

GLOBAL HEALTH MATTERS

Fogarty International Center
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NIH Support Grows to Battle Global Epidemic of Non-Communicable Diseases



Dr. Abdallah Daar warned of the approaching epidemic.

Support is growing at NIH to find ways to battle the predicted global epidemic in chronic, non-communicable diseases, forecast to cause some 388 million deaths worldwide in the next decade.

Fogarty's Director and staff have been conducting outreach to other NIH Institutes and Centers to identify ways to leverage

the considerable existing expertise to combat chronic diseases such as diabetes, cardiovascular conditions and cancer that are increasingly striking populations in the developing world.

The recent *Nature* article, "Grand Challenges in Chronic and Non-Communicable Diseases,"—whose authors included Fogarty Director, Dr. Roger I. Glass, and National Heart Lung and Blood Institute (NHLBI) Director, Dr. Betsy Nabel—helped galvanize the effort.

To foster continued dialogue on the topic, Fogarty invited the paper's lead author, Dr. Abdallah Daar of the McLaughlin-Rotman Center for Global Health, to NIH for a series of discussions and presentations. In addition to consulting with Dr. Nabel and NHLBI staff, he met individually with NIH Director, Dr. Elias Zerhouni; National Institute of Diabetes and Digestive and Kidney Diseases Director, Dr. Griffin Rodgers; and National Institute of Neurological Disorders and Stroke Director, Dr. Story Landis.

"We are encouraged that by working together with NIH partners and outside collaborators, we can transfer proven intervention strategies that can be adapted and implemented to suit the populations of developing countries," according to Dr. Glass.

During his address to the NIH scientific community, Dr. Daar called for a coordinated research strategy similar to the Human Genome Project, in order to halt the approaching global epidemic in non-communicable diseases.

"We must move away from the notion that nothing can be done, and that people only have themselves and their unhealthy lifestyles to blame. These myths and misconceptions are part of the reason why people don't get involved," he said. "The problems are complex and difficult to solve, but it is feasible."

Supporting research collaborations that will stem the tide of preventable deaths from non-communicable diseases in the developing world is one of five goals detailed in Fogarty's new strategic plan, set to be published shortly.

"While we must continue our research and training efforts in infectious diseases, we cannot ignore the terrible toll that chronic conditions such as diabetes and cancer will claim in human lives over the next decade if we do not act now," said Dr. Glass.

The full text of the *Nature* article "Grand Challenges in Chronic and Non-communicable Diseases" is available at: <http://www.nature.com/nature/journal/v450/n7169/full/450494a.html>

MALARIA SUPPLEMENT

New insights on how to best control and combat malaria were published recently by the American Journal of Tropical Medicine and Hygiene, in the third such supplement edited by Fogarty Senior Scientist Joel Breman. For highlights, see pages 2-4.

Banners were recently hung across the NIH campus signaling the kickoff of Fogarty International Center's 40th anniversary celebrations. A series of events is being planned. Details will be announced soon.

Experts Publish Groundbreaking Research to Aid Malaria Eradication



An African child dies of malaria every 30 seconds. In total, about 500 million people become severely ill with the disease each year, resulting in more than one million deaths, according to the World Health Organization (WHO).

New insights on how to best control and combat this global scourge were recently published in a supplement to *The American Journal of Tropical Medicine and Hygiene*, titled "Defining and Defeating the Intolerable Burden of Malaria III: Progress and Perspectives," the third in a series to be edited by Fogarty Senior Scientist, Dr. Joel Breman.

This comprehensive publication of 42 papers describes new ways of looking at classic challenges for the malaria community, as well as novel findings in clinical, epidemiological, drug, vector, genetic and vaccine research. Special attention is given to the difficulties of diagnosing malaria and the scaling-up of national and international control programs. Many of the contributing authors of the 340-page supplement hale from malarial countries, including Burkina Faso, Eritrea, India, Ghana, Kenya, Mali and Tanzania.

The challenge for the near future is integrating these advances into working, sustainable solutions—an especially daunting task given the variety of economic and scientific resources available in the approximately 90 countries where malaria is endemic. "Malaria control will never be successful if we declare victory when rates go down and success seems at hand," wrote Fogarty Director, Dr. Roger I. Glass, in the supplement's introduction. "Sustainability will require the training of local staff to continue the scientific and administrative leadership of prevention and treatments efforts, and adequate preparation so they can monitor and address any outbreaks."

The recent call for eradication by Bill and Melinda Gates has drawn attention to the disease and the many challenges that remain. Co-author of the supplement's introduction, Dr. Anthony S. Fauci, Director of the National Institute of Allergy and Infectious Diseases (NIAID), is optimistic but cognizant of the difficulties ahead.

"The extraordinary advances highlighted in this valuable publication reflect a new commitment by the international community to confront malaria with fervor and funding," according to Dr. Fauci. "As a result of recent research, we now have new drugs that are highly effective in treating malaria, new and improved vector control strategies, and a widening pipeline of promising vaccine candidates. Even so, much remains to be done."



