

GLOBAL HEALTH MATTERS

Fogarty International Center
National Institutes of Health
U.S. Department of Health and Human Services

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IOM Examines U.S. Commitment to Global Health

Why should the U.S. make a deeper commitment to global health? An Institute of Medicine (IOM) committee has begun a 14-month examination of the issue and will produce a report next spring. The IOM intends the study to be a broader and more complete exploration of the subject than its 1997 analysis, *America's Vital Interest in Global Health*. The committee plans to release a brief outline of its new vision for U.S. involvement in global health this December, to provide guidance to the incoming administration.

NIH Director Dr. Elias A. Zerhouni and Fogarty Director Dr. Roger I. Glass made presentations to the committee at its first meeting on March 24. Both stressed the importance of

building local research capacity to the long-term success of American-supported health efforts overseas. "If you don't have the troops, you don't have a battle plan," suggested Dr. Zerhouni. "Everything else comes from this."

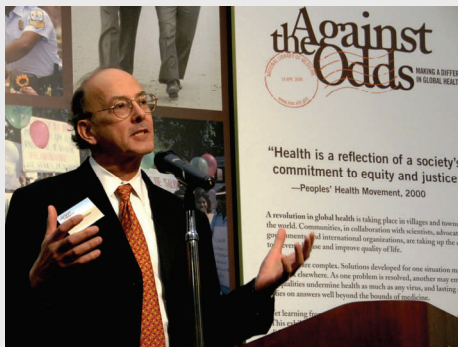
With large amounts of public and private funding now being directed to global health initiatives, Dr. Glass asked the committee to consider offering advice on how it could be spent wisely. "How can we leverage this money...creatively to ensure sustainable and enduring outcomes, and move these from assistance programs alone to programs that really lead to sustainability and to long-term partnerships?"

The committee's final report will address the case for a deeper commitment to global health by the U.S., and communicate specific recommendations pertaining to government, academia, research and diplomatic communities, the private sector and foundations.

The study is being funded by 17 components of the NIH, in addition to the CDC, the State Department, Homeland Security and a number of private foundations.

For slides and recordings of the March 24 presentations, as well as other information about the project, visit: <http://www.iom.edu/?ID=51303>.

NIH's National Library of Medicine Opens New Global Health Exhibit



Fogarty's Dr. Roger Glass speaking at the opening of NLM's global health exhibit.

The NIH's National Library of Medicine has opened its new global health exhibit titled, "Against the Odds: Making a Difference in Global Health." The interactive display depicts a variety of public health problems including HIV/AIDS and disaster relief issues. It showcases the barefoot doctors program, which trained over one million young people to treat the common ailments of residents of rural China in the 1960s and 1970s. The exhibition also profiles a successful campaign for oral rehydration in Bangladesh that saved countless lives.

Fogarty International Center supported the exhibit and its director, Dr. Roger I. Glass, was on hand to help celebrate its opening.

"Against the Odds" focuses on how individuals and communities, in collaboration with scientists, advocates, governments and international organizations, have made and are making a difference in the health of people around the globe.

The exhibit will be open to the public on the NIH campus for two years. The online component offers further information: <http://apps.nlm.nih.gov/againsttheodds/exhibit/index.cfm>

at

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Years of Excellence

FOGARTY INTERNATIONAL CENTER

presents:

Race Against Time:
Searching for Hope in
AIDS-Ravaged Africa

Stephen Lewis

Tuesday, May 6

Masur Auditorium
Clinical Center

11:30AM to 12:30PM

Reception to follow

For more information visit:
www.fic.nih.gov/news

NIH Strengthens Research Collaborations Between U.S. and India

The NIH has agreed to strengthen its research collaborations with India in the areas of mental health and neurological and addictive disorders. In addition, India has committed to establishing long-term career paths for its scientists by facilitating their return to appropriate research positions following NIH fellowships. The subjects were discussed in a recent meeting between NIH Director Dr. Elias Zerhouni and Dr. Raj Bhan, India's Secretary of the Department of Biotechnology (DBT).

The topics are critical for India, as these diseases have taken a substantial social and economic toll in the South Asia region. Despite India's status as a pioneer country in health care planning, mental health has traditionally been a lesser priority, according to the International Review of Psychiatry. Both Dr. Zerhouni and Dr. Bhan expressed optimism that inroads can be made in these areas through increased teamwork.

"These alliances create rare opportunities for breakthroughs, not only because of the champion scientists involved, but through shared risk and shared rewards," said Dr. Zerhouni. "Our international partnerships are better now than any other time in history."

Dr. Bhan also met with Fogarty Director Dr. Roger I. Glass and the directors of the National Institute of Mental Health, the National Institute of Neurological Disorders and Stroke, the National Eye Institute, and the National Institute on Drug Abuse.



NIH Director Dr. Zerhouni and India's Dr. Bhan signed an agreement to collaborate on mental health, neurological and addictive disorders research projects.

Discussion topics included specific research areas such as small molecule screening and population genetics. The consensus view was that the NIH Blueprint for Neuroscience Research would be the best starting point for defining a joint research agenda.

"This is very encouraging," said Dr. Glass, who moderated the meeting. "There is a real incentive for working together when you have twice the resources." He cited the Indo-U.S. Vaccine Action Program, which was established in 1987 and renewed in May 2007, as one example of a highly successful joint venture between the two nations.

