

Researchers, physicians, and students are mobilizing
to solve serious health problems in developing nations.



A Passport, a Problem-Solving Mind, and Making a Difference in Global Health

BY ROGER SEGELKEN

Born into a family of particular misfortune—one of her siblings and two cousins already had died of malaria, diarrhea, and pneumonia, respectively—baby Amina’s luck was about to change.

For Amina (not her real name) good fortune came on the back of a healthcare worker’s motorcycle.

Amina’s Lucky Day Moving as expeditiously as the rutted road through rural Zanzibar, Tanzania, allowed, the motorcycle carried a digital scale and other gear for a neonatal assessment of the newborn child: weight, respiratory rate, temperature, and possible infections.

Trained observers will interview Amina’s parents through another part of the Cornell-based program to gauge the effects of malnutrition on childhood disease in Tanzania. They also are trying to determine whether early intervention can turn around a dismal infant-mortality rate. Amina’s father, a subsistence farmer who sells fish to villagers from a borrowed bicycle, and her mother, who bakes street food for sale when flour and firewood can be found, struggle to feed their own children and extended family that shares their roof.

But the nutritional quality is far from adequate for a child in a country where iron-deficiency anemia is rampant and malnutrition underlies the diseases (and deaths) of poverty. Another worker will monitor the village’s well—actually more of a seasonal mud hole—that is both the principal source of water for scores of adults and children and a breeding ground for mosquitoes that carry malaria.

Because baby Amina will be “followed” through repeated home visits, she has a better chance of surviving than many of the 1.4 million born last year in the United Republic of Tanzania. Life expectancy (at birth) is 46 years, in part because more than 170,000 children die before reaching school age each year. Her parents will get help buying medicines that may be necessary, including rehydration if Amina develops diarrhea. She will receive an experimental fortified instant food for babies that is being evaluated for clinical trials there. In this neonatal home visit, Amina’s mother will be encouraged to breastfeed exclusively for about six months and she will learn why cleaner water and a more balanced diet, with vitamin supplementation and iodized salt, is critical for infant health—and for prenatal health as the family grows.

Later, Rebecca Stoltzfus, a Human Ecology professor of nutritional sciences specializing in the epidemiology of diseases of poverty, will report >>>

Participants in a study of infant feeding practices, this mother and child live in a coastal village called Tumbe in northern Pemba Island of Zanzibar, Tanzania.



to agencies that can implement change for more Tanzanian youth (including UNICEF, that nation's Ministry of Health, and USAID). Early intervention and proper nutrition, she will say, *can* make a difference.

The Zanzibar, Tanzania, project is one of several, based in the College of Human Ecology and Weill Cornell Medical College, that are part of Cornell University's new Global Health program.

B **Building on a Record of Service** Nutritional scientists from the College of Human Ecology and doctors from Weill Cornell Medical College have been working in developing countries for more than 40 years. But until recently, those two parts of the university rarely joined forces to address health needs of third-world countries.

They're doing just that and much more in the new Global Health program. Supported in part by a "framework program" grant from the National Institutes of Health (NIH) Fogarty Institute, the nutritional scientists and physicians are rallying faculty members from three other Cornell colleges (Agriculture and Life Sciences, Arts and Sciences, and Veterinary Medicine) to help communities, institutes, and hospitals in some of the neediest parts of the world fight malnutrition and disease. Kathleen Rasmussen, a professor in Nutritional Sciences, and Dan Fitzgerald, an assistant professor at Weill Cornell, helped to co-author the winning grant proposal.

Preparing Minds for Problem-Solving Without neglecting present-day, urgent needs of people, the program begins building the next generation of service-minded world citizens with a new undergraduate minor in global health.

Academically based in the College of Human Ecology, the Global Health minor speaks to undergraduates from just about any part of the university with two requirements: the students must have a fundamental education in the disciplines that underlie global health research, and they must have a passport to travel.

For graduate students, medical students, and postdoctoral fellows interested in the study and control of the so-called diseases of poverty, the Global Health program will provide new seminar courses and research experience at international field sites.