An African child dies of malaria every 30 seconds. (Photo: WHO/Tropical Diseases Research/Crump)

The supplement also includes papers that explore malaria advocacy efforts and international cooperation, examining the gains made by the Multilateral Initiative on Malaria and the Global Fund, and making recommendations for a long-term vision for global malaria prevention and control.

"Advocacy for malaria prevention, control and research requires a holistic view of the disease and an understanding of the socioeconomic and political circumstances in which malaria exists—malaria's agenda must at least coordinate, if not merge, with a broader, encompassing global health agenda," according to Dr. James Herrington, co-author of an advocacy paper and director of Fogarty's international relations division.

The supplement was edited by Dr. Joel Breman, from Fogarty, Dr. Martin Alilio, from the Academy for Educational Development (formerly of Fogarty), and Dr. Nicholas J. White, a distinguished professor of tropical medicine at Mahidol University in Bangkok, Thailand and Oxford University in England.

Multiple donors funded the publication, including Fogarty, NIAID, the CDC, and the Foundation for the National Institutes of Health with unrestricted contributions from the Bill & Melinda Gates Foundation, the Burroughs Wellcome Fund, GlaxoSmithKline and the World Health Organization.

Full text of the supplement can be accessed by visiting: http://www.aitmh.org/cgi/content/full/77/6_Suppl/i

Printed copies or CD-ROMs of the supplement are also available by contacting Cheric Holloway at hollowac@mail.nih.gov or (301) 496-0815.

Low-Cost Synthetic Form of Artemisinin May Provide Solution in Malaria Battle

Scientists hope a low-cost, semi-synthetic form of artemisinin manufactured through a fermentation process will make life-saving therapies available to the most vulnerable malaria sufferers who cannot afford actual artemisinin.

Derived from the Chinese plant *Artemisia annua*, or sweet wormwood, artemisinin takes over a year to mature, making it an expensive product. In addition, Asian growers are unlikely to be able to meet the projected global demand.

Scientists from the University of California at Berkeley are collaborating with private industry and non-profit organizations to improve this situation by producing strains of baker's yeast that can also synthesize the compound. By inserting plant genes into the yeast cells, all of the chemical steps needed to produce artemisinin can be accomplished in a much more efficient



Tissue cultures of Artemisia annua.
(Photo: WHO/Tropical Diseases Research/Crump)

package. Not only can the yeast forms produce artemisinin at a faster rate—they can produce a purer compound compared to the extracts from cultivated plants.

The scientists involved believe that this will allow better access to artemisinin-based treatments for patients in Africa and other malaria-endemic regions, especially in areas where *A. annua* does not grow. Additionally, by ensuring that all synthesized artemisinin ends up in combination therapies rather than monotherapies, the researchers hope to delay the evolution of resistance.

Microbially Derived Artemisinin: A Biotechnology Solution to the Global Problem of Access to Affordable Antimalarial Drugs. Hale V, Keasling JD, Renninger N, Dagana TT. *Am. J. Trop. Med. Hyg.* 77 (Suppl 6) 2007, pp. 198-202.

To access the paper, visit: http://www.ajtmh.org/cgi/content/full/77/6_Suppl/198

Comprehensive Malaria Control in Africa Projected to Cost \$3 Billion

Comprehensive malaria control in Africa is projected to cost about \$3 billion each year or about \$4 per person at risk, according to a study published by Columbia University's Earth Institute.

If fully implemented, the ramp-up of coverage would meet the U.N. Millennium Development Goal for reducing the burden of malaria by 75 percent. By using Geographic Information System maps and U.N. population estimates, Dr. Awash Teklehaimanot and his colleagues forecast the number of people at risk of contracting malaria in Africa. They then estimated the annual costs of covering those at risk with the package of interventions recommended by the the U.N. Millennium Project.

The study calculated the expense of key interventions such as long-lasting insecticide treated bed nets, indoor residual spraying, training of community health workers and other specialists, and education campaigns. In addition, they included enhanced diagnostic tests, artemisinin-combination therapies, and overhead rates for monitoring, evaluation and administration.

The authors note that the world's capacity to produce both insecticide-treated bed nets and artemisinin-combination therapies would need to increase significantly if the demands of scaling-up are to be met.

Given the disease kills millions and is readily preventable and treatable, the authors encourage the international community to seize the opportunity to reduce massively this human disease burden at such a low cost.



The distribution of insecticide-treated bed nets is a key intervention in malaria control. (Photo: Fogarty/J. Herrington)

Scaling Up Malaria Control in Africa: An Economic and Epidemiological Assessment. Teklehaimanot A, McCord GC, Sachs JD. *Am. J. Trop. Med. Hyg.*, 77(Suppl 6) 2007, pp. 138-144.

To access the paper, visit: http://www.ajtmh.org/cgi/content/full/77/6_Suppl/138

DDT's Ongoing Role in Malaria Control Examined

While abandoned by the Americas and Europe because of known environmental toxicity, the WHO considers indoor spraying of DDT a best practice for malaria vector control in much of the world. One study included in the supplement examines the controversy surrounding DDT, the effectiveness of indoor residual spraying (IRS) with the pesticide, a cost-benefit analysis and a survey of its use by different malarial countries.