Immediately following the meeting, two new Indo-U.S. agreements were signed by Dr. Zerhouni and Dr. Bhan, the first of which was

a Joint Statement on Research Related to Mental Health, Neurology and Addictive Disorders, which covered a wide range of topics, including genetic testing and mapping of brain disease and disorders, animal models for collaborative research, advanced brain-imaging technologies and increased bilateral collaboration on new therapeutics and biologicals.

"We are very interested in partnering in these areas," said Dr. Bhan. "U.S. science is a huge enterprise, and India has a large, publicly funded research community as well—now it is just a question of moving forward."

The second agreement was a Letter of Intent to establish long-term career paths for Indian scientists of exceptional scientific ability, as well as continued long-term scientific collaborations with their NIH mentors after they have completed their training and returned to India.

DBT, which Dr. Bhan has led since 2004, is one of NIH's most important partner institutions within India. NIH has a long history of collaboration with India, both through intramural and extramural activities. NIH has provided funding to over 175 research projects in India, supporting research on HIV/AIDS, tuberculosis, malaria, rotavirus, cancer and other diseases. Additionally, India ranks among the top five countries in terms of number of foreign researchers on the NIH campus.

Congressional Hearing Highlights Fogarty's Role in Global Health



Mr. Jeff Miotke
(Photo: Dept. of State)

Fogarty's role in fostering international collaborations was highlighted in a hearing held in April by the House Science and Technology's Subcommittee on Research and Science Education. The session explored how federal agencies prioritize and coordinate international science and technology programs.

"International scientific cooperation promotes good will, strengthens political relationships, helps foster democracy and civil society, and advances

the frontiers of knowledge," according to written testimony submitted by Jeff Miotke, the State Department's Deputy Assistant Secretary for Science, Space and Health.

Because the U.S. is a melting pot of immigrants from every continent, "we can make substantive gains in our own nation's health only through a better understanding of the predilection for diseases from ancestral populations abroad," suggested Mr. Miotke.

The State Department works closely with Fogarty to foster international biomedical collaborations, he noted. Yet many global health research questions remain unanswered partly due to Fogarty's small budget, which provides "a small fraction" of what is needed to support global health

research and research training capacity worldwide. "This is particularly relevant given the increasing incidence of infectious and non-communicable diseases in low- and middle-income countries, where science diplomacy could be most helpful for the U.S.," he concluded.

The session—the second in a series of hearings aimed at exploring science diplomacy—was hosted by Subcommittee Chairman Rep. Brian Baird.

To learn more, visit: http://science.house.gov/publications/hearings_markup_details.aspx?NewsID=2134.

Economist Offers Perspective on Health Programs in Developing Countries

The relationship between rising incomes and health care in the developing world is not a simple one, suggested Dr. Angus Deaton, Professor of Economics at Princeton University, in a lecture hosted by Fogarty at the NIH's Stone House. "There seems to be little progress—more than a billion people still live in absolute poverty, and we still have 10.5 million child deaths a year that would not take place in rich countries," he said.

Dr. Deaton challenged the commonly held belief that income is a powerful determinant of health in poor countries, using a model called the Millennium Preston Curve to illustrate his point. The curves measure the relationship between a country's life expectancy and its per capita income. According to Dr. Deaton, the creator of the curve felt that the majority of health improvements were related to technology and technique, rather than income.

China and India are both examples of countries that have seen significant recent income rises but have also experienced only small declines in infant mortality rates, according to Dr. Deaton. "Is wealthier healthier?" he asked. "It's plausible, but certainly not automatically true. Health improvement is likely related to governments, and their capacity and interest in doing something."

Randomized control trials should be incorporated into the evaluation of global health programs, he said, touting the success of the World Bank's Development Impact Evaluation initiative. "Randomized control trials are excellent for debunking things that are not true, and sometimes even reveal problems that were not obvious in advance," he concluded.

Dr. Deaton is professor of international affairs and economics at Princeton University. His current research focuses on the determi-



Princeton economist Dr. Angus Deaton challenged the commonly held belief that income is a determinant of health in poor countries.

nants of health in rich and poor countries, as well as on the measurement of poverty in India and around the world. He also maintains a long-standing interest in the analysis of household surveys.

Polio Meeting Report Published in *The Lancet*

Broad support continues for achieving global eradication of polio, but some new strategies could be critical to the effort's success, according to a report published recently in *The Lancet*. The article is a summary of the discussions hosted by Fogarty and the National Institute of Allergy and Infectious Diseases last fall on the NIH campus. The two-day meeting, titled "Polio Immunization: Moving Forward," gathered more than 100 scientists from 18 countries to review progress, discuss the remaining challenges and develop a research agenda to advance the eradication effort.

The report's authors—members of the organizing committee and chairmen of the meeting sessions—recommend some new tactics be adopted. They advocate that the inactivated poliovirus vaccine (IPV) be used in conjunction with the oral polio vaccine (OPV) to interrupt disease transmission in high-risk areas. In addition, they suggest stopping use of OPV worldwide when IPV coverage makes it safe to do so, while continuing IPV with routine childhood immunizations. For the near future, the authors call for continued vigilance, surveillance and vaccine response capacity to cover the susceptible populations of some countries.

The world's progress in global eradication of polio, tracked by 11 my country

Polio Immunization: Moving Forward

September 19-20, 2007
National Institutes of Health
William H. Natcher Building
Bldg. 45, Conference Room
Balcony B and Balcony C
45 Center Drive
Bethesda, MD 20892

Organizers:
Fogarty International Center
National Institute of Allergy and Infectious Diseases

Contact: ficpm@mail.nih.gov

In addition, they outline the research agenda needed as part of an ever evolving strategy to eliminate the polio threat. They conclude that additional basic and field research into the biology and genetics of the virus should be conducted, the role of antiviral drugs should be investigated, and vaccines must be improved.