Human Ecology's Rebecca Stoltzfus, co-director of the Global Health program, says: "Our vision is to create a sustainable and innovative, university-wide Global Health training program that engages students and faculty from multiple disciplines to solve problems." The end result, she says, "will be that more of Cornell's outstanding students in human and veterinary medicine, nutrition, agriculture, and basic sciences will make lifelong contributions to global health, particularly problems of resource-poor countries." Sharing expectations with Stoltzfus is her co-director, Warren D. Johnson Jr., a Weill Cornell Medical College professor and chief of Weill Cornell's Division of International Medicine and Infectious Diseases.

Formalizing Commitments In Ithaca the 1970s saw the formation of the Program in International Nutrition in the Division of Nutritional Sciences and the College of Human Ecology. The program's emphasis on research, education, and training to address nutritional problems worldwide produces graduates who are highly prized by government ministries and action agencies, such as

UNICEF and the World Health Organization. From many sites of field work by the Program in International Nutrition, the newly formed Global Health program chose three: Bangladesh, where a NIH-funded training program in cooperation with Dhaka's International Centre for Diarrhoeal Research is directed by Kathleen Rasmussen; and Peru and Tanzania, where programs in collaboration with Lima's Instituto de Investigacion Nutricional and Zanzibar's Public Health laboratory, respectively, are directed by Stoltzfus.

Until Stoltzfus and other founders of the Global Health program asked for start-up support from Cornell's Mario Einaudi Center for International Studies, global health had not been an explicit focus for that center, which fosters study-abroad opportunities and advances international teaching, research, and outreach at Cornell. "But the Einaudi

Center has many of the resources we need to support work in global health, such as social and cultural studies in an extraordinary range of languages," Stoltzfus says. The Einaudi Center provided a critical seed grant to help prepare the NIH grant proposal. And so another partnership was born.

At Cornell's medical college, one of the first efforts to formalize the commitment to global health came in 1979 with the establishment of the Division of International Medicine within the Department of Medicine.

The medical school's AIDS program was incorporated when the division expanded, in 1995, to its current mission as International Medicine and Infectious Diseases. In 2004 the division added a new focus on research and training in Ghana and began collaborating with the Noguchi Memorial Medical Institute for Medical Research.

To address AIDS-related tuberculosis in Haiti, collaborative programs headed by Weill Cornell have reduced the prevalence of HIV infection from 6.2 percent in the 1990s to 2.9 percent today, Dr. Johnson says. By helping form and bring NIH support to a Haitian network for service, training, and research called GHESKIO (Groupe Haïtien d'Etude du Sarcome de Kaposi et des Infections Opportunistes), Cornell medical workers defined the optimal treatment and prophylaxis of tuberculosis in AIDS patients. As Drs. Johnson, Fitzgerald, and Stoltzfus learned about each others' research through writing the NIH grant proposal, they realized they had mutual interest in integrating nutrition research and services into the broad array of activities already ongoing at GHESKIO, which also include tuberculosis screening and treatment, family planning, and a pilot program in microcredit. And so Fitzgerald and Stoltzfus are already planning their next NIH grant, to fund research on nutrition and HIV in Haiti. Much more remains to be done in Haiti, according to Johnson, making that impoverished island nation a natural place to study global health—and to do something about it.





**UNITED NATIONS
UNIVERSITY**

Patrick Stover Is Director of UNU's Food and Nutrition Programme for Human and Social Development

Patrick Stover, Human Ecology professor and director of the Division of Nutritional Sciences (DNS), has begun a four-year term as director of the Food and Nutrition Programme of the United Nations University (UNU), with plans to engage more faculty from the college and across Cornell in the multidisciplinary work of UNU. Stover takes the place of Cutberto Garza, his predecessor in the DNS director's office and in the directorship (1996–2005) of the Food and Nutrition Programme, the only UNU program that is headquartered in the United States.