By treating dwellings with DDT, mosquitoes are not only killed by coming in contact with sprayed surfaces, but are greatly deterred from entering the homes at all. When used in combination with pyrethroid-treated bed nets, it can reduce malaria transmission better than bed nets alone, according to the study.



Photo: DHHS

DDT is also the least expensive insecticide available, costing only about \$1.60 per house and providing about six months of effectiveness.

The authors contend that DDT does have a place in malaria control programs but should be carefully monitored for negative ecological, economic, or health effects.

Dichlorodiphenyltrichloroethane (DDT) for Indoor Residual Spraying in Africa: How can it be used for Malaria Control? Sadasivaiah S, Tozan Y, Breman JG. *Am J Trop Med Hyg.* 2007; 77 (Suppl 6): 249 –263.

To access the paper visit: http://www.ajtmh.org/cgi/content/full/77/6_Suppl/249

Genetically Engineered Mosquitoes May Aid in the Fight Against Malaria

Rather than eradicating malaria from mosquito vectors, some scientists propose replacing wild populations with genetically engineered mosquitoes that are incapable of transmitting malaria to humans. This strategy appears more feasible as interest by international funding agencies increases, according to one article in the supplement.

However, several scientific and political roadblocks remain, according to Dr. Bart Knols, of the University of Nairobi, and his research team. Even with the genome for *Anopheles gambiae* available, scientists are

still struggling to engineer refractory mosquitoes that are unable to transmit *Plasmodium falciparum* parasites. Once these mosquitoes are created, there remain challenges related to driving these refractory genes into the native populations and sustaining the mutations through multiple generations of mosquitoes.

The authors suggest that the social hurdles for implementing such a strategy may be even more daunting than the scientific. Creating the global partnerships needed for even the most basic field trials will be a chal-

lenge, they acknowledge, if the research and risks are going to be managed in an ethical and culturally sensitive manner.

Transgenic Mosquitoes and the Fight Against Malaria: Managing Technology Push in a Turbulent GMO World. Knols BGJ, Bossin HC, Mukabana WR, Robinson AS. *Am J Trop Med Hyg.* 2007; 77(Suppl 6): 232-242.

To access the paper, visit: http://www.ajtmh.org/cgi/reprint/77/6_Suppl/232

Scientists Report that Misdiagnosis of Malaria is Common

Misdiagnosis of malaria is common and the term "malaria" itself has a variety of meanings, according to one of the supplement's papers submitted by researchers from Ghana and Malawi.

Because malaria's symptoms often mimic other diseases, it is often under-diagnosed in areas where incidence is rare, they report. Conversely, in endemic areas many people diagnosed with malaria may have the indicative parasite loads, but are in fact suffering from a different disease or condition. The presence of parasites doesn't necessarily indicate disease and many people in high-transmission areas learn to tolerate parasitemia.

In the clinical setting, misdiagnosed patients may receive unnecessary medication, raising



Photo: Fogarty/J. Herrington

the cost of treatment and likelihood of parasite drug-resistance development. At a more global level, misdiagnosis may cause problems in clinical trials for new treatments and may interfere with the evaluation of current programs.

The authors call for a clarification of malaria's definition on two fronts. In the clinic,

doctors need to identify more "signature" symptoms, such as a distinctive retinopathy, that can segregate malaria from other illnesses. On the academic front, researchers and policy makers need to tighten their use of "malaria" to distinguish between the presence of the parasites and the actual disease, if their meaning is to be understood.

When is "Malaria" Malaria? The Different Burdens of Malaria Infection, Malaria Disease, and Malaria-Like Illnesses. Koram KA, Molyneux ME. *Am. J. Trop. Med. Hyg.* 77 (Suppl 6), 2007, pp. 1-5.

To access the paper, visit: http://www.ajtmh.org/cgi/content/full/77/6_Suppl/1

Kenyan Malaria Expert Proposes Holistic Approach to Disease Control



Dr. Onesmo K. ole-MoiYoi makes the case for a holistic approach to reducing malaria.

The toll of malaria can be greatly reduced not only through clinical research, but through improved environmental and agricultural practices, suggested Dr. Onesmo ole-MoiYoi of Kenyatta University, in a recent lecture hosted by Fogarty at the Stone House. "Before you talk about malaria vaccines, you must first address environmental issues," he said.

According to Dr. ole-MoiYoi, malaria remains a major disease in Africa, in part, because of human changes to the environment and the incredible ability of mosquitoes carrying the disease to adapt to manmade habitats. Currently, over one million

people die of malaria every year, mostly infants, young children and pregnant women in sub-Saharan Africa, according to WHO.

Dr. ole-MoiYoi, who is also Director of Research and Partnerships at the International Centre of Insect Physiology and Ecology (ICIPE) in Nairobi, maintained that 90 percent of larval habitats are manmade. He explained that rice paddies, water tanks, swimming pools, flower gardens, blocked drainage pipes and even tire tracks can act as collection areas for warm water, establishing ideal breeding sites for malaria-carrying mosquitoes.