Since 1988, the WHO's eradication efforts have eliminated wild poliovirus from more than 100 countries, with only four currently identified as endemic and 13 as reinfected, or having more than two cases in the same transmission, according to the WHO. The number of paralyzed children has dropped by 99 percent since the \$5.3 billion effort began.

Immunization against poliomyelitis: moving forward. Ehrenfeld E, Glass RI, Agol VI, Chumakov K, Dowdle W, John TJ, Katz SL, Miller M, Breman J, Modlin J, Wright P. *The Lancet* 2008;371:1385-7.

To access the paper, visit: <http://www.thelancet.com/journals/lancet/article/PIIS0140673608605978/fulltext>.

Fogarty Trains Future Generation of Global Health Innovators

Fogarty staff were energized by the enthusiasm of the returning Fogarty Scholars, who visited the NIH campus en masse recently to share notes from their research experiences abroad. The topics of the lectures and displays were wide-ranging and included research areas such as HIV status disclosure in Russia, neurodevelopmental delay in HIV-infected children in South Africa, and cervical cancer research in Zambia.

“It’s thrilling to see the level of talent in our scholars, and the amazing growth of this initiative,” Fogarty Director Dr. Roger I. Glass.

Fogarty’s International Clinical Research Scholars Program, jointly administered by Fogarty and Vanderbilt University’s Institute for Global Health, offers a year of mentored clinical research training at sites in the developing world, in hopes the recipients will ultimately seek careers in global health-related clinical research. A key element of the program is a stipend provided for a foreign graduate student to work alongside the U.S. trainee. Research training sites include Botswana, Haiti, India, Kenya, Mali, Peru, South Africa, Thailand, Uganda, Bangladesh, China, Russia, Tanzania, Zambia and the recent addition of a site in Fortaleza, Brazil.

Ms. Krista Pfaendler, a third-year medical student from the University of Pittsburgh, spent a year in Zambia helping to build a cervical cancer screening and treatment program. Cervical cancer is the deadliest form of cancer among African women. Those infected with HIV/AIDS are five times more likely to develop the disease. Since women account for more than half of those living with AIDS in Zambia, the problem is enormous.

“Human interaction has always been important to me,



Fogarty scholar Ms. Krista Pfaendler helped train Zambians to screen for cervical cancer.



New equipment was required to open the 14 cervical cancer screening sites established in Zambia.

Ms. Pfaendler and her colleagues at the Centre for Infectious Disease Research in Zambia (CIRDZ) implemented a number of innovative practices, including the use of consumer-grade digital cameras for cervical photography and a low-cost method of visual inspection using acetic acid, which is essentially household vinegar. “It was important that we integrated these practices into the public health system that already existed in Zambia, rather than reinventing everything,” she said.

During her 10-month stint, 15 nurses were trained and more than 8,800 cervical exams were conducted. Of the nearly 1,500 women referred for further testing, about 150 were diagnosed with cancer.

So far, 14 screening sites have been established in the country. The eventual goal is to replicate the idea for adoption elsewhere in Africa.

For Ms. Pfaendler, the experience has changed her life and the focus of her career, she says. “Human interaction has always been important to me, but working with these patients lit a fire in me,” she said.

Mr. Jason Goldman, a third-year student from University of Pennsylvania School of Medicine, also conducted research in Zambia. His work focused on optimizing the timing of antiretroviral therapy initiation in resource-poor settings, and on simple adherence assessments to predict virologic suppression among HIV-infected adults. Since little data existed on these topics in Zambia, Mr. Goldman's project and others like it are now helping to reshape public health policy there. "The experience changed my view of the world, how I regard research, even how I use data," said Mr. Goldman. "Most of all, it made me aware of problems I didn't even know existed."

Fourth-year student Ms. Christina Tara Khan was similarly transformed by the scholars program while working in Peru. "It has really solidified my vision for the future," she said. "It also introduced me to the realm of surgical research." A medical student at University of Illinois, Ms. Khan designed a novel study on outcomes in patients treated for invasive cervical cancer at Peru's main cancer treatment center. As a result of her experiences, she has since developed a real love of surgery and surgical research, which she intends to combine with a long-standing interest in public health.

"There is more energy than ever in the global health field" said Dr. Sten Vermund, the Principal Investigator of the program and Director of the Vanderbilt University Institute for Global Health. "This group is proof of that."

but working with these patients lit a fire in me."
—Fogarty Scholar Krista Pfaendler



Cervical screening is conducted using a consumer-grade digital camera.



About 150 Zambian women were diagnosed with cervical cancer and referred for surgery.

(Photos courtesy of K. Pfaendler)

In addition to Fogarty, the NIH centers who fund and support the scholars program are the National Institute of Allergy and Infectious Diseases, the National Center on Minority Health and Disparities, the National Institute on Drug Abuse, and the National Institute of Child Health and Human Development. Program support for the solicitation and review of applications is provided by the Association of American Medical Colleges, in collaboration with the Association of Schools of Public Health.

The three-day session also served as the interview and selection process for the newest candidates, a group of 40 that had been narrowed down from 157 applicants.

"Our hope is to attract candidates at the earliest point in their careers possible," said Fogarty program officer Dr. Aron Primack. "We aim to give them both an alternative to private practice and a unique life experience."

