-Residence Dr. Frank Fenner has died at age 95. The Australian immunologist played a key role in smallpox eradication and control of the 1950s rabbit virus plague. Fenner came to NIH for three stints as a Fogarty Scholar in the 1970s and early 80s. He received the Australian Prime Minister's 2002 Science Prize.

**Poll shows Americans support global health**

While many Americans remain wary of foreign aid in general, they are more supportive of efforts described as "improving health in developing countries," according to a recent survey by the Kaiser Family Foundation. Six in 10 Americans say the U.S. spends too much on foreign aid but only about 30 percent say the U.S. invests too much on global health. Full report: <http://bit.ly/efm1pw>

**Lancet calls for medical education reform**

A Lancet Commission is calling for major reform across the entire medical education system to improve training so that doctors and other healthcare professionals are prepared for the 21st century. Changes are needed because of fragmented, outdated, and static curricula that produce ill-equipped graduates, the study says. Redesign of professional health education is necessary given the solutions offered by global interdependence due to acceleration of flows of knowledge, technologies, and financing across borders. Full report: <http://bit.ly/edUAoJ>

**WHO says NTD control feasible**

The misery and disability caused by a group of chronic infectious diseases, found almost exclusively in very poor populations, can be substantially reduced, according to the WHO. A new report, titled "Working to overcome the global impact of neglected tropical diseases," covers 17 neglected tropical diseases that thrive in impoverished settings. Full report: <http://bit.ly/fYLihs>

**Call to action on mental health**

A call to action on mental health has been issued in a recent WHO report. Persons with mental and psychosocial disabilities are a vulnerable group that continues to be marginalized in terms of development aid and government attention, the study says. It urges investment in persons with mental and psychosocial disabilities to improve development outcomes. Full report: <http://bit.ly/gAlfjy>

**Study examines future of tobacco control**

Tobacco use is the leading cause of disease and premature death worldwide, costing the global economy more than \$500 million annually, according to a report issued by the Center for Strategic and International Studies. The study examines the future of tobacco control efforts and includes information about Fogarty's tobacco control research and training program.

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

## Funding Opportunities

Program	Contact	Receipt Date	Eligibility
Brain Disorders in the Developing World (BRAIN - Non AIDS) (R01) PAR-11-030	Kathleen Michels, Ph.D. michelsk@mail.nih.gov	January 10, 2011	Applications must be submitted as collaborations between investigators or institutions from a high-income country and a low- or middle-income country. Applicants for R01s must have already had an R21 under the companion Brain Disorders in the Developing World program.
Brain Disorders in the Developing World (BRAIN - Non AIDS) (R21) PAR-11-031			
Fogarty International Research Collaboration - Basic Biomedical Research Award (FIRCA-BB) (R03) PAR-11-037	Xingzhu Liu, M.D., Ph.D. Xingzhu.Liu@mail.nih.gov	January 10, 2011	Scientists with an active NIH-funded research grant and who want to initiate/ extend international research collaborations in biomedical research in a low- or middle-income country should apply. Former FIRCA LMIC collaborators may also apply as PD/PI. <b>NOTE:</b> Applications for collaboration with investigators in sub-Saharan African countries are especially encouraged.
Fogarty International Research Collaboration - Behavioral and Social Sciences Research Award (FIRCA-BSS) (R03) PAR-11-036			
Limited Competition for the Global Research Initiative Program, Basic Biomedical Sciences (R01) PAR-10-278	Xingzhu Liu, M.D., Ph.D. Xingzhu.Liu@mail.nih.gov	<b>Non AIDS:</b> January 10, 2011 <b>AIDS:</b> March 10, 2011	Eligible applicants, scientists from low- and middle-income countries, must have: completed their research training by the project start date, but not more than four years prior to announcement's receipt date; research training that was supported under the specified NIH-funded awards (see FOA for list); and at least two years of research training experience or one year of training experience plus an additional year of well-documented mentored research.
Limited Competition for the Global Research Initiative Program, Behavioral/ Social Sciences (R01) PAR-10-280			

For more information, visit [www.fic.nih.gov/funding](http://www.fic.nih.gov/funding)

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### Photo contest winners announced



Fogarty recently announced the winners of its grantee photo contest. Nineteen images were selected for special recognition by the center's staff and are available for viewing online.

One of the winning entries (above) depicts a home-based intervention program for children with intellectual disabilities in Vietnam, provided by Dr. Jin Y. Shin of Hofstra University. Shin is principal investigator on a Fogarty Brain Disorders in the Developing World grant.

Photo contest gallery is online at [www.fic.nih.gov/news/photos](http://www.fic.nih.gov/news/photos)

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