Some human activities are particularly conducive to the formation of mosquito habitats, he said, including the traditional method of farming rice in paddies, the use of stagnant ponds to mine clay for brick making and even littering. "Plastic bags are especially disastrous for Africa," according to Dr. ole-MoiYoi. "They are everywhere."



Large numbers of insects collect in brick pits such as this one in Kenya. (Photo: WHO/Tropical Diseases Research/Service)

Fogarty Director Dr. Roger I. Glass, a longtime colleague and former classmate of Dr. ole-MoiYoi's at Harvard Medical School, reinforced the need for more innovative malaria research. "There are still numerous misconceptions regarding malaria. Onesmo's research goes a long way in combating ignorance surrounding this disease, which strikes more than 500 million people a year," said Dr. Glass.

Dr. ole-MoiYoi ended his lecture on a hopeful note, describing some of ICIPE's discoveries, as well as some of the recent successful environmental measures implemented across Africa that have reduced the spread of the disease, including the banning of plastic bags in Tanzania and the rotation from rice to dryland crops such as soybeans in Kenya. "One thing is obvious," he said, "we will need more than one solution to this problem."

Infectious Disease Modelers Gather at Fogarty to Address Roadblocks

Frustrated by running into the same problems each time a possible pandemic disease threat emerges, modeling experts from around the world gathered recently at Fogarty to develop a plan to discover solutions.

While there is a wealth of data available from recent epidemics, researchers don't always agree how it should be used to predict the next outbreak. Nor do they see eye-to-eye on how models should be framed for consideration by policy makers. These pressing issues were the subject of a two-day workshop, "Infectious Disease Modeling: Lessons Learned and Future Prospects."

Using case studies from recent outbreaks involving influenza, SARS, and Foot and

Mouth disease, the scientists discussed two challenges infectious disease modelers often face. The first involves the hierarchy of models: How much detail does a model need? How can models at different levels of complexity be "nested"? How can they be validated against epidemiological data? The second issue surrounds zoonosis: Is it possible to predict which animal host the next virulent pathogen will emerge from? What makes a zoonosis "good" or "bad" in terms of researchers' ability to model how the infection will spread and how it will respond to efforts to control it?

The meeting marked the beginning of the Research and Policy in Infectious Disease Dynamics program (RAPIDD), which will support several postdoctoral researchers and produce workshops to investigate dis-

ease modeling challenges over the next year. RAPIDD, co-sponsored by the Department of Homeland Security, is the result of a multi-agency initiative to address critical needs for preventing and responding to infectious disease outbreaks.

"This event was a wonderful opportunity to bring together current leaders and rising talent to tackle the problems that emerge for any disease model we study," says Fogarty senior scientist, Dr. Ellis McKenzie, who has been instrumental in the development of RAPIDD. "We hope this workshop has initiated the dialogue and collaborations we need to move this field forward."

Smoking Will Kill One Million Indians Each Year, Fogarty-Supported Study Says

India's smoking epidemic is expected to cause one million deaths a year, with more than half of them occurring among the poor and illiterate, according to a recent Fogarty-funded study.

With a 120 million Indian smokers, the death toll from tuberculosis, cardiovascular disease, respiratory conditions and cancer could soon account for 20 percent of all male deaths, and five percent of all female deaths in middle age, the study says.

The findings are from the first national study of smoking in India and were published recently in the *New England Journal of Medicine*. Led by Dr. Prabhat Jha at the University of Toronto, the effort involved about 900 field workers who surveyed 1.1 million homes in all parts of India. Researchers compared the smoking histories of 74,000 adults who had died with 78,000 living controls.

"Fogarty is proud to be a sponsor of this groundbreaking study," said Fogarty Director Dr. Roger I. Glass. "It has been an extraordinary effort to survey over one million homes, but that task looks small compared to the enormous and avoidable toll that smoking will cause among Indian men and women."

More than 30 percent of men and five percent of women aged 30-69 smoke either regular cigarettes or "bidis," small, cheaply made versions containing about one-fourth the amount of tobacco.

The study found substantial hazards among both educated and illiterate adults, in urban and rural areas. However, smoking-related deaths are mainly caused by TB in rural areas, while urban deaths are often linked to heart attacks. The study also found smokers in India have twice the cancer rate of non-smokers.

"The extreme risks from smoking that we found surprised us, as smokers in India start at a later age than those in Europe or America and smoke less," said Dr. Jha. "This research demonstrates the scale of the problem."

Men who smoked cigarettes lost an average of ten years of life, while smoking bidis cut an average of six years from life expectancy. The study found there were no safe levels of smoking. While the hazards of smoking even a few bidis a day raised mortality risks by one-third, consuming the same number of cigarettes nearly doubled the risk of death in middle age.



There are about 120 million smokers in India. (Photo: Lung Health Image Library/Gary)



Cheaply made cigarettes known as bidis are inexpensive and popular in India. (Photo: Lung Health Image Library/Gary Hampton)

"I am alarmed by the results of this study," said India's Health Minister Dr. Abumani Ramadoss. "The government of India is trying to take all steps to control tobacco use—in particular by informing the many poor and illiterate of smoking risks."