To learn more about Fogarty's International Clinical Research Scholars Program visit: http://www.fic.nih.gov/programs/training_grants/nih_fogarty.htm.

Fogarty Grantee Encourages Collaborations Between U.S. and African Scientists



Increasing the number of U.S. scientists who conduct research in Sub-Saharan Africa should be a global health priority, according to Fogarty grantee Dr. Robert Glew, of the University of New Mexico.

In an effort to encourage medical students, residents and faculty to devote part of their careers to research in Africa, Dr. Glew recently published a paper in *Experimental Biology and Medicine* offering advice to those considering such ventures.

He describes the driving force that led him to Nigeria 30 years ago to teach and study health problems in rural and urban areas. "The reason for choosing Nigeria was simple; I wanted to be useful."

To guide others who may consider following in his footsteps, he stresses the importance of identifying the right foreign collaborators, selecting a suitable research topic, setting realistic goals, learning the local culture and indigenous language, and securing funding.

He also identifies potential pitfalls and problems that are often overlooked—or underestimated—in the early phases of planning an international partnership. These include lukewarm institutional support at home, inflexible review boards, dominance of the program by the U.S. partner, maintaining continuity, and striking the right balance between scholarly work and humanitarian efforts.

Dr. Glew expresses the hope that U.S. students and faculty in the health professions who read the article will be stimulated and encouraged to consider how they might integrate into their curriculum or academic life visits lasting several months or more each year, during which they would teach or train others or engage in research at a teaching hospital in some African country.

Promoting Collaborations Between Biomedical Scholars in the U.S. and Sub-Saharan Africa. Glew, R. H. *Experimental Biology and Medicine* 233:277-285 (2008).

To learn more, visit: <http://www.ebmonline.org/cgi/content/full/233/3/277>.

New Model to Optimize Child Development Finds Success in Turkey



As childhood mortality continues to fall in low- and middle-income (LAMI) countries, there is an emerging interest in introducing models to optimize child development and

to reduce the burden of developmental difficulties beginning in early childhood.

To address these challenges, a team of scientists at Ankara University have designed the *Guide for Monitoring Child Development* training program. The guide offers a practical new method for developmental monitoring and the early detection of developmental difficulties within health systems in LAMI countries, such as Turkey.

The guide, supported by Fogarty funding and published in *Pediatrics*, has been adopted by the Turkish Ministry of Health and UNICEF-Turkey to be used in a nationwide training program on child development for primary health care providers.

The toolkit consists of written materials, slides and demonstration videos. The training involves one day for each of the three components. It includes:

- Interpreting the result of the GMCD, along with other existing clinical information;
- Providing feedback of a child's specific strengths; and

- Addressing a child's developmental difficulties and providing a plan to support the child's development with the child's caregiver.

Comparisons of the guide with other studies reviewed by the research team suggest that, during the early ages, children from different populations may attain developmental milestones at similar ages.

If such milestones can be included in monitoring instruments, this may have important implications for eliminating the need to standardize and validate instruments in each country.

A Guide for Monitoring Child Development in Low- and Middle-Income Countries. Ertem IO, Dogan DG, Gok CG, Kizilates SU, Caliskan A, Atay G, Vatandas N, Karaaslan T, Baskan SG, Cicchetti DV. *PEDIATRICS* Vol. 121 No. 3 March 2008.

To learn more, visit: <http://pediatrics.aappublications.org/cgi/reprint/121/3/e581>.

Nearly One-Third of South Africans Suffer from a Psychiatric Disorder

Nearly one-third of South Africans participating in a Fogarty-supported study reported having suffered from one or more psychiatric disorder over the course of their lives.

A nationally representative household survey was conducted from 2002 to 2004, which included 4,351 adult South Africans of all ethnic groups. The analysis, led by Dr. Dan J. Stein of the University of Cape Town and his research team, was published recently in the *British Journal of Psychiatry*.

The most prevalent mental disorders were related to alcohol abuse at 11.4 percent, with major depression and agoraphobia both at 9.8 percent. The most common class of disorder was anxiety disorders at 15.8 percent, followed by substance abuse at 13.3 percent and mood disorders at 9.8 percent. The lifetime prevalence estimate of having had any disorder was 30.3 percent, with 11.2 percent of respondents having two, and 3.5 percent having three or more disorders.



Nearly one-third of South Africans suffer from psychiatric disorders. (WHO/P. Viot)

The team found an increased lifetime prevalence of substance abuse disorders among the non-white group. Although this group is a diverse one, it was given a distinct status during apartheid rule when workers on wine farms were paid with alcohol.

The high prevalence and early onset of psychiatric disorders, together with the growing acceptance that people with mental illness have a right to treatment, create important policy implications, the authors conclude. They express hope that the survey results are sufficiently compelling to provide impetus for changes in South Africa's mental health policy with an appropriate increase in funding for services.

Lifetime prevalence of psychiatric disorders in South Africa. Stein DJ, Seedat S, Herman A, Moomal H, Heeringa SG, Kessler RC, Williams DR. *The British Journal of Psychiatry* (2008).

Study Finds Suicide Risk Factors Consistent Across Nations

Suicide is contemplated by nearly 10 percent of the world's population, although fewer than 3 percent actually make an attempt, according to a Fogarty-supported study published in the *British Journal of Psychiatry*. The research is the largest examination of the prevalence of suicidal behaviors across numerous countries in order to analyze risk factors.