The 30-year-old, Tokyo-based UNU is the research and "think tank" for the United Nations System. It was born out of UNESCO (United Nations Educational, Scientific, and Cultural Organization) with the overarching mission "to contribute, through research and capacity building, to efforts to resolve the pressing global problems that are the concern of the United Nations, its peoples and member states." The Food and Nutrition Programme is among four science-society-technology programs administered by the UNU.

Later this year in Ithaca, Cornell and UNU officials will sign a memorandum of understanding after which Cornell will be an "Associated Institution" of UNU. In confirming Stover's appointment to the Food and Nutrition Programme and the continuation of the program's base at Cornell, the UNU referred to Cornell's Division of Nutritional Sciences as "one of the largest academic units in the U.S. devoted to research, training, and outreach in human nutrition."

The UNU rector (president), Hans van Ginkel, would like to engage American and European universities with developing nations to train and retrain scientists who will continue to work in their native countries, according to Stover. Many of Cornell's programs already focus on this and, in addition, share resources with academic libraries in developing countries. The new designation as an Associated Institution will give Cornell educators and researchers the opportunity to do even more, Stover notes.

Stover credited Garza with establishing a network of research and outreach sites in Africa, South Asia, the Middle East, Eastern Europe, and South America. While attending the November 2006 UNU Council meeting in Tokyo, Stover was informed by African members of the council "that Cornell University is one of the few, if not the only, outward-looking American universities that engages the developing world, including Africa, and provides much more than it takes away."

Work and Framework As a framework program, Global Health was never intended to do all the hands-on, country-by-country work itself—but rather to facilitate and nurture linkages, Stoltzfus and Johnson both agree. Collaborations among NIH-sponsored programs that emphasize aspects of international health are the most obvious and were necessary to win the initial grant from the NIH, according to Stoltzfus. But she wants the framework to become crossroads for all kinds of government-funded programs (the National Science Foundation, for example) and the U.S. Department of Agriculture (USDA) and the Agency for International Development (USAID). Partnerships with Cornell programs supported by private philanthropic organizations (such as the Gates Foundation, Rockefeller Foundation, and the Wellcome Trust) and individual donors will be needed to sustain the program and to engage Cornell's broad expertise in international development.

More than two dozen Cornell faculty participants—people such as medical entomologist Laura C. Harrington, an expert in insect-borne disease, and veterinary scientist Alfonso Torres, a specialist in public policy and in zoonotic diseases (transmitted among animals and humans)—are already involved and helping to build the program. "The framework program has already stimulated new conversations on global health issues among faculty who were previously unaware of each other," says Stoltzfus.

Thinking Globally Cornell is a truly great place to be a student at the beginning of a career. The university's long-time dedication to teaching sciences on the undergraduate level is an attraction for many students who plan for medical degrees. Some 300 to 400 Cornell graduates annually pursue advanced study in human medicine. These are the students Stoltzfus wants to reach.

The Global Health program is complete with an undergraduate minor that begins with a gateway course that was taught for the first time in the spring '07 semester, the three-credit Introduction to Global Health. Pioneering students in the new global health minor were attracted by the promise of multidisciplinary, problem-focused approach, taught by a team of faculty members from several colleges who can offer a variety of perspectives: epidemiological, biological, political-economic, social-ecological, and ethical.

Mentors at the in-field experiences for undergraduates will provide additional perspectives, no doubt, and career-counseling services will be available to the students. Stoltzfus hopes the undergraduates will become just as involved in global health concerns as one graduate student, a resident of the Netherlands, who got a Dutch Rotary Club to donate money to help renovate the maternity ward where many of the Zanzibar women participating in the research seek obstetric care.

In their quest for role models, the Cornell students will look to people like Rebecca Stoltzfus and Warren Johnson—global health pioneers who made careers for themselves far from their comfortable offices in Ithaca and Manhattan.

And Stoltzfus and Johnson will be looking to the new advocates for global health to step outside the classroom, pack a passport and a new world view, and go to work. ●●●

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