It's clear that the best way for smokers to reduce their risk of these life-threatening diseases, is to stop smoking entirely, the researchers concluded. "Smoking kills, but stopping works—about a quarter of all smokers will be killed by tobacco in middle age, unless they stop," said co-author Professor Sir Richard Peto of Oxford University. "British studies show that stopping smoking is remarkably effective."

A Nationally Representative Case-Control Study of Smoking and Death in India, Jha P, Jacob B, Gajalakshmi V, Gupta PC, Dhingra N, Kumar R, Sinha DN, Dikshit RP, Parida DK, Kamadod R, Boreham J, Peto R.

To learn more, visit: <http://content.nejm.org/cgi/content/full/NEJMsa0707719>

Cost-Effective Solutions Could Alleviate the Enormous Economic Burden of Cardiovascular Diseases in Africa

In sub-Saharan Africa, the leading cause of death in those over the age of 45 continues to be cardiovascular disease. Interventions would not only save lives, but could also alleviate the huge financial burden measured in both health care costs and lost productivity.

In a Fogarty-supported study recently published in *The British Medical Journal's Heart*, Dr. Thomas A. Gaziano of Brigham & Women's Hospital reviews existing literature on cardiovascular diseases and provides guidelines to produce cost-effective interventions.

In the article, "Economic Burden and the Cost-Effectiveness of Treatment of Cardiovascular Diseases in Africa," Gaziano makes recommendations for management of major cardiovascular risk factors through changes in lifestyle and drug therapies. He provides a framework for the devel-



Cardiovascular diseases are a leading cause of death in Africa. (Photo: WHO/Chris de Bode)

opment of guidelines to prevent cardiovascular diseases, taking into account the particular political, economic, social and medical circumstances of sub-Saharan Africa.

Although screening for cardiovascular diseases is population-based, once individuals are identified as high-risk they require

personal interventions for the management of their elevated risk, according to Dr. Gaziano. He suggests that these guidelines will be cost-effective if the approach targets high-risk individuals and relies on easily identifiable screening tools such as limited laboratory testing and opportunistic screening for hypertension and high cholesterol.

In another scenario he provides information on a program that was a combination of legislative, voluntary industry and mass media participation to reduce salt consumption—thus reducing the risk of cardiovascular diseases and the associated costs of treatment.

Gaziano also evaluated the cost-effectiveness of other specific interventions for ischaemic heart disease, congestive heart failure, stroke, diabetes, and rheumatic heart disease.

Cardiovascular diseases place an enormous financial burden on sub-Saharan African countries, both in direct costs of treatment and indirect costs of reduced workforce productivity. As a result, over a ten-year period Tanzania and Nigeria alone will lose \$2.5 billion and \$7.6 billion respectively, according to the WHO.

The majority of cost estimates for the sub-Saharan African region used in this study come from the *WHO-CHOICE (Choosing Interventions that are Cost-Effective)* program and the *Disease Control Priorities Project (DCP2) in Developing Countries*, a Fogarty-sponsored endeavor.

Economic burden and the cost-effectiveness of treatment of cardiovascular diseases in Africa. T A Gaziano. *Heart*. 2008; 94:140-144.

To learn more visit: <http://heart.bmj.com/cgi/content/full/94/2/140>

Obesity Among Syrian Women Has Reached Epidemic Levels

Obesity among Syrian women has reached epidemic levels affecting almost half of those studied, according to a recent paper published by a Fogarty-supported research team. The incidence rose with age, with an alarming 81 percent of Syrian women between the ages of 46–65 being categorized as obese. In comparison, obesity among U.S. women in the same age group is 24.4 percent.

Syria, a low-middle income country, has witnessed rapid changes in lifestyle, and is showing a double disease burden where non-communicable diseases have emerged while infectious diseases continue unabated. According to a recent estimate from Aleppo, the country's second-largest city with a population of 2.5 million, about half of women aged 45–65 have hypertension. About 15 percent of older men and women have ischemic heart disease, and diabetes is also common.

The study was led by Dr. M. F. Fouad of the Center for Tobacco Studies in Aleppo. The team used data from the first Aleppo Household Survey, conducted in 2004 to provide a baseline of the main health problems affecting adults aged 18–65 in Aleppo. The team found:

- Obesity is related to the frequent consumption of certain food items, including coffee, olive oil, fruits and vegetables.
- There is a significant association between the prevalence of obesity among women with repeated pregnancies.
- Less-educated women were more likely to be obese than those with a higher level of education.
- Lack of physical activity has led to obesity in Syrian women with half of the women in the "low activity" category, as compared to one-fifth of the men.



This Syrian woman has lost her leg as a consequence of diabetes. (Photo: WHO/Chris de Bode)

- Male ex-smokers were more likely to be obese than current smokers.
- Married adults of both sexes were more likely to be obese than unmarried.
- The prevalence of obesity increased with age in both men and women.

The study shows that the prevalence of obesity among Syrian adults is high, especially in comparison with those from neighboring or industrialized countries.