The study uses data from the WHO's World Mental Health survey, carried out in 17 countries including: Nigeria, South Africa, Colombia, Mexico, U.S., Japan, New Zealand, China, Belgium, France, Germany, Italy, the Netherlands, Spain, Ukraine, Israel and Lebanon. A total of 84,850 adults were asked in face-to-face interviews about suicidal behaviors and socio-demographic and psychiatric risk factors.

The analysis, led by Dr. Matthew Nock of Harvard University, found that risk factors for suicidal thoughts, plans and attempts are consistent across countries and increase sharply during adolescence and young adulthood. Further, it is not just depression

that increases the risk of suicidal behaviors across countries—impulse control disorders, substance abuse and anxiety disorders all are associated with a significantly higher risk of suicidal thoughts and attempts. Risk of suicidal behavior is significantly related to being young, female, unmarried, and less well educated, the study found.

Among those interviewed, 9.2 percent reported that they had seriously thought about suicide and 2.7 percent reported making a suicide attempt at some point in their lives. However, there was variation from country to country with regard to the rates of suicidal thoughts and behaviors.

Rates of suicidal thoughts ranged from 3.1 percent of people in China to 15.9 percent in New Zealand. A possible reason for this variation may be that different cultural standards exist with regard to the acceptability of telling others about suicidal thoughts. Therefore, among countries with lower rates of suicidal thoughts, it's possible that some thoughts of suicide were not reported.

Among people with suicidal thoughts, 29 percent later made a suicide attempt, and these attempts occurred most often within the first year after the onset of suicidal thoughts. The probability of a suicide attempt among people with both suicidal thoughts and a plan was 56 percent, but only 15.4 percent among those without a plan.

The ability to predict and prevent suicidal thoughts and actions must be improved, the authors say, and requires the continued identification of risk and protective factors that influence such behaviors.

Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. Nock MK, Borges G, Bromet EJ, Alonso J, Angermeyer M, Beautrais A, Bruffaerts R, Tat Chiu W, de Girolamo G, Gluzman S, de Graaf R, Gureje O, Haro JM, Huang Y, Karam E, Kessler RC, Lepine JP, Levinson D, Medina-Mora ME, Ono Y, Posada-Villa J, Williams D. *The British Journal of Psychiatry*, February 2008.

Croatian Children Still Suffer Weapon-Related Injuries in the Wake of the War



The increase of weapon-related injuries and deaths among Croatian children in the wake of the Balkan war underscores the need for firearm prevention programs, according to Fogarty-supported research published recently in the *Archives of Pediatrics & Adolescent Medicine*.

Dr. Aida Mujkic of the University of Iowa led the study, with support from the Fogarty International Collaborative Training in Injury and Trauma Research Program. Her project is designed to build infrastructure for trauma and injury prevention in Croatia and nearby countries.

The team investigated homicide, suicide and unintentional weapons-related deaths among children, from birth to age 19, in Croatia during and after the war, using Croatian government data.

The team found weapons-related deaths in the early postwar period (1996-2000) remained more than twice as high as before the war, and the weapon-related suicide rate remained more than three times that of the prewar period.

The authors note that from after World War II until the beginning of the recent conflict, most children in Croatia were not exposed to firearms and explosives in their homes or communities. Unlike many countries, personal weapon ownership was not a custom in Croatia

and existing firearms were predominantly rifles, used for hunting or kept for display.

During the war, Croatians took weapons—including firearms, grenades and other explosive devices—from military barracks located in Croatia after the Yugoslav army left, to protect themselves and their families. Other weapons were obtained through a growing black market and local manufacturing of new weapons.

Recent Croatian government data identified 371,684 legally owned and registered weapons, primarily firearms. However, some estimate that the circulation of illegal weapons is equal to that of legal ones.

The combination of psychological effects of war on children with an increased presence of weapons may present a particularly important area for prevention, according to the authors.

In conclusion, Dr. Mujkic and colleagues call for programs that focus on the prevention of weapon-related injuries to be integrated into programs that assist countries in rebuilding after political unrest.

Effect of War on Weapon-Related Deaths in Croatian Children and Youth. Mujkic A, Peek-Asa C, Young T, Rodin U. *Arch Pediatr Adolesc Med.* 2008;162(2):140-144.

To learn more, visit: <http://archpedi.ama-assn.org/cgi/content/abstract/162/2/140>.

Resources to Counter Infectious Diseases Poorly Allocated, Study Shows

Global resources to counter infectious disease emergence are poorly allocated, according to a recent Fogarty-supported study published in *Nature*. The majority of scientific and surveillance efforts are focused on countries where the next important emerging infectious diseases are least likely to originate. Meanwhile, there is a substantial risk of diseases springing up in lower latitudes where the reporting effort is low, the study reports.

The research team, headed by Fogarty grantee Dr. Peter Daszak of the Consortium for Conservation Medicine at Wildlife Trust, analyzed a database of 335 emerging infectious diseases “events,” or origins of diseases, between 1940 and 2004 and discovered non-random global patterns. The effort was supported by funding from Fogarty’s Ecology of Infectious Diseases Initiative.

The study included newly evolved strains of pathogens such as multi-drug-resistant tuberculosis and chloroquine-resistant malaria, those that have recently entered human populations for the first time such as HIV-1 and SARS, and those that have proba-



The majority of emerging infectious diseases are those transmitted from animal to man. (WHO)

bly been present in humans throughout history but have recently increased in incidence, including Lyme disease.

The majority of emerging infectious disease origins in the database were zoonotic pathogens, or diseases that began in animals, the study discovered. More than 70 percent of zoonotic disease events were caused by organisms with a wildlife origin and the number of such occurrences has increased sig-

nificantly over time.

Given that zoonotic emerging diseases represent an increasing and serious threat to global health, the authors suggest more attention should be given to understanding the factors that increase interaction between humans and wildlife.

The analysis also revealed that events caused by drug-resistant microbes comprised about 20 percent of the cases and have increased considerably with time as well, most likely a result of a rise in antimicrobial drug use in developed countries.

Global trends in emerging infectious diseases. Kate E. Jones, Nikkita G. Patel, Marc A. Levy, Adam Storeygard, Deborah Balk, John L. Gittleman & Peter Daszak. *Nature*, 21 Feb. 2008, 451, pp. 990-993.

To learn more visit: <http://www.nature.com/nature/journal/v451/n7181/full/nature06536.html>.

Estonia's HIV Epidemic Expanding Rapidly Due to New Injectors of Illegal Drugs

Estonia's HIV epidemic is rapidly expanding due to new injectors of illegal drugs, according to a Fogarty-supported study. Estonia's rate of new HIV infections was 467 per million inhabitants in 2005, the highest per capita rate in Eastern Europe and almost twice as high as Russia, which had the second highest rate.



As many as half of Estonia's drug users are infected with HIV. (Photo: LHIL, Jad Davenport)

Dr. Anneli Uuskula of the University of Tartu and her colleagues conducted two HIV risk behavior and HIV infection studies among drug injectors in Tallinn, Estonia, in 2004 and 2005. Their findings, published in the *Journal of Public Health*, reveal that HIV prevalence was just as high for new injectors—those injecting less than three years—

as for long-term injectors. In the first study, half of the new injectors were infected. In the first, the rate was 34 percent.

The research revealed that injection and sexual risk behaviors were similar among new and long-term injectors, with about one third sharing needles and syringes within the first three months and about half having had more than one sexual partner in the previous year.

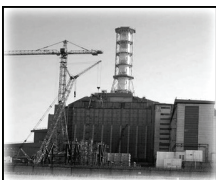
It is of "utmost importance" that interventions to prevent HIV and discourage drug injection be scaled up in Estonia, the authors urge. In many settings, younger and new injectors may have less access to HIV prevention and other services. Peer education that could provide new injectors with risk-reduction skills could also be effective, suggest the authors.

Finally, the team recommends implementation of programs known to reduce HIV risk behavior among injecting drug users such as community outreach, needle and syringe access programs, treatment for drug addiction, and methadone maintenance treatment for heroin addiction. They note that these interventions have brought HIV epidemics under control in a number of countries, including parts of the U.S. and Western Europe.

High-prevalence and high-estimated incidence of HIV infection among new injecting drug users in Estonia: need for large scale prevention programs. Uuskula A, Kals M, Rajaleid K, Abel K, Talu A, Ruutel K, Platt L, Rhodes T, Dehovitz J, Des Jarlais D. *J Public Health (Oxf)*. 2008.

To learn more, visit: <http://jpubhealth.oxfordjournals.org/cgi/content/short/fdn014v1>.

Study Finds Chernobyl's Radioactive Fallout Increases Thyroid Tumor Risk



An analysis of Ukrainians exposed to Chernobyl's radioactive fallout as children shows they have a greater risk of developing benign thyroid tumors known as follicular adenoma.

The research, published recently by the *American Journal of Epidemiology*, estimated risk of follicular adenoma in relation to radiation dose after Chernobyl. The Fogarty-supported study team analyzed baseline data from those exposed as children or adolescents. A stratified random sample was selected from all individuals who were younger than 18, had thyroid radioactivity measurements taken within two months after the accident, and resided in the three heavily contaminated areas in Ukraine.

Of the 12,504 subjects screened, 23 cases of follicular adenoma were discovered. All subjects referred for surgery complied and pathologists confirmed the diagnoses.

The risk of tumors was significantly higher in women compared with men but age-at-exposure effects were unclear with no consistent pattern. The risk of follicular adenoma is lower than the risk of thyroid cancer, according to the study.

A large increase in the incidence of thyroid cancer occurred among people who were young children and adolescents at the time of the Chernobyl accident and lived in the most contaminated areas of Belarus, the Russian Federation and the Ukraine. This was due to the high levels of radioactive iodine released from the reactor in the early days after the accident. Radioactive iodine deposited in pastures was eaten by cows—whose milk was subsequently drunk by children. This was further exacerbated by a general iodine deficiency in the local diet causing more of the radioactive iodine to be accumulated in the thyroid, according to the WHO.

A cohort study of thyroid cancer and other thyroid diseases after the Chernobyl accident: dose-response analysis of thyroid follicular adenomas detected during first screening in Ukraine (1998-2000). Zablotska LB, Bogdanova TI, Ron E, Epstein OV, Robbins J, Likhtarev IA, Hatch M, Markov V, Bouville AC, Olijnyk VA, McConnell RJ, Shpak VM, Brenner A, Terekhova GN, Greenebaum E, Tereshchenko VP, Fink DJ, Brill AB, Zamotayeva GA, Masnyk IJ, Howe GR, Tronko MD. *AM J Epidemiol*. 2008 Feb 1;167(3):305-12.

To learn more, visit: <http://aje.oxfordjournals.org/cgi/content/abstract/167/3/305>.