The soaring obesity rate among women is a matter of great concern and is likely to be rooted in Arab societal norms and gender roles, the paper suggests. Syrian women are often confined to their homes with little opportunity for recreation or sporting activities. The research team recommends further studies to obtain the full picture of the causes of obesity in Syria.

Prevalence of obesity and its associated factors in Aleppo, Syria. MF Fouad, S Rastam, KD Ward, and W. Maziak *Prev Control*. 2006 June; 2(2): 85–94. doi: 10.1016/j.precon.2006.09.001

To learn more, visit: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2094121>

Summer Flu Outbreak of 1918 May Have Provided Partial Protection Against Lethal Fall Pandemic

Recent studies of the 1918 Spanish Flu pandemic have dramatically altered scientists' understanding of its transmission and could provide insight into planning for future pandemics, according to a recent study co-authored by a Fogarty scientist.

A summer wave of influenza may have provided partial protection against the lethal fall wave of the 1918 Influenza pandemic in Copenhagen, Denmark, according to the analysis published recently in the *Journal of Infectious Diseases*.

The Spanish Flu pandemic killed over 50 million people worldwide. Historical records suggest that an early pandemic wave struck Europe during the summer of 1918. The researchers obtained surveillance data that were compiled weekly in Copenhagen and included medically treated influenza-like illnesses, hospitalizations and deaths by age.

The study team, including Fogarty scientist Cécile Viboud, report only .02 percent of Copenhagen's population died during the summer wave, as compared with .27 percent during the fall wave. Similar patterns were observed in three other Scandinavian cities and likely represent a wider European or even global experience, the study suggests.



The 1918 Spanish Flu Epidemic killed more than 50 million people worldwide. (Photo: WHO)

The Copenhagen summer wave may have been caused by a precursor pandemic virus that transmitted efficiently—but lacked extreme virulence—according to the authors. They conclude that a mild summer wave of a flu pandemic may be a positive occurrence, because it may afford the population some protection against lethal subsequent waves.

Epidemiologic characterization of the summer wave of the 1918 influenza pandemic in Copenhagen: Implementations for pandemic control strategies. Andreasen V, Viboud C, Simonsen L. *J Infect Dis*. 2008 Jan.

To access the paper, visit: <http://www.journals.uchicago.edu/doi/pdf/10.1086/524065>

Targeted Screening Detects Chagas Infection in Children

A targeted screening strategy could provide a more efficient, cost-effective and viable way to diagnose and treat chagas disease among children in resource-poor settings, according to a Fogarty-supported study.



A young girl suffers from acute chagas disease. A small sore develops at the bite where the parasite enters the body. If near the eye, the eyelid becomes swollen, known as Romaña sign. (Photo: WHO)

Chagas kills more people than any other parasitic ailment in Latin America, where an estimated 11 million are infected with *trypanosoma cruzi* (*T. cruzi*), the single-cell parasite that causes the disease.

Anti-trypanosomal drug therapy can cure infected individuals, but treatment efficacy is highest early in infection. Vector control campaigns, such as spraying, disrupt transmission of *T. cruzi*, but without timely diagnosis, children infected prior to vector control often miss the window of opportunity for effective intervention.

The study—led by Michael Levy of Emory University and the CDC—performed a serological survey in children living in Arequipa, Peru, where a vector control campaign is currently disrupting transmission of *T. cruzi*. The team found that just over five percent of the children had already been infected by the time their households received insecticide application. They also found that households with infected children were tightly clustered within looser clusters of households where parasite-infected insects were found.

The researchers then related their findings to data that had been collected during the vector control campaign, which included entomological, spatial and census data. They found that using such data to target diagnostic testing would have identified over 83 percent of the infected children, while requiring testing only 22 percent of eligible children.

Levy and colleagues conclude that data easily collected during an ongoing insecticide spraying campaign in Arequipa could be used to identify children at greatest risk of infection with *T. cruzi*, so they could be diagnosed and treated at an early stage.

Targeted Screening Strategies to Detect Trypanosoma cruzi Infection in Children. Levy MZ, Kawai V, Bowman NM, Waller LA, Cabrera L, et al. (2007). *PLoS Neg. Trop Dis* 1(3): e103. doi:10.1371/journal.pntd.0000103.

To access the study, visit: <http://www.plosntds.org/article/info:doi%2F10.1371%2Fjournal.pntd.0000103>

Holocaust Survivors Spare Children Psychological Wounds of Their Traumatic Past

Parents who are Holocaust survivors have spared their children the psychological wounds of their own traumatic past, according to a trans-generational study. Part of the Israel-component of the World Mental Health Survey, the analysis was partially supported by Fogarty and published in the *Israeli Journal of Psychiatry Related Science*.

Dr. Itzhak Levav of the Ministry of Health in Jerusalem and his research team surveyed children whose parents were Holocaust survivors, as well as a comparison group of children of European-born parents who had not resided in Nazi-occupied Europe.

In addition to psychopathological domains explored in past community studies—such as emotional distress, mood and anxiety disorders—the team researched new factors including the use of services, self-appraisal of health, self-reported physical health conditions and suicidal behavior.