Rice Cropping Intensity and Duck Populations Identified as Risk Factors for Bird Flu Outbreaks

The intensity of rice cropping and size of free-grazing duck populations have been identified as risk factors for bird flu outbreaks in Thailand and may apply elsewhere, according to a Fogarty-supported study.

Scientists used a combination of new data sets to track the risk patterns of the highly pathogenic H5N1 avian influenza in Southeast Asia. Because results of prior studies suggest the region may act as an "evolutionary sink" for the H5N1 virus, the research team focused on domestic ducks in intensive rice-cropping areas as a risk factor in Thailand and Vietnam, two countries that have experienced recurring outbreaks of the virus.

The paper, which was published in the *Proceedings of the National Academy of Sciences*, examined the statistical relationships between the recorded H5N1 virus presence and a set of five key environmental variables including elevation, human population, chicken numbers, duck numbers and rice cropping intensity, for three simultaneous epidemics in Thailand and Vietnam. According to the study, rice paddy fields are an important habitat for free-ranging ducks, but also for wild waterfowl exploiting the same food resource in the wintering season, and may form a critical risk factor in the introduction, persistence and spread of H5N1.



Intensive rice-cropping areas in Southeast Asia may be a key risk factor in the persistence of H5N1.
(Photo: UN/ S. Rotner)

Remote sensing data provided by NASA played a key role in the study. Using imagery gathered from sensors on NASA's TERRA satellite, the researchers were able to map rice paddy agriculture in the region. The resulting algorithms allowed them to monitor cropping intensity, planting and harvesting dates, and irrigation practices at moderate resolution and in near real-time.

The authors conclude that the five variables can act as reliable predictors for mapping risk patterns of H5N1. Free-grazing ducks were found in much higher numbers where rice-cropping is intense, while farmed ducks were not found to be significantly associated

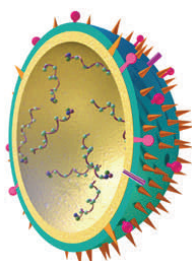
with virus presence. The paper also suggests this model may apply in other countries with similar agricultural and ecological conditions, such as Laos or Cambodia.

In Southeast Asia alone, it was estimated that H5N1 virus outbreaks caused the death of 140 million domestic birds with economic losses at around \$10 billion, according to the WHO. Additionally, there is concern that the continued spread of the virus across eastern Asia represents a serious threat if the virus mutates into a version that is transmitted easily from poultry to humans. Since 2003, the number of reported human H5N1 cases in Asia, Europe, and Africa has risen to over 300, with about half of those infected dying.

Mapping H5N1 highly pathogenic avian influenza risk in Southeast Asia. Marius Gilbert, Xiangming Xiao, Dirk U. Pfeiffer, M. Epprecht, Stephen Boles, Christina Czarnecki, Prasit Chaitaweesub, Wantanee Kalpravidh, Phan Q. Minh, M. J. Otte, Vincent Martin, and Jan Slingenbergh. *PNAS*. 2008; 105:4769-4774.

To learn more, visit: <http://www.pnas.org/cgi/content/full/105/12/4769>.

Homologous Recombination Does Not Play Major Role in Evolution of Human Influenza A Virus



Human Influenza A Virus.
(Source: NIAID)

Homologous recombination does not play a major role in the evolution of the human influenza A virus, according to a recent Fogarty-supported study published in the *Journal of Virology*.

Homologous recombination, or "crossing over," is a process that occurs naturally during the formation of organisms.

Recombination allows chromosomes to shuffle their genetic material, increasing the potential for genetic diversity. The influenza A virus has the ability to quickly generate both antigenic variants that can escape host immunity, as well genotypes that provide resistance to antiviral drugs typically used to combat flu.

Influenza A viruses are a major source of respiratory disease in humans, causing 36,000 deaths each year in the U.S. and occasionally starting widespread pandemics, according to the CDC. As much as 20 percent of the U.S. population gets the flu every year and more than 200,000 people are hospitalized.

The dynamic nature of the virus and its ability to evolve are of major concern to the global health community. New influenza viruses emerge as a result of a process called antigenic shift, which prompts a sudden and major change in influenza A viruses. If these changes result in a new influenza A virus subtype that can infect humans and spread easily from person to person—an influenza pandemic can occur.

In order to determine the extent of homologous recombination in human influenza A

virus, the authors assembled a data set of 13,852 sequences representing all eight segments and of both major circulating subtypes of the virus, H3N2 and H1N1.

The study concludes that no sequence of human influenza A virus contains a clear signature of the action of homologous RNA recombination. As over 10,000 different sequences were analyzed, the authors contend that if it occurs at all, homologous recombination plays only a very minor role in the evolution of human influenza A virus.

Homologous Recombination is Very Rare or Absent in Human Influenza A Virus. Maciej F. Boni, Yang Zhou, Jeffery K. Taubenberger, Edward C. Holmes. *J. Virol.* doi:10.1128/JVI.02683-07

To learn more, visit: <http://jvi.asm.org/cgi/reprint/JVI.02683-07v1>.

FOGARTY IN THE NEWS

Fogarty Director Dr. Glass Quoted in *The Scientist*



Fogarty International Center's Director Dr. Roger I. Glass was recently quoted by *The Scientist* magazine in an article titled "Implementing Change."

The piece, written by Mr. Bob Grant, explores the growing concern within the global health community that the actual outcomes of many interventions in the developing world are not being properly evaluated, and that implementation science is being excluded from many global health initiatives. A few international organizations have even analyzed how well they evaluate program outcomes, with less than promising results.

"How will we know if we're really seeing the impact we expect?" asks Dr. Glass. "We spend a lot of effort to develop new tools, vaccines and drugs, and then we wash our hands of them." Dr. Glass recounts the story of development agencies' attempts in the 1970's to halt cholera epidemics in Bangladesh by drilling tube wells. The initial outcomes of the project were unsuccessful because evaluation had not been built into the design of the program. The problem of scarce funding for evaluation in global health programs with already strained budgets is also touched upon.

In addition, Mr. Grant gives several examples of implementation successes in developing nations. The article devotes considerable attention to Fogarty grantee Dr. Jean Pape, citing his work with the GHESKIO clinic in Haiti as an example of a successful link between evaluation and adaptive management. "Jean Pape does that better than anyone else," said Dr. Glass.

The article is available at: <http://www.the-scientist.com/2008/3/1/42/1/>.

New York Times Features Fogarty Grantee in Haiti

The *New York Times* recently published an account of a visit by First Lady Laura Bush to a Fogarty grantee site in Haiti.



First Lady Laura Bush visits the GHESKIO HIV/AIDS Center in Haiti.
(Photo: White House/ S. Craighead)

During a tour of the GHESKIO HIV/AIDS Center in Port-Au-Prince earlier this spring, Mrs. Bush met with young people who are HIV positive. "It is important for young people to know if they do get tested and are HIV positive, there are good things they can do," she said.

The center is also a participant in the President's Emergency Plan for AIDS Relief.

NPR's Morning Edition Features Fogarty Grantee's Work in Amazon

National Public Radio's Morning Edition program recently featured Fogarty grantee Dr. Margaret Kosek and her team's study of the impact of deforestation on the spread of infectious diseases in the Peruvian Amazon.

New roads promote deforestation that not only reduces the world's carbon balance but also boosts malaria rates, according to Dr. Kosek, an infectious-disease expert at Johns Hopkins Bloomberg School of Public Health.

When roads are built, culverts are formed alongside that create pools of water. These are ideal places for mosquitoes to lay their eggs, according to the researchers. Roads also bring outsiders to villages that have been largely isolated. If



Deforestation can encourage malaria outbreaks.
(WHO TDR Mark Edward)

these newcomers carry malaria, mosquitoes could bite them, pick up the parasites and infect new victims, the scientists say.

In the Peruvian Amazon, 75 percent of the forest disruption, from 1999-2005, was within 12 miles of a road. Consequently, the areas that had suffered the most deforestation also suffered more malaria.

Dr. Kosek and her team recently surveyed an area where the Peruvian government plans to put in a highway. The road will go from the frontier river village of Mazan, through the Amazon jungle, to the city of Iquitos. The team wants to see what impact this will have. If they can unravel the health effects of building roads through the jungle, they say, it could help them find ways to prevent some of the problems.

However, many people who live in the area see the road as a sign of progress. It will provide construction jobs and help farmers get their goods to market. But the research team knows the road will also increase the number of mosquitoes, including those that carry malaria.

Dr. Kosek is Principal Investigator on a Fogarty International Research Scientist Development Award.

To learn more, visit: <http://www.npr.org/templates/story/story.php?storyId=19276850>.

FOGARTY UPCOMING PROGRAM ANNOUNCEMENTS

Program	Contact	Receipt Date	Eligibility
Fogarty International Research Collaboration Award—Basic Biomedical (FIRCA—BB)	Kathleen Michels, PhD firca@nih.gov	May 28, 2008	PI of U.S. based NIH-sponsored research project grant that will be active for at least one year beyond submission date of application, in collaboration with partner institutions in low- to middle-income countries.
Global Infectious Disease Research Training Program (GID)	Barbara Sina, PhD barbara_sina@nih.gov	September 16, 2008	U.S. and low- to middle-income institutions with demonstrated history of research collaboration.
Global Research Initiative Program for New Foreign Investigators Basic Biomedical, and Global Research Initiative Program for New Foreign Investigators Behavioral and Social Science (GRIP)	Aron Primack, MD primacka@mail.nih.gov	September 21, 2008	Low- to middle-income scientists currently or recently supported through Fogarty D43 international training programs, through NIH Visiting Program for Foreign Scientists, or as NIDA INVEST or Humphrey Fellowships.
AIDS International Training and Research Program (AITRP)	Jeanne McDermott, PhD mcdermoj@mail.nih.gov	August 14, 2008	U.S. (or pre-approved non-U.S.) nonprofit, public or private institutions with HIV/AIDS and HIV-related research collaborations with low- to middle-income institutions.
International Clinical, Operational and Health Services Research Training Award for AIDS and TB (ICOHRTA AIDS/TB)	Jeanne McDermott, PhD mcdermoj@mail.nih.gov	August 18, 2008	This program supports research training to strengthen the capacity of institutions in low- and middle-income countries to conduct HIV/AIDS and TB research.
Brain Disorders in the Developing World	Kathleen Michels, PhD brainfic@nih.gov	AIDS-related: Aug. 22, 2008 Non-AIDS: May 16, 2008	The program supports collaborative research and capacity building projects on brain disorders throughout life, relevant to low- and middle-income nations.


Fogarty's program research grants or research training grants are listed at: www.fic.nih.gov/funding

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- Research studies;
- Printing of pamphlets and brochures about global health for the general public; and
- Support of research conferences, symposia and workshops of special importance to global health research.

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