Given the parents' ordeal during and immediately after World War II, the study team

expected their children would be affected in terms of their psychopathology, as well as other psychological domains. However, in the measures used, they found no differences between Holocaust survivor offspring and those of the comparison group.

In gathering evidence of the ability of Holocaust survivors to function as parents, the team noted that survivors had a relatively lower level of education than the controls. However, their children achieved more years of education than the comparison group.

The authors conclude that although the Holocaust-survivor parents suffered adversity in their lives, they protected their children's mental health up to adulthood.

They suggest that rather than continue to explore the domain of ill-mental health among the offspring of Holocaust survivors, research should focus on the resilience of their parents.



Psychopathology and Other Health Dimensions among the Offspring of Holocaust Survivors: Results from the Israel National Health Survey. Levav I, Levinson D, Radomislensky I, Shemesh A, Kohn, R. *Isr J Psychiatry Relat Sci*, Vol 44 No. 2 (2007) 144–151.

To obtain a copy of this paper visit: <http://www.ncbi.nlm.nih.gov/pubmed/18080651?dopt=Abstract>

Bacterial Diseases Follow Seasonal Patterns in Vietnam, According to Fogarty Analysis

Outbreaks of bacterial diseases in Vietnam follow distinct temporal trends and seasonal patterns, according to a Fogarty study published recently in *Environmental Health Perspectives*. While climate plays a role, the analysis suggests it does not appear to be an important factor influencing the timing of outbreaks.

Water-borne diseases such as dysentery, typhoid fever and cholera are significant health concerns in Vietnam, a densely populated country of approximately 85 million people. To better understand their epidemiology, Dr. Mark A. Miller, Director of Fogarty's Division of International Epidemiology and Population Studies, and his research team determined temporal trends, seasonal patterns and climatic factors associated with high risk periods in eight regions across Vietnam.

By identifying peak periods of disease, the researchers hope to help focus local interventions. The team quantified monthly cases and incidence rates for each region from national surveillance data from 1991 to 2001. They found, on average, the highest incidence rates of dysentery occurred between April and September, and that



cholera spiked between May and November. All disease outbreaks occurred earlier in the south than in the north. Peak periods

of disease in the southern region coincided with the onset of the wet season, the study showed.

While climatic associations were not strong, distinct climatic differences were evident between the high- and low-disease periods, with hotter, wetter, and more humid conditions associated with an increased incidence of disease. Poor socioeconomic conditions likely play a more important role than climate, the authors conclude. Acknowledging that climate is only one cause of disease outbreaks, the researchers suggest that seasonal changes help define risk periods and may provide some clues into the timing of outbreaks.

Temporal trends and climatic factors associated with bacterial enteric diseases in Vietnam, 1991-2001. Kell7-Hope LA, Alanso WJ, Thiem VD, Canh DG, Anh DD, Lee H, Miller MA. *Environ Health Perspect*. 2008.

To learn more visit: <http://www.ehponline.org/docs/2007/9658/abstract.html>

PEOPLE



Fogarty's Science Policy Chief Featured on Voice of America

Fogarty's science policy chief was recently featured in a Voice of America report on global health. Dr. Karen Hofman, Director of International Science Policy, Planning and Evaluation, was interviewed about the importance of implementation science to the quick delivery of new drugs, treatments and interventions to the populations where they are needed most. One example she offered is male circumcision as a means to prevent the spread of HIV. Since different cultures react differently to the idea of circumcision, Dr. Hofman said researchers

Dr. Karen Hofman

must now study how best to employ this medical intervention in culturally sensitive ways.

Another example she presented regards drugs that are normally effective in suppressing HIV. In poor countries, these might not have the same effect in patients who also suffer from malaria, tuberculosis or malnutrition, she said.

In other words, one-size does not fit all, the report concluded.

Hofman's interview was the result of a recent paper she co-authored in *Science*, titled "Implementation Science." The full text is available at <http://www.fic.nih.gov/news/publications/index.htm>



Fogarty's Joel Breman Quoted in Science

Fogarty's malaria expert and senior scientist, Dr. Joel Breman, was recently quoted by *Science* in an article titled, "Malaria: Did They Really Say... Eradication?"

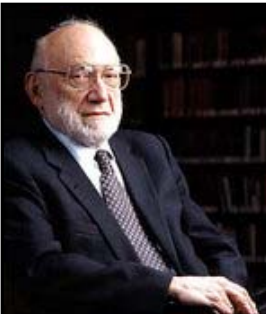
The piece dealt with the recent call for malaria eradication made by Bill and Melinda Gates, and the buzz that has created among infectious disease researchers. While no timeline was given, it has ignited a debate on whether it is wise to dangle potentially unattainable goals before the public,

Dr. Joel Breman

the article reported. "There is a danger of overpromising and underachieving," according to Dr. Breman.

At the same time, the appeal for eradication is having an impact, the report said. Scientists and U.S. health officials are trying to turn the vision into reality, bolstered by already-plummeting malaria rates in several countries.

The Gateses outlined a two-pronged approach. They encouraged a massive ramping up of the use of existing tools while simultaneously working to discover new ones, such as vaccines, drugs, alternative insecticides, traps and other novel interventions.



Nobel Laureate and Fogarty Supporter Dies

One of the 20th century's leading scientists, Dr. Joshua Lederberg, who received the 1958 Nobel Prize for his pioneering work in bacterial genetics, died in early February at the age of 82.

Lederberg graduated from high school at the age of 15, earned a bachelor's in zoology from Columbia College in 1944 and a doctorate from Yale University in 1947. He held appointments at the University of Wisconsin and Stanford University before moving to Rockefeller University in 1978.

Dr. Joshua Lederberg

Throughout his career, he cultivated a broad range of scientific interests and worked to improve communications among scientists, the public and policymakers. He advised nine U.S. presidents and in 2006, he received the *Presidential Medal of Freedom*, the nation's highest civil award.

In the mid-1990s, he co-chaired an external panel review of NIH international programs. In his presentation of their findings, he reported the panel intensely felt the NIH could not fulfill its mission without attending carefully to global problems, information, resources and cooperation. He advocated Fogarty should remain a separate unit of the NIH.

Time Magazine Names Fogarty Grantees' Work Top Medical Breakthrough of 2007

Time magazine has named the work of two Johns Hopkins University researchers showing that male circumcision is a powerful HIV prevention tool, the number one medical breakthrough of 2007.

Fogarty AIDS Training and Research Program (AITRP) grantee, Dr. Ronald Gray, and his colleague Dr. Maria Wawer, oversaw a randomized clinical trial in Rakai, Uganda demonstrating that surgical circumcision reduced a man's chances of acquiring the HIV virus through sexual contact with women by more than 50 percent.

The details of their work were published in the *Lancet*, whose editors called the discovery "a new era for HIV prevention."

The dramatic findings led the National Institute of Allergy and Infectious Diseases to halt the Uganda research and another clinical trial in Kenya so circumcision surgery could be offered to men in the control groups. The WHO and UNAIDS now endorse the procedure as part of a comprehensive prevention package for HIV-negative men.

More than 30 AITRP grantees are currently involved in this research.

To learn more visit: <http://www.ihsp.edu/rakai/>

PEOPLE

Fogarty Hosts Reception to Welcome New Japanese Fellows to NIH

US-Japanese scientific cooperation was toasted at a recent Stone House reception to honor the 2008 fellows of the Japan Society for the Promotion of Science (JSPS) program at NIH.

Fifteen young scientists were welcomed into the program that has brought a total of 109 Japanese researchers to NIH for training since 2002.

“We greatly value and appreciate the Society’s support in this important bilateral cooperation between the NIH and Japan,” said Fogarty Director Dr. Roger I. Glass. “We hope to expand this wonderful partnership by sending more American scientists to Japan.”

“This is a tremendous opportunity for young Japanese scientists,” remarked Dr. Keiko Ozato, NIH Review Committee Chair of JSPS. “Research conducted under this program has been outstanding, furthering our organizations’ shared goals to promote excellence in science.”

The event was also attended by Dr. Michael Gottesman, Deputy Director of Intramural Research at NIH; Dr. Akira Masaïke, the Director of the JSPS Washington Office and Ms. Suzuko Ooki, of the JSPS Headquarters in Tokyo.

The JSPS is an independent administrative institution established by Japan for the advancement of science. Founded in 1932 as a non-profit foundation, it plays a pivotal role in Japan's scientific and academic programs. Fogarty manages JSPS’s relationships at NIH, maintains a Web site for the fellowship program, and oversees review of both U.S. applicants who wish to work in Japan and Japanese scientists interested in coming to NIH.



Dr. Akira Masaïke (right) discusses US-Japanese cooperation with Dr. Roger I. Glass and Dr. Michael Gottesman during the reception to honor the new Japan Society for the Promotion of Science fellows who are beginning training at NIH.

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 21, 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 13, 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	December 21, 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.

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

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NIH Public Access Policy

The *NIH Public Access Policy* ensures that the public has access to the published results of NIH-funded research. It requires scientists to submit journal articles that arise from NIH funds to the digital archive *PubMed Central*.

Important Dates:

April 7, 2008

As of April 7, 2008, all articles arising from NIH funds must be submitted to *PubMed Central* upon acceptance for publication.

May 25, 2008

As of May 25, 2008, NIH applications, proposals, and progress reports must include the *PubMed Central* reference number when citing an article that falls under the policy and is authored or co-authored by the investigator, or arose from the investigator's NIH award. This policy includes applications submitted to the NIH for the May 25, 2008 due date and subsequent due dates.

For more information visit: <http://publicaccess.nih.gov/>

Fogarty Accepts Donations to Further Global Health Research

The U.S. Congress authorizes Fogarty to accept donations and bequests to support its mission. Donations to Fogarty are deposited in a Gift Fund account which is separate from the funding the Fogarty receives from Congress. Projects supported through the Gift Fund may vary from year to year depending on the needs of the Center. The following examples are the types of activities that may be supported through the Gift Fund